

# NEUROLOGIA CROATICA

---

1953 ZAGREB

## BOOK OF ABSTRACTS

### 4<sup>th</sup> Croatian Congress on Alzheimer's Disease with international participation

October 8<sup>th</sup> - 11<sup>th</sup>, 2008

St Andrew's Island, Rovinj, Croatia



# NEUROLOGIA CROATICA

---

1953 ZAGREB

## BOOK OF ABSTRACTS

**4<sup>th</sup> Croatian Congress on Alzheimer's Disease  
with international participation**

**October 8<sup>th</sup> - 11<sup>th</sup>, 2008**

**St. Andrew's Island, Rovinj, Croatia**

**Supplement Editors: Goran Šimić  
Ninoslav Mimica**

Coordinating Editor: Damir Petravić

Official Journal of:  
Croatian Neurological Society  
Croatian Neurosurgical Society

Indexed/Abstracted in:  
Neuroscience Citation Index  
EMBASE/Excerpta Medica

## **4<sup>th</sup> Croatian Congress on Alzheimer's Disease with international participation**

### **ORGANIZERS**

Alzheimer Disease Societies Croatia

Croatian Society for Clinical Psychiatry, CMA

Croatian Society for Neuroscience

### **UNDER THE AUSPICES OF**

Alzheimer's Disease International

Ministry of Science, Education and Sports of the Republic of Croatia

Ministry of Health and Social Welfare of the Republic of Croatia

Istria County

### **ORGANIZING COMMITTEE**

**President:** Ninoslav Mimica

**Secretaries:** Mihovil Mladinov, Morana Trešćec-Ivičić

**Members:** Vanja Bašić Kes  
Marina Boban  
Denis Čerimagić  
Mira Dajčić  
Tajana Dajčić  
Nenad Dejanović  
Veljko Đorđević  
Krasanka Glamuzina,  
Goran Ivkić  
Svjetlana Kalanj-Bognar  
Dubravka Kalinić  
Marina Kovač  
Oliver Kozumplik  
Darko Labura  
Gordan Makarić  
Nevenka Mimica  
Maja Mustapić  
Ernestina Novy-Radonić  
Damir Petravić  
Paola Presečki  
Ljubomir Radovančević

Vladimir Sabljic  
Maja Silobrčić Radić  
Kristina Stipetić  
Spomenka Subašić  
Helena Šarac  
Vesna Šendula-Jengiće  
Goran Šimić  
Zvonimir Šostar  
Suzana Uzun  
Ankica Vidas Kaćanski  
Danijela Źakić Milas

### **SCIENTIFIC COMMITTEE**

**President:** Goran Šimić

**Members:** Nenad Bogdanović  
Vida Demarin  
Goran Dodig  
Pavo Filaković  
Vera Folnegović Šmalc  
Nori Graham  
Rudolf Gregurek  
Silva Hećimović  
Neven Henigsberg  
Patrick R. Hof  
Vlasta Hrabak-Źerjavić  
Miro Jakovljević  
Vlado Jukić  
Aleš Kogoj  
Ivica Kostović  
Rajka Liščić  
Ivo Lušić  
Đulijano Ljubičić  
Mate Mihanović  
Ninoslav Mimica  
Dorotea Mück-Šeler  
Lilijana Oruč  
Nela Pivac  
Ivanka Radman  
Krešimir Rotim  
Melita Šalković-Petrišić  
Janoš Terzić  
Zlatko Trkanjec

Spomenka Tomek-Roksandić  
Dinko Vitezić  
Gordana Župan

## INVITED SPEAKERS

**Adrian Danek** (München, Njemačka / Germany)  
**Vera Folnegović Šmalc** (Zagreb, Hrvatska / Croatia)  
**Nori Graham** (London, Velika Britanija / United Kingdom)  
**Miro Jakovljević** (Zagreb, Hrvatska / Croatia)  
**Vlado Jukić** (Zagreb, Hrvatska / Croatia)  
**Aleš Kogoj** (Ljubljana, Slovenija / Slovenia)  
**Ivo Lušić** (Split, Hrvatska / Croatia)  
**Dorotea Mück-Šeler** (Zagreb, Hrvatska / Croatia)  
**Lilijana Oruč** (Sarajevo, Bosna i Hercegovina / Bosnia and Herzegovina)  
**Nela Pivac** (Zagreb, Hrvatska / Croatia)  
**Ivanka Radman** (Bergheim, Švicarska / Switzerland)  
**Melita Šalković Petrišić** (Zagreb, Hrvatska / Croatia)  
**Dinko Vitezić** (Rijeka, Hrvatska / Croatia)

## CONGRESS TOPICS

1. BASIC RESEARCH AND NEUROPATHOLOGY OF AD
2. EARLY DIAGNOSTICS OF AD
3. EPIDEMIOLOGY AND RISK FACTORS FOR AD
4. CLINICAL RESEARCH IN AD
5. CLINICAL CHARACTERISTICS OF AD AND CASE REPORTS
6. PHARMACOTHERAPY OF DEMENTIA
7. NON-PHARMACOLOGICAL INTERVENTIONS IN AD
8. CARE FOR PEOPLE WITH DEMENTIA
9. NON-ALZHEIMER DEMENTIA
10. QUALITY OF LIFE IN DEMENTIA
11. AD ASSOCIATIONS AND SUPPORT GROUPS
12. FREE TOPICS

---

*Technical Editor*

Kristina Ivić

*Proof Reader*

Ljubica Grbić

*Typesetting*

STUDIO HRG d.o.o., Zagreb

*Printed by*

DENONA d.o.o., Zagreb

Zagreb, October 2008

300 copies

---

The Editor-in-Chief of "Neurologia Croatica" with the advice of Editorial Board, accepted the publishing of the abstracts of the 4<sup>th</sup> Croatian Congress on Alzheimer's Disease with international participation as a supplement of the journal.

The editors of this supplement have been committed to review and accept the abstracts of the submitted contributions. The authors of the invited lectures are responsible for their own contributions.

The Supplement Coordinating Editor is responsible of the overall quality of the supplement.

N. Zurak  
Editor-in-Chief

## CONTENTS

<b>GENERAL INFORMATION</b> .....	2
<b>INTRODUCTION</b>	
<i>Mimica N</i> .....	12
<b>WELCOME</b>	
<i>Šimić G</i> .....	13
<b>ABSTRACTS</b>	
<b>ORAL PRESENTATIONS</b>	
<b><i>BASIC RESEARCH AND NEUROPATHOLOGY OF AD / OP-1-(01-06)</i></b> .....	15
AMYLOID- $\beta$ : FROM MOLECULAR BIOLOGY TO CLINICAL PRACTICE ( <i>OP-1-01</i> ) <i>HEĆIMOVIĆ S, Malnar M, Košiček M, Petek Tarnik I, Trkanjec Z, Titlić M, Demarin V, Goate A</i> .....	16
ENVIRONMENTAL RADON BRAIN MAP OF ALZHEIMER'S DISEASE - A HAZZARD WITHIN ( <i>OP-1-02</i> ) <i>MOMČILOVIĆ B, Lykken I, Prejac J, Cooley M, Ivičić N</i> .....	18
DOPAMINE-BETA-HYDROXYLASE IN ALZHEIMER'S DISEASE ( <i>OP-1-03</i> ) <i>MÜCK-ŠELER D, Mustapić M, Mimica N, Pivac N, Presečki P, Folnegović Šmalc V</i> .....	19
LATEST ADVANCES IN GENETICS OF ALZHEIMER DISEASE ( <i>OP-1-04</i> ) <i>ORUČ L, Kapur L, Pojskić N</i> .....	20
CATECHOL-O-METHYL-TRANSFERASE VAL158/MET POLYMORPHISM IN ALZHEIMER'S DISEASE ( <i>OP-1-05</i> ) <i>PIVAC N, Nedić G, Deželjin M, Mustapić M, Mimica N, Mück-Šeler D, Folnegović Šmalc V</i> .....	21
"AMYLOID CASCADE HYPOTHESIS FOR ALL" - FACT OR ILLUSION? ( <i>OP-1-06</i> ) <i>ŠALKOVIĆ-PETRIŠIĆ M, Osmanović J, Hoyer S, Riederer P</i> .....	23
<b><i>EARLY DIAGNOSTICS OF AD / OP-2-(01)</i></b> .....	25
PREDICTION OF ALZHEIMER'S DISEASE IN SUBJECTS WITH MILD COGNITIVE IMPAIRMENT USING BIOLOGICAL MARKERS FROM CSF ( <i>OP-2-01</i> ) <i>ŠIMIĆ G</i> .....	26
<b><i>CLINICAL RESEARCH IN AD / OP-4-(01-05)</i></b> .....	27
IMPAIRED FACE RECOGNITION: ACQUIRED AND CONGENITAL ( <i>OP-4-01</i> ) <i>DANEK A</i> .....	28
ALZHEIMER'S DEMENTIA - THE DISEASE CHANGING THE STRUCTURE OF PSYCHIATRIC PATHOLOGY ( <i>OP-4-02</i> ) <i>JUKIĆ V</i> .....	29



DEMENTIA AS CHALLENGE FOR ETHICS (OP-4-03)	
RADMAN I .....	30
CLINICAL DRUG TRIALS: WHICH STUDY DESIGN IS ADEQUATE FOR ALZHEIMER'S DISEASE? (OP-4-04)	
VITEZIĆ D .....	32
CURRENT THERAPEUTIC STRATEGIES FOR TREATMENT OF AD-HOW CLOSE ARE WE TO SOLVE THE PROBLEM? (OP-4-05)	
WINDISCH M .....	33
<b>CLINICAL CHARACTERISTIC OF AD AND CASE REPORTS / OP-5(01) .....</b>	<b>35</b>
WORK IN THE GROUP OF PATIENTS SUFFERING FROM DEMENTIA (OP-5-01)	
BOSANAC D, Juretić-Pešćica M .....	36
<b>PHARMACOTHERAPY OF DEMENTIA / OP-6(01-03) .....</b>	<b>37</b>
TREATMENT OF DEMENTIA FROM INTEGRATIVE MEDICINE PERSPECTIVE (OP-6-01)	
JAKOVLJEVIĆ M .....	38
PHARMACOTHERAPY OF ALZHEIMER DISEASE AND EVIDENCE-BASED MEDICINE (OP-6-02)	
LUŠIĆ I .....	38
PSYCHOPHARMACOTHERAPY OF PSYCHOTIC STATE IN PERSONS WITH ALZHEIMER'S DISEASE (OP-6-03)	
MIHANOVIĆ M, Svrđlin P, Devčić S, Glamuzina Lj .....	39
<b>NON-PHARMACOLOGICAL MANAGEMENT OF DEMENTIA / OP-7(01-03) .....</b>	<b>41</b>
NON-PHARMACOLOGICAL MANAGEMENT OF DEMENTIA: A CLINICAL PERSPECTIVE (OP-7-01)	
GRAHAM N .....	42
INTEGRATIVE VALIDATION (IVA) ACCORDING TO NICOLE RICHARD (OP-7-02)	
HARAŠIĆ K .....	43
COGNITIVE AND BEHAVIOURAL INTERVENTIONS FOR CARERS OF PEOPLE WITH DEMENTIA (OP-7-03)	
VERNOOIJ-DASSEN M, Drašković I, Downs M .....	44
<b>CARE FOR PEOPLE WITH DEMENTIA / OP-8(01-04) .....</b>	<b>47</b>
PROFESSIONALS' KEY COMPETENCES IN MULTIDISCIPLINARY DEMENTIA CARE: VALIDATION OF A SELF-APPRAISAL INSTRUMENT (OP-8-01)	
DRAŠKOVIĆ I, Otero M, Bottema B, Lucassen P, Degen S, van Achterberg T, Olde Rikkert M, Vernooij-Dassen M .....	48
PROBLEMS OF PERMANENT LODGING OF AD PATIENTS (OP-8-02)	
GILIĆ A, Škeljo A, Pletikosa M .....	49

CARE FOR PERSONS WITH DEMENTIA IN THE DAY CENTRE OF THE HOME FOR ELDERLY AND IMPAIRED PERSONS (OP-8-03) <i>Grubišić Juhas V, APOSTOLOVSKI D, Drandić V</i> .....	50
PSYCHOSOCIAL ASPECT OF ELDERLY CARE FOR THE FAMILY MEMBER WITH ALZHEIMER'S DISEASE (OP-8-04) <i>LAKLIJA M, Milić Babić M, Rusac S</i> .....	51
<b>QUALITY OF LIFE IN DEMENTIA / OP-10-(01-02)</b> .....	53
QUALITY OF LIFE AND THE CARE PROVIDED FOR PERSONS WITH DEMENTIA (OP-10-01) <i>RADOVANČEVIĆ LJ</i> .....	54
QUALITY OF LIFE: EQUALLY IMPORTANT FOR THE ILL AND FOR FAMILY MEMBERS (OP-10-02) <i>ŠOLJAN I, Josipović-Jelić Ž</i> .....	56
<b>AD ASSOCIATIONS AND SUPPORT GROUPS / OP-11-(01-04)</b> .....	57
COUNSELING CENTER FOR FAMILY MEMBERS/CAREGIVERS OF PATIENTS WITH ALZHEIMER'S DISEASE (OP-11-01) <i>DAJČIĆ M, Dajčić T</i> .....	58
TEN YEARS OF ALZHEIMER'S DISEASE ASSOCIATION OF SLOVENIA - WHERE ARE WE? (OP-11-02) <i>KOGOJ A</i> .....	60
ALZHEIMER DISEASE SOCIETIES CROATIA - WHAT HAVE WE DONE SINCE LAST CONGRESS (OP-11-03) <i>MIMICA N, Dajčić M, Šimić G, Mladinov M, Glamuzina K, Novy-Radonić E, Trešćec-Ivičić M, Vidas Kačanski A</i> .....	62
SUBSIDIARY OF CROATIAN ASSOCIATION FOR ALZHEIMER'S DISEASE (OP-11-04) <i>VIDAS KAČANSKI A</i> .....	64
<b>FREE TOPICS / OP-12-(01-02)</b> .....	65
THE ASSESMENT OF TESTAMENTARY CAPABILITIES IN ALZHEIMER'S DEMENTIA PATIENTS (OP-12-01) <i>FOLNEGOVIĆ ŠMALC V, Varda R, Folnegović Grošić P</i> .....	66
MAGNETIC RESONANCE IMAGING OF THE BRAIN IN DIAGNOSING AND EVALUATION OF THERAPEUTIC EFFICIENCY IN ALZHEIMER DISEASE (OP-12-02) <i>HENIGSBERG N, Kalember P, Kovačić Z, Radoš M</i> .....	68
<b>POSTER PRESENTATIONS</b>	
<b>BASIC RESEARCH AND NEUROPATHOLOGY OF AD / PP-1-(01-06)</b> .....	69
THE ROLE OF LIPID RAFTS ON APP PROCESSING AND AMYLOID- $\beta$ FORMATION (PP-1-01) <i>KOŠIČEK M, Goate A, Hećimović S</i> .....	70

THE CHOLESTEROL-EFFECT ON AMYLOID- $\beta$ FORMATION UPON NPC1 DYSFUNCTION INVOLVES ALTERED APP LOCALIZATION (PP-1-02) <i>MALNAR M, Košiček M, Goate A, Hećimović S</i> .....	71
COGNITIVE TRAINING AND BRAIN INSULIN RECEPTOR IN RAT MODEL OF SPORADIC ALZHEIMER'S DISEASE (PP-1-03) <i>OSMANOVIĆ J, Riederer P, Šalković-Petrišić M</i> .....	72
PLATELET SEROTONIN CONCENTRATION AND MONOAMINE OXIDASE ACTIVITY IN EARLY-, MID- AND LATE-STAGE OF THE ALZHEIMER'S DISEASE (PP-1-04) <i>PRESEČKI P, Mück-Šeler D, Mimica N, Mustapić M, Pivac N, Folnegović Šmalc V</i> .....	74
INTRACEREBROVENTRICULAR APPLICATION OF A SMALL DOSE OF BOTULINUM TOXIN TYPE A PRODUCES LONG TERM COGNITIVE IMPAIRMENT IN RAT (PP-1-05) <i>REBIĆ V, Riederer P, Lacković Z</i> .....	76
LARGE PYRAMIDAL NEURONS IN THE ASSOCIATIVE PREFRONTAL CORTEX PRESERVE DENRITIC MORPHOLOGY DURING NORMAL AGING (PP-1-06) <i>ZEBA M, Kostović I, Uylings HBM, Petanjek Z</i> .....	77
<b>EARLY DIAGNOSTIC OF AD / PP-2-(01-07)</b> .....	79
THE ROLE OF THE CEREBROSPINAL FLUID BIOMARKERS IN A TERTIARY MEMORY CLINIC: OUR 4-YEAR EXPERIENCE (PP-2-01) <i>BOBAN M, Grbić K, Mladinov M, Hof PR, Süßmair C, Ackl N, Bader B, Danek A, Šimić G</i> ....	80
HOW PRECISELY WE CAN RECOGNISE ALZHEIMER'S DISEASE (PP-2-02) <i>DEJANOVIĆ N</i> .....	82
NEUROSONOLOGICAL EVALUATION OF PATIENTS WITH COGNITIVE IMPAIRMENTS (PP-2-03) <i>DEMARIN V, Bašić-Kes V, Morović S</i> .....	83
BETA STIFFNESS INDEX IN PATIENTS WITH DEMENTIA (PP-2-04) <i>JURASIĆ MJ, Martinić Popović I, Morović S, Trkanjec Z, Šerić V, Bene R, Demarin V</i> .....	84
DEPRESSION IN MIDDLE AGE: POSSIBLY ALZHEIMER'S DISEASE OR MULTI-INFARCT DEMENTIA ? (PP-2-05) <i>PAVLOVIĆ E, Jonovska S, Bilić D</i> .....	85
BREATH HOLDINH INDEX AND EVALUATION OF COGNITIVE DECLINE (PP-2-06) <i>ZAVOREO I, Lovrenčić Huzjan A, Bosnar Puretić M, Bašić-Kes V, Demarin V</i> .....	87
THE ROLE OF NEUROPSYCHOLOGICAL ASSESSMENT IN THE DIAGNOSIS OF ALZHEIMER DEMENTIA (PP-2-07) <i>ŽAKIĆ MILAS D</i> .....	88
<b>EPIDEMIOLOGY AND RISK FACTORS FOR AD / PP-3-(01-07)</b> .....	89
HIPERGLYCEMIA IN PATIENTS WITH ALZHEIMER'S DISEASE VS PATIENTS WITH VASCULAR DEMENTIA (PP-3-01) <i>BENE R, Trkanjec Z, Martinić Popović I, Strinek M, Ažman D, Demarin V</i> .....	90

VASCULAR ORIGINS OF DEMENTIA (PP-3-02) <i>BUDIŠIĆ M, Jurasic MJ, Martinić Popović I, Morović S, Šerić V, Bene R, Demarin V</i> .....	91
HOSPITAL TREATMENT OF ALZHEIMER'S DISEASE IN ZAGREB (PP-3-03) <i>LEPPÉE M, Čulig J, Štimac D, Orban M, Erić M, Paležac L</i> .....	92
DEMENTIA, IS THERE A VASCULAR ORIGIN? (PP-3-04) <i>MOROVIĆ S, Jurasic MJ, Martinić Popović I, Šerić V, Demarin V</i> .....	93
RISK ASSESSMENT AND PREVENTION OF ALZHEIMER'S DISEASE (PP-3-05) <i>PRESEČKI P, Šain I, Peharda T, Breški D, Mimica N</i> .....	94
EPIDEMIOLOGICAL REVIEW OF DEMENTIAS IN CROATIA (PP-3-06) <i>SILOBRČIĆ RADIĆ M, Hrabak-Žerjavić V</i> .....	95
IS HIGH CHOLESTEROL LEVEL A RISK FACTOR FOR ALZHEIMER DISEASE? (PP-3-07) <i>TRKANJEC Z, Martinović Popović I, Bene R, Jurasic MJ, Lisak M, Šerić V, Demarin V</i> .....	97
<b>CLINICAL CHARACTERISTICS OF AD AND CASE REPORT / PP-5-(01-04)</b> .....	99
STRUCTURAL BRAIN ABNORMALITIES IN HOMICIDAL PATIENT: FORENSIC CASE REPORT (PP-5-01) <i>RADELJAK S, Žarković-Palijan T, Kovač M, Kovačević D</i> .....	100
THE CLINICAL APPROACH TO DEMENTIA (PP-5-02) <i>TREŠČEC-IVIČIĆ M</i> .....	102
LOW VALUES OF VITAMIN B <sub>12</sub> AND SYMPTOMS OF DEMENTIA (PP-5-03) <i>UZUN S, Kozumplik O, Jakovljević M</i> .....	103
RISPERIDON IN TREATMENT OF DELUSIONS IN ALZHEIMER DISEASE (PP-5-04) <i>VIDAS KAČANSKI A</i> .....	105
<b>PHARMACOTHERAPY OF DEMENTIA / PP-6-(01-02)</b> .....	107
ANTIPSYCHOTIC TREATMENT OF DEMENTIA OF THE ALZHEIMER'S TYPE WITH PSYCHOTIC FEATURES ON A HOSPITAL WARD - COMPLIANCE WITH TREATMENT GUIDELINES (PP-6-01) <i>NOVY-RADONIĆ E, Henigsberg N, Erdeljić V, Radonić E</i> .....	108
TREATMENT OF PSYCHOTIC EPISODE IN PATIENT WITH DEMENTIA (PP-6-02) <i>UZUN S, Kozumplik O, Jakovljević M</i> .....	110
<b>CARE FOR PEOPLE WITH DEMENTIA / PP-8-(01-04)</b> .....	113
INSTITUTIONAL AND NON-INSTITUTIONAL CARE FOR PERSONS WITH ALZHEIMER'S DEMENTIA (PP-8-01) <i>GLAMUZINA K</i> .....	114
WHEN I NO LONGER KNOW WHO I AM, WHERE I AM... (PP-8-02) <i>GOLJAK J, Sučević V</i> .....	115

OUT-INSTITUTIONAL CARE FOR PEOPLE WITH ALZHEIMER'S DISEASE (PP-8-03) MLADINOV M, Mimica N, Novy-Radonić E, Trešćec-Ivičić M, Glamuzina K, Dajčić M, Šimić G .....	116
ALZHEIMER'S PATIENT AT GENERAL PSYCHIATRIC INTENSIVE CARE UNIT - CASE REPORT (PP-8-04) REPOVEČKI S .....	117
<b>NON-ALZHEIMER DEMENTIA / PP-9-(01-02)</b> .....	119
ALZHEIMER'S DEMENTIA: AS BARRIER BETWEEN EXTERNAL AND INTERNAL STIMULI (PP-9-01) DRAGAČ-PAIĆ V, Labura D, Valić-Rajić D.....	120
DIFFERENTIAL DIAGNOSTIC DILEMMA - VASCULAR DEMENTIA OR ORGANIC AFFECTIVE DISORDER (PP-9-02) LOVROVIĆ D, Juretić-Pešćica M, Bosanac D .....	122
<b>AD ASSOCIATIONS AND SUPPORT GROUPS / PP-11-(01)</b> .....	123
ALZHEIMER DISEASE SOCIETIES CROATIA – OUR PLANS FOR NEAR FUTURE (PP-11-01) MIMICA N, Dajčić M, Šimić G, Mladinov M, Glamuzina K, Novy-Radonić E, Trešćec-Ivičić M, Vidas Kačanski A .....	124
<b>FREE TOPICS / PP-12-(01-04)</b> .....	127
DO WE KNOW THE SIMPTOMS OF DEMENTIA? (PP-12-01) GJURČEVIĆ M, Gabud Gjurčević S, Kokanović B .....	128
CEREBRAL AMYLOID ANGIOPATHY AS CAUSE OF MULTIPLE INTRACEREBRAL HAEMATOMAS - CASE REPORT (PP-12-02) KIĐEMET-PISKAČ S, Detoni J .....	130
COGNITIVE CHANGES AND GENETIC MARKERS IN AMYOTROPHIC LATERAL SCLEROSIS: PRELIMINARY RESULTS OF A PROSPECTIVE STUDY (PP-12-03) LIŠČIĆ MR, Štukovnik V, Babić A, Nedić G, Mustapić M, Pivac N, Zidar J, Mück-Šeler D ....	131
COGNITIVE IMPAIRMENTS AND DRUG ADDICTION: A STUDY CASE (PP-12-04) RUŽIĆ K, Tatalović Vorkapić S, Dadić Hero E, Lovrović D, Bosanac D .....	133
<b>AUTHORS' INDEX</b> .....	135
<b>ACKNOWLEDGEMENT</b> .....	140

## INTRODUCTION

Alzheimer Disease Societies Croatia (ADSC), as a main organizer, along with the support of the Croatian Society for Clinical Psychiatry, CMA and Croatian Society for Neuroscience is continuing to organize the 4<sup>th</sup> Croatian Congress on Alzheimer's Disease with international participation. This professional and scientific meeting will show the newest findings from the field of Alzheimer's disease (AD) and other dementias.

This time, also, we are going to begin the Congress with cultural happening – exhibition of paintings from our colleague Primarius Ljubomir Radovančević, MD, PhD.

During the working part of the Congress, we will try to lighten disease as much as possible, so we are going to speak about AD thru 12 topics. Namely, this time it will be possible to listen the lectures and view the posters from the following topics: 1. Basic research and neuropathology of AD; 2. Early diagnostics of AD; 3. Epidemiology and risk factors for AD; 4. Clinical research in AD; 5. Clinical characteristics of AD and case reports; 6. Pharmacotherapy of dementia; 7. Non-pharmacological intervention in AD; 8. Care for people with dementia; 9. Non-Alzheimer dementia; 10. Quality of life in dementia; 11. AD Associations and support groups; 12. Free topics. Thirteen eminent invited speakers will cover many of the topics listed above, and we are more than happy to announce that our Congress will open Dr. Nori Graham, former President and representative of Alzheimer's Disease International (ADI), the umbrella organization, which the ADSC is a full member.

Throughout this meeting participants will daily have chance to hear about most recent findings as well from basic as from clinical field and also about care for people with dementia (PWD). We believe that this Congress, which is encouraging the holistic approach to AD, will give the opportunity and space to all professionals and interested persons from various professions to share the information and experience. Since we did not want parallel lectures, a large number of submitted papers will be presented in poster form, which will remain mounted from opening till closing of the Congress, and the best of them will be given a price.

We are proud to announce that this Congress hit the record in connection with active participants, and due to this we are sure that the important conclusions will be given, which will have substantially impact on the improvement of care and overall treatment for PWD as well as for quality of life of their careers. All mentioned above, will give strength to our volunteers in ADSC to continue on this important task.

**Assist. Professor Ninoslav Mimica, MD, DSc, Primarius**

President of Alzheimer Disease Societies Croatia  
President of the Organizing Committee of 4<sup>th</sup> Croatian Congress on  
Alzheimer's Disease with international participation

## WELCOME

### **Dear colleagues, friends and guests,**

On behalf of the Scientific Committee it is my great honor to welcome you, this time to Rovinj, to the fourth Croatian congress on Alzheimer's disease. I am very pleased to see so many distinguished colleagues participating in this meeting, particularly those who are here with us for the first time.

Undoubtedly, research on Alzheimer's disease has had a tremendous impact in the unraveling of the mystery of human aging and brain disease in previous years. However, it is my general opinion that our work should strengthen these efforts through even more integrated translational research in the future.

These are exciting times. New opportunities are also bringing to the foreground a number of tough to answer questions of social and ethical nature. It is therefore crucial to encourage constructive thinking, public discussion and, above all, joined efforts to help patients with Alzheimer's and other chronic and progressive neurodegenerative disorders. In order to achieve a correct common perspective it is also of major importance to ensure production and spreading of sufficient knowledge about the mechanisms of the disease. With this idea in mind, it was our major goal to join clinicians, caregivers and scientists together to provide a forum for new perspectives in dementia research and, subsequently, its treatment, support and prevention options.

The program of this fourth meeting focuses on many of these new advances on Alzheimer's disease including new data concerning other than Alzheimer's disease causes of dementia, early behavioral signs and symptoms, early diagnosis using biomarkers and different imaging modalities, emerging treatment options and prevention of dementia.

It is a most fortunate coincidence that the beautiful city of Rovinj is hosting this meeting. With this thought I would like to warmly welcome all of you and to reassure you that all of us have made every possible effort to exceed your expectations. Thank you again for your contributions.

Sincerely Yours,

**Assoc. Professor Goran Šimić, M.D., Ph.D.**

President of the Scientific Committee of 4<sup>th</sup> Croatian Congress on  
Alzheimer's Disease





***ORAL PRESENTATIONS***

**BASIC RESEARCH AND NEUROPATHOLOGY**

**OF ALZHEIMER'S DISEASE**

**OP-1-(01-06)**

## AMYLOID- $\beta$ : FROM MOLECULAR BIOLOGY TO CLINICAL PRACTICE

HEĆIMOVIĆ S<sup>1</sup>, Malnar M<sup>1</sup>, Košiček M<sup>1</sup>, Petek Tarnik I<sup>2</sup>, Trkanjec Z<sup>3</sup>, Titlić M<sup>4</sup>, Demarin V<sup>3</sup>, Goate A<sup>5</sup>

<sup>1</sup> Division of Molecular Medicine, "Ruđer Bošković" Institute, Zagreb, Croatia

<sup>2</sup> Laboratory of Endocrinology, Department of Nuclear Medicine and Oncology, Clinical Hospital "Sestre Milosrdnice", Zagreb, Croatia

<sup>3</sup> Department of Neurology, Clinical Hospital "Sestre Milosrdnice", Zagreb, Croatia

<sup>4</sup> Department of Neurology, Clinical Hospital Split, Split, Croatia

<sup>5</sup> Department of Psychiatry, Washington University School of Medicine, Saint Louis, Missouri, USA

*silva.hecimovic@irb.hr*

**Aim:** Altered processing of the  $\beta$ -amyloid precursor protein (APP) leading to increased formation of amyloid- $\beta$  peptide (A $\beta$ ) is considered to be a central event in the pathogenesis of Alzheimer's disease (AD). Understanding the mechanism of A $\beta$  formation is crucial for developing novel therapies for AD as well as for understanding normal APP function. The goal of our research is to elucidate the molecular and cellular pathways of A $\beta$  production and to investigate whether analyzing the levels of A $\beta$  peptide in the cerebrospinal fluid (CSF) may be considered for differential diagnosis of Alzheimer's disease.

**Methods and results:** Using NPC disease as a model to study cholesterol-effect on A $\beta$ , we found that increased cholesterol levels lead to markedly increased levels of A $\beta$  (ELISA A $\beta$ , BioSource Int. Inc.). A fluorescent-based assay revealed that this effect was not due to increased activities of  $\beta$ - and/or  $\gamma$ -secretase, the two enzyme activities that are crucial for A $\beta$  formation. In addition, by confocal microscopy and by lipid raft isolation in a sucrose discontinuous gradient we show that cholesterol accumulation does not lead to increased compartmentalization of APP in lipid rafts, a membrane microdomains rich in cholesterol and shingolipids previously found to be the site of A $\beta$  synthesis. Indeed, we observed that cholesterol overload in NPC1-null cells leads to altered trafficking of APP within endocytic compartments, supporting that increased distribution of APP within early/late endosomes leads to increased A $\beta$  production. Using an ELISA CSF assay (Innogenetics) we found that the levels of A $\beta$ 42 in the CSF of AD individuals were markedly decreased compared to its levels in the CSF of non-AD and control subjects.

**Conclusion:** Our results support that cholesterol levels modulate the levels of A $\beta$  by an indirect mechanism, indicating that regulating cholesterol levels (using statins/cholesterol lowering drugs) may be considered to treat, prevent or decrease the progression of Alzheimer's disease.

Indeed, clinical trials on the use of statins for treating AD are currently under investigation. Together with emerging imaging tools of A $\beta$  in the brain, analysis of the CSF A $\beta$ 42, tau and phospho181-tau levels may be considered for differential diagnosis of Alzheimer's disease.

## ENVIRONMENTAL RADON BRAIN MAP OF ALZHEIMER'S DISEASE - A HAZZARD WITHIN

MOMČILOVIĆ B<sup>1,2</sup>, Lykken GI<sup>3</sup>, Prejac J<sup>4</sup>, Cooley M<sup>5</sup>, Ivičić N<sup>6</sup>

<sup>1</sup> Institute for Research of Sustainable Eco Systems, Zagreb, Croatia

<sup>2</sup> Institute for Medical Research and Occupational Health, Zagreb, Croatia

<sup>3</sup> Physics Department, University of North Dakota, Grand Forks, North Dakota, USA

<sup>4</sup> Clinical Hospital Center Zagreb, School of Medicine, University of Zagreb, Zagreb, Croatia

<sup>5</sup> Department of Pathology, University of North Dakota, Grand Forks, North Dakota, USA

<sup>6</sup> Institute for Medical Research and Occupational Health, Zagreb, Croatia  
berislav.momcilovic@gmail.com

**Aim:** Radon and its daughters (RAD) are the principal source of natural environmental radiation exposure for humans. Previously we found that RAD accrue selectively to the brain proteins in Alzheimer's Disease (AD) and lipids in Parkinson's Disease (PD). The aim of this study was to investigate RAD distribution in different brain areas in AD.

**Methods:** RAD <sup>210</sup>Po and <sup>210</sup>Bi were analyzed in the gray and white brain matter proteins and lipids in amygdala (Amy), hippocampus (Hip), locus ceruleus (LC0, nucleus basalis (NB), substantia nigra (SN), and frontal (Fro), occipital (Occ), parietal (Par), tempora (Tem) brain lobes of deceased 86-year-old women who had suffered from AD.

**Results:** RAD distribution was greatly different for various brain areas, generally more RAD accumulated in the proteins than lipids of gray and white (gray > white) brain matter. The RAD radiation exposure risk (mSv·year<sup>-1</sup>) was, in the decreasing order of magnitude: Amy >> Hip > Tem ~ Fro > Occ ~ Par > SN >> LC ~ NB.

**Conclusion:** In AD, Amy, and Hip are exceptionally vulnerable brain areas for RAD internal alpha particle radiation damage (5.98, and 1.82 mSv·year<sup>-1</sup>, respectively). Naturally occurring internal radiation exposure to environmental RAD is a strong health hazard which may dramatically enhance AD brain deterioration due to selectively targeting emotions (Amy) and memory (Hip) brain areas.

## DOPAMINE-BETA-HYDROXYLASE IN ALZHEIMER'S DISEASE

MÜCK-ŠELER D<sup>1</sup>, Mustapić M<sup>1</sup>, Mimica N<sup>2,3</sup>, Pivac N<sup>1</sup>, Presečki P<sup>4</sup>,  
Folnegović Šmalc V<sup>2,3</sup>

<sup>1</sup> Division of Molecular Medicine, "Ruđer Bošković" Institute, Zagreb, Croatia

<sup>2</sup> University Department of Psychiatry, Psychiatric Hospital "Vrapče", Zagreb, Croatia

<sup>3</sup> School of Medicine, University of Zagreb, Zagreb, Croatia

<sup>4</sup> Department of Psychiatry, General Hospital Pula, Pula, Croatia

seler@irb.hr

Alzheimer's disease (AD) is complex and polygenic disorder. Polymorphisms within the dopamine beta-hydroxylase (*DBH*) gene could be related to etiology of Alzheimer's disease (AD), given the well-documented changes in the catecholamine-mediated neurotransmission that occurs in this disorder. The aim of the present study was to investigate *DBH* -1021C/T gene polymorphism and plasma *DBH* activity between patients with AD and healthy controls.

Plasma *DBH* activity and *DBH* -1021C/T polymorphism were determined in 155 patients (mean  $\pm$  SD age  $66.3 \pm 11.2$  years; MMSE =  $13.1 \pm 8.1$ ) with AD (NINCDS-ADRDA and DSM-IV-TR criteria) and 188 healthy controls ( $66.3 \pm 11.2$  years). The patients were subdivided into two subgroups according to the presence or absence of psychotic features and according to the early (F00.0)- or late (F00.1)-onset AD. Plasma *DBH* activity was determined by a photometric method and *DBH* genotype by standard RFLP technique.

Among AD patients 62%, 31% and 6.5% were carrying CC, CT and TT genotype, while 61.5%, 33.5% and 5.3% of healthy controls were carrying CC, CT and TT genotype, respectively. *DBH* genotype (Chi-square=0.38; df=2; p=0.825) and allele (Chi-square=0.038; df=1; p=0.90) frequencies were similarly distributed between healthy controls and patients with AD, between patients with or without psychotic features (Chi-square=1.90; df=2; p=0.386) and between patients with early- and late-onset AD (Chi-square=3.07; df=2; p=0.215). A significantly (p<0.001) lower plasma *DBH* activity was found in AD patients carrying CC or CT genotype as compared to healthy controls carrying the corresponding genotypes.

The results suggest that genotype-controlled measurement of plasma *DBH* activity might be used as a potential biological marker in AD.

## LATEST ADVANCES IN GENETICS OF ALZHEIMER'S DISEASE

ORUČ L<sup>1</sup>, Kapur L<sup>2</sup>, Pojskić N<sup>2</sup>

*<sup>1</sup> Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina*

*<sup>2</sup> Genetic Engineering and Biotechnology Institute, Sarajevo, Bosnia and Herzegovina  
lejla.kapur@ingeb.ba*

Alzheimer disease (AD) is a neurodegenerative disorder with overall risk for development from 1% for age under 65 and up to 40% in population over 65. Until now, major gene found to predispose an individual to late onset Alzheimer's (LOAD) is APOE4 that has been confirmed in number of consecutive linkage and association studies.

Introduction of novel large-scale genetic analysis platforms enabled identification of novel candidate genes: one of them encodes activator of phosphatidylinositol-3 kinase (GAB2) that appears to increase a person's risk for AD.

Genomic findings obtained by high throughput techniques provides novel insight in the pathophysiology of AD and gives rise for development of potential pharmacotherapeutical targets. Main aspects of progress in genomic research and its possible applications in clinical practice will be assessed by systematic overview of latest publications in the field of genetics of Alzheimer disease.

## CATECHOL-O-METHYL-TRANSFERASE VAL158/MET POLYMORPHISM IN ALZHEIMER'S DISEASE

PIVAC N<sup>1</sup>, Nedić G<sup>1</sup>, Deželjin M<sup>1</sup>, Mustapić M<sup>1</sup>, Mimica N<sup>2,3</sup>, Mück-Šeler D<sup>1</sup>,  
Folnegović Šmalc V<sup>2,3</sup>

<sup>1</sup> Division of Molecular Medicine, "Ruđer Bošković" Institute, Zagreb, Croatia

<sup>2</sup> University Department of Psychiatry, Psychiatric Hospital "Vrapče", Zagreb, Croatia

<sup>3</sup> School of Medicine, University of Zagreb, Zagreb, Croatia

npivac@irb.hr

Alzheimer disease (AD) is a neurodegenerative disease characterised by progressive cognitive decline, functional impairment, and psychotic symptoms. An enzyme catechol-*O*-methyltransferase (COMT) degrades dopamine and noradrenalin, and might be a risk factor for different psychiatric disorders, cognitive deficits and psychosis. *COMT* val158/met polymorphism results in guanine to adenine substitution at the exon 4 of the *COMT* gene (i.e. valine to methionine substitution).

The presence of valine allele (high activity) is associated with up regulation of striatal dopamine activity and increased risk for psychosis in AD.

**Aim:** The study evaluated the frequency of the *COMT* genotypes: GG (Val/Val), GA (Val/Met), and AA (Met/Met) in patients with psychotic and non-psychotic AD and in healthy controls.

**Methods:** Probable AD fulfilling NINCDS-ADRDA criteria was diagnosed in 198 patients (DSM-IV-TR criteria): 63 with late and 135 with early onset (AD started after/before 65 years of age). Cognitive impairment was assessed using Mini Mental Status Examination (MMSE). In DNA samples *COMT* polymorphism was genotyped by TaqMan (Applied Biosystems) analysis.

**Results:** The sample did not differ significantly ( $p > 0.50$ ) from Hardy-Weinberg equilibrium. Significant ( $c^2 = 12.763$ ;  $df = 2$ ;  $P = 0.002$ ) differences in the frequency of the GG, GA or AA genotypes between 284 healthy control subjects (12%, 70% and 18%) and patients with AD (23%, 57% and 20%); or between healthy subjects and psychotic and non-psychotic patients with AD ( $c^2 = 13.769$ ;  $df = 2$ ;  $P = 0.008$ ), or between healthy subjects and patients with early or late onset of AD ( $c^2 = 13.315$ ;  $df = 2$ ;  $P = 0.010$ ), were found.

MMSE scores did not differ significantly ( $F = 2.103$ ;  $df = 2, 74$ ;  $P = 0.129$ ) between patients who had GG ( $16.58 \pm 6.4$ ), GA ( $11.81 \pm 8.8$ ), and AA ( $12.24 \pm 8.6$ ) genotype.

The distribution of the *COMT* genotypes did not differ significantly between 68 psychotic and 130 non-psychotic patients ( $\chi^2 = 0.962$ ;  $df=2$ ;  $P = 0.618$ ), or between patients with early or late onset of AD ( $\chi^2 = 0.459$ ;  $df=2$ ;  $P = 0.795$ ) were detected.

**Conclusion:** Present results do not support the association of valine allele with psychosis, or methionine allele with better cognitive function in patients with AD. *COMT* polymorphism should be evaluated in larger groups with better cognitive characterisation.



## "AMYLOID CASCADE HYPOTHESIS FOR ALL" - FACT OR ILLUSION?

ŠALKOVIĆ-PETRIŠIĆ M<sup>1</sup>, Osmanović J<sup>1</sup>, Hoyer S<sup>2</sup>, Riederer P<sup>3</sup>

<sup>1</sup> Department of Pharmacology and Croatian Institute for Brain Research, School of Medicine, University of Zagreb, Zagreb, Croatia

<sup>2</sup> Department of Pathology, University of Heidelberg, Heidelberg, Germany

<sup>3</sup> Department of Clinical Neurochemistry, Clinic for Psychiatry and Psychotherapy, Bayerische Julius -Maximilians- University of Wuerzburg, Wuerzburg, Germany  
melitas@mef.hr

**Background and aim:** The great majority of Alzheimer's disease (AD) patients has sporadic type of disease (sAD) with age and several non-amyloid beta (A $\beta$ )-related susceptibility genes as risk factors, suggesting that amyloid cascade hypothesis might not be true for sAD.

Continuing our previous research, we have investigated whether damage to the brain insulin system in long-term could trigger A $\beta$  pathology in streptozotocin-intracerebroventricular (STZ-icv) rats which have been proposed as an experimental model of sAD. Namely, although insulin resistant brain state and cognitive deficits have been developed as early as 1 month after the STZ-icv treatment, no signs of A $\beta$  pathology could have been seen at that time-point.

**Methods:** RT-PCR was used for measuring the expression of insulin (Ins-I), insulin receptor (IR) and insulin degrading enzyme (IDE) mRNA in hippocampus, while their respective protein expression was measured by immunoblotting, 3 and 6 months following the STZ-icv treatment.

Immunohistochemistry and Congo red staining were used for A $\beta$  pathology analysis. Cognitive deficits, measured by Morris Water Maze Test, were recorded during the whole 6 month-long observational period. Data were analyzed by Kruskal-Wallis ANOVA and Mann-Whitney U test ( $P < 0.05$ ).

**Results:** In STZ-icv rats decreased hippocampal expression of Ins-I, IR and IDE mRNA was found both after 3 (85%, 19%, and 19%) and 6 (57%, 26%, and 38%) months, followed by decreased expression of IR (23% and 28%) and IDE (21% and 22%) protein, respectively. Development of A $\beta$  pathology in STZ-icv treated rats was confirmed by finding of intracellular A $\beta$ <sub>1-42</sub> aggregates after 3 months, and formation of primitive amyloid-like plaques after 6 months in cortical and hippocampal tissue.

**Conclusion:** Data from studies on experimental, non-transgenic sAD animal model suggests that dysfunction in brain insulin system and IR signaling, found also in humans during aging and diabetes type II, might be

the primary event capable of causing the development of A $\beta$  neuroptahological AD hallmark on a long-term basis. Therefore, A $\beta$ -related gene mutation should not be taken for granted as a trigger for other brain neurochemical alterations in sporadic AD form.

Supported by Croatian MZOS (108-1080003-0020) and DAAD.

***ORAL PRESENTATION***

**EARLY DIAGNOSTICS OF ALZHEIMER'S DISEASE**

**OP-2-(01)**

*EARLY DIAGNOSTICS OF AD (OP-2-01)*

## PREDICTION OF ALZHEIMER'S DISEASE IN SUBJECTS WITH MILD COGNITIVE IMPAIRMENT USING BIOLOGICAL MARKERS FROM CSF

ŠIMIĆ G

*Croatian Institute for Brain Research, School of Medicine, University of Zagreb,  
Zagreb, Croatia  
gsimic@hiim.hr*

With the advent of new drugs such as gamma-secretase inhibitors, early detection of elderly subjects with mild cognitive impairment (MCI) who are destined to develop AD is becoming increasingly important. For this purpose, the three most commonly used CSF biomarkers (total tau, amyloid- $\beta$ 42 protein and phosphorylated tau protein) have been evaluated in numerous studies, including ours.

Majority of these investigations confirmed that CSF markers have high sensitivity to differentiate early and incipient AD from normal aging, major depressive disorder, alcoholic dementia and Parkinson's disease, but relatively lower specificity against other primary causes of dementia syndrome, such as frontotemporal and Lewy body dementia.

In most studies, low amyloid- $\beta$ 42 and high total tau protein in cerebrospinal fluid were found in about 90% of the MCI cases that progressed to AD as compared with the 10% stable MCI cases. Similarly, higher concentrations of tau protein phosphorylated on threonine 231 were found in MCI cohort that progressed to AD compared to those with stable MCI. It is concluded that pathological levels of two or more CSF markers can reliably predict MCI conversion to AD and correctly identify the stable form of MCI.

***ORAL PRESENTATIONS***

**CLINICAL RESEARCH IN ALZHEIMER'S DISEASE**

**OP-4-(01-05)**

*CLINICAL RESEARCH IN AD (OP-4-01)*

## IMPAIRED FACE RECOGNITION: ACQUIRED AND CONGENITAL

DANEK A

*Neurology Clinic and Polyclinic, Ludwig-Maximilians-University Munich, Munich,  
Germany  
adrian.danek@med.uni-muenchen.de*

Prosopagnosia, the inability to identify an individual only from inspection of his or her face, appears to be still underdiagnosed. A lesion in the right occipito-temporal region (fusiform gyrus) has been proven sufficient to cause the syndrome, which, however, often seems to be missed in the clinical examination. Compensatory mechanisms such as reliance on other features of an individual (visual such as style of hair and clothing and patterns of gesturing and locomotion or non-visual such as voice characteristics and the sound of steps) appear responsible.

To improve the diagnostic rate of prosopagnosia we have developed a psychometric test that asks for learning and multiple choice recognition (1 in 4) of the faces of ten unknown individuals, presented at three increasing levels of difficulty (portrait photograph, portrait in different clothes, isolated face) as well as for the recognition of a series of famous personalities. Impairment in this test has been found with lesions to the temporo-occipital region caused e.g. by stroke, herpes encephalitis or in cortical degeneration.

In addition to acquired prosopagnosia, the condition appears to exist in a congenital form with autosomal-dominant inheritance. Data from an ongoing study of subjects with face recognition difficulties since early childhood will be presented and the possibility of a relation of congenital prosopagnosia to other variants of cognitive abilities such as developmental dyslexia will be discussed.

*CLINICAL RESEARCH IN AD (OP-4-02)*

## ALZHEIMER'S DEMENTIA - THE DISEASE CHANGING THE STRUCTURE OF PSYCHIATRIC PATHOLOGY

JUKIĆ V

*Psychiatric Hospital "Vrapče", Zagreb, Croatia  
vlado.jukic@bolnica-vrapce.hr*

Even a superficial look at the structure of hospitalized psychiatric patients in the last hundred years reveals that this structure is changing considerably. While in the first half of the twentieth century the patients hospitalized in psychiatric hospitals mostly suffered from schizophrenia, epilepsy, neurosyphilis and mental retardation, at the end of that century, apart from schizophrenics, most hospitalized psychiatric patients were drug and alcohol addicts and those whose psychological problems are the result of organic brain damage.

This change in the structure of hospitalized psychiatric patients is especially noticeable with patients suffering from various types of dementias, among which, according to clinical observations, senile dementia of Alzheimer's type (SDA) is the most frequent one.

This fact is apparent in the example of Psychiatric Hospital Vrapče, Zagreb, where, in the beginning of the 20 century, there was not a single person hospitalized for difficulties characteristic for the elderly (dementias, psychoorganic syndrome...), while in the middle of the century those patients represented only 1-2 % of the patients, and at the end of the century 12-14%.

Data on the increased number of patients suffering from dementia of the Alzheimer's type hospitalized in the Psychiatric Hospital Vrapče, Zagreb are carefully analysed, and the number is related to the increase of the older population in Croatia, but also to other, mostly social, circumstances. Along with the conclusions arising from the gathered data there is also the issue of whether the psychiatric hospital will in the future be primarily an institution for treating patients suffering from different types of dementia, especially the Alzheimer's type.

## DEMENTIA AS CHALLENGE FOR ETHICS

RADMAN I

*Psychiatric Clinic "Schloessli", Oetwil am See, Switzerland  
ivanka.radman@schloessli.ch*

There is a bounty of ethical issues, questions and decisions, with which medical doctors are confronted on a daily basis. One such example from the domain of geronto-psychiatry is a forceful hospitalization of patients who suffer from dementia; another is suspension of the life-prolonging medical treatment. In such complex ethical situations physicians frequently rely on the evidence based medicine. However, the sort of medicine has also its problematic side: it seems to suggest that what is measurable is also more important than that what cannot be quantified and in that sense more difficult to be objectified, as is the case with the emotional and ethical.

We quite obviously tend to underestimate, and even neglect, just this emotional and ethical aspects of patient's behavior, and prefer to focus instead on the measurable traits (such as bodily reactions and somatic diagnostic) that serve as a basis for making important medical decisions. Compared to the biologically oriented medicine, it is much more difficult to define objective criteria for ethical dilemmas.

The frequency of demential diseases increases with patient's age, and they significantly reduce the capacity of making decisions in critical situations. For that reason it is quite common that during the therapy the points of view and value judgments differ significantly between the members of patient's family and the team of therapists. Confronted is the need for the respect of patient's personality and protection of her autonomy, on the one hand, and the medical and ethical duty of the team whose aim is to prevent and protect patient from the effects of the disease, on the other hand ("ethics of care"). It has to be stressed, that patients with dementia, irrespective of their cognitive deficits and salient changes in behavior, are grown up persons with well-preserved need to be treated with respect and according to their age.

What are the criteria according to which it is possible to make a medical-ethical decision related to patients with dementia? In what way is it possible to include patient in decision-making, irrespective of her disturbance of cognitive functions and of altered emotional world? Where are the limits of the autonomous self-determination in the sense of the "informed consent"? How is it possible, from fragmentary and unfaithful patient's reports, to make a medical decision in accord with her sense of life?



Responses to these questions cannot be found in various argumentational models of ethics; they can only be brought about within an interdisciplinary dialog and ethics of care. Ethical decisions reached through such an interdisciplinary dialog, even though based on the fragmented reports of a patient with dementia, do correspond to her suppressed but present will, her changed world, and her life preferences.

## CLINICAL DRUG TRIALS: WHICH STUDY DESIGN IS ADEQUATE FOR ALZHEIMER'S DISEASE?

VITEZIĆ D<sup>1,2</sup>

<sup>1</sup> Medical School, University of Rijeka, Rijeka, Croatia

<sup>2</sup> University Hospital Centre Rijeka, Rijeka, Croatia

*vdinko@medri.hr*

Clinical trials (CT) for new drugs represent one of the most important and demanding steps in the process of drug research and development. Because current therapies used in the treatment of patients with Alzheimer disease (AD) are symptomatic treatments with low efficacy there is an obvious need for more intensive CT of new drugs. CT in AD have certain characteristics considering the design of the study. A standard design includes randomized, double-blind, controlled CT, but there is a dilemma in using as a comparator an active compound or placebo. A standard therapy has been established in many countries, particularly in mild to moderate AD. Therefore it would be ethically and scientifically justified that new treatments may be evaluated by using add-on-designs, particularly in long term studies (establishing comparative benefit/risk ratio).

Placebo control for demonstration of efficacy could be used in CT with short duration (e.g. 6 or 12 months) and after that to switch placebo patients to active treatment (new or standard therapy). As a proof of efficacy, non-inferiority design versus only active control will not be accepted because of missing assay sensitivity. In designing CT several important elements should be considered, such as an adequate selection of patients (diagnostic criteria, stages of disease), measurement tools (cognitive, functional or global), endpoints (clinical and surrogate). Primary endpoints, at present, represent proof of efficacy in phase III trials and are clinically based. As surrogate endpoints neuroimaging (structural MRI, PET and other functional imaging) and biomarkers (markers in cerebrospinal fluid e.g. A $\beta$ 1-42 peptide, Tau and phosphorylated-Tau proteins; genetic markers e.g. Apo-E4 allele) are in the focus of investigation and hopefully, in the future, a correlation with clinical outcome will be established.

In conclusion, for the success of further CT in AD there is a clear need for the usage of consensually defined endpoints. This is important for comparing the data within studies which will consequently lead to a better quality of the studies and possibly enable a faster process of drug development for AD.

CLINICAL RESEARCH IN AD (OP-4-05)

## CURRENT THERAPEUTIC STRATEGIES FOR TREATMENT OF AD - HOW CLOSE ARE WE TO SOLVE THE PROBLEM?

WINDISCH M

*JSW-Research, Research Laboratory Ltd., Grambach, Austria  
mwindisch@jsw-cns.com*

Alzheimer's disease (AD) is a complex disease and so far the etiopathogenesis is relatively unknown. There are different theories behind onset and progression of AD, including the amyloid cascade hypothesis, but in spite of an impressive body of evidence, no final proofs for any of the theories have been made so far. The fact that the disease is still poorly understood and the lack of reliable preclinical models for drug development is a hindrance for rapid therapeutic progress.

In spite of an enormous research effort during the last couple of years, we are still waiting for a therapeutic breakthrough. Nowadays the therapy of AD is purely symptomatic and most widely used drugs are cholinesterase inhibitors and one an NMDA receptor modulator. During the last couple of years efforts concentrated on influencing amyloid precursor protein (APP) expression and metabolism, as well as on A $\beta$  aggregation and trafficking.

Beside different inhibitors of gamma- and beta secretase, which should decrease the occurrence of A $\beta$  peptides, in particular toxic A1-42, recently gamma secretase modulators like Tarenflurbil moved into the focus of interest, because they are shifting the processing towards A $\beta$ 38, avoiding the more dangerous peptide species and lacking potential side effects of gamma secretase inhibitors.

Clinical trial results are so far optimistic, results from bigger studies are expected to be published soon. Different attempts have been made to address A $\beta$  aggregation, and in the beginning of this year PBT-2, a metal chelator showed positive results in a clinical phase II trial, improving cognitive function and decreasing CSF A $\beta$ 40. On the other hand, the GAG-mimetic Alzemed failed to show statistically significant improvements in big phase III studies.

Many companies are exploring the therapeutic potential of active and passive vaccination procedures against A $\beta$ . After the safety problems of the first clinical trial using A $\beta$ 42 as antigen, now improved active vaccines are under investigation and first trial results are expected in the near future.

Clinical studies with passive immunization, using highly specific antibodies are already in progressed stage. Currently it is believed that the passive immunization can be the safer way for reducing amyloid pathology.

Also different drug development programs addressing tau hyperphosphorylation either by stimulation of phosphatases or inhibition of protein kinases (in particular GSK3 $\beta$ ) are on the way, but so far they are in early stages of clinical development.

Almost 20 years ago studies with neurotrophic factors have been initiated but at that time the trials were terminated due to intolerable safety problems. Nowthere is again big interest in such neurotrophic molecules, and the derivative of activity-dependent neurotrophic factor achieved positive results recently in a study in MCI. Several development programs utilizing the original nerve growth factor or the brain derived neurotrophic factor are ongoing, including gene therapy.

Other development programs investigate radical scavengers and different types of neuroprotective molecules. So far, none of these treatment strategies reported conclusive findings. It is of interest to mention that several new cholinesterase inhibitors are in clinical trials at the moment. In contrast to the original compounds they combine different activities, like for example properties of SSRIs, or an additional effect on APP metabolism.

In spite that none of the mentioned treatment approaches has so far proven clinical efficacy in phase III studies, there is a big chance to have new compounds for therapeutic use available very soon. It is most exciting that some of these approaches will also be useful to prove the scientific theories behind the etiology of the disease.

***ORAL PRESENTATION***

**CLINICAL CHARACTERISTIC OF ALZHEIMER'S DISEASE**

**AND CASE REPORTS**

**OP-5-(01)**

## WORK IN THE GROUP OF PATIENTS SUFFERING FROM DEMENTIA

BOSANAC D, Juretić-Pešćica M

*Psychiatric Hospital "Lopača", Dražice, Croatia  
dbosanac@gmail.com*

**Objective:** Monitoring the development of dementia clinical picture in the period of 9 months with regard to etiology and progression of symptoms.

**Method:** Different cognitive component modalities of 7 patients suffering from different types of dementia were monitored through continuous physical and cognitive stimulation in the group. Group work took place twice a week and included simple physical exercises in the course of which patients were asked to name parts of the body involved in the current physical activity. After the aforesaid, two of the following cognitive stimulations were employed: short text reading, remembering group members' names with the help of "keys to remember", naming objects, testing orientation and recent events, solving puzzles, recognizing emotions on photos and recalling information from episodic memory. During the period of 9 months, specific fields of cognitive functioning were measured - short-term memory, learning, orientation, naming and recognizing. Neuropsychological tests were used for estimation of conceptual reasoning, memory testing, testing of verbal functions, executive and motoric functions and orientation and attention testing.

**Results:** Changes of specific cognitive modalities were recorded depending on the type of dementia. Patients suffering from AD showed the fastest deterioration of mnemonic functions and reasoning as well as significant aberrations in the sense of nominal aphasia. Variable aberrations in all measured cognitive spheres were recorded in patients suffering from VD, i.e. no significant deteriorations were recorded concerning specific cognitive functions. Variable changeability of cognitive efficiency depended on external influences or on patients' current psychophysical condition. In patients with alcohol dementia, an improvement of certain memory functions was recorded, primarily with regard to short-term memory, attention, orientation and naming.

**Conclusion:** Work in a group of demented patients turned out to be effective in the sense of achieving optimal physical condition and mood improvement. Cognitive stimulation accompanied by partial rehabilitation of demented patients is possible in the early stages of illness. Deterioration of specific cognitive modalities can be a valid indicator in the process of establishing differential diagnosis of dementia.

***ORAL PRESENTATIONS***

**PHARMACOTHERAPY OF DEMENTIA**

**OP-6-(01-03)**

## TREATMENT OF DEMENTIA FROM INTEGRATIVE MEDICINE PERSPECTIVE

JAKOVLJEVIĆ M

*University Psychiatric Department, Clinical Hospital Centre Zagreb, Zagreb, Croatia  
mjakov@mef.hr*

Conventional drug treatments of dementia has shifted from vasodilators and nootropic agents to drugs that increase brain levels of acetylcholine or regulate glutaminergic system activity. Available cholinesterase inhibitors have significant side effects and are only effective against mild or early symptoms of Alzheimer's disease. Memantine has been substantiated as an effective treatment of mild to severe forms of various types of dementia.

Patients with dementia frequently experience anxiety, depression, agitation, and psychotic symptoms. Modern antipsychotics and antidepressants may have crucial role in effective treatment of patients with dementia.

Many nonconventional modalities (dietary modification, ginkgo biloba, CDP-choline, phosphatidylserine, acetyl-l-carnitine, vitamins B, E, C, DHEA, etc.) may be useful treatments of cognitive impairment related to Alzheimer's disease, cerebrovascular insufficiency, stroke or traumatic brain injury.

Integrative medicine involves the best of both conventional and nonconventional methods to achieve the optimal synthesis of biological, psychological, mind-body, energetic, and spiritual therapies addressing each patient's needs and preferences. Integrative therapy combines techniques and methods from different conventional and non-conventional therapeutic modalities based on the therapist's judgment of which particular techniques will provide the greatest benefit for the patient at any given moment.



PHARMACOTHERAPY OF DEMENTIA (OP-6-02)

## PHARMACOTHERAPY OF ALZHEIMER DISEASE AND EVIDENCE-BASED MEDICINE

LUŠIĆ I

*Department of Neurology, Clinical Hospital Center Split, Split, Croatia*  
*ivo.lusic@st.htnet.hr*

Alzheimer's disease (AD) is the most common cause of dementia in the older adult. Hence, it has received the greatest attention in drug development. The cause of Alzheimer's disease is unknown. This gap in knowledge has created a stumbling block in the search for a genuinely effective treatment - or cure - for this dementia.

Currently approved therapies for AD are exclusively symptomatic - that is, they help abate some of the symptoms of AD such as memory loss, other cognitive and behavioural changes, and impairment in activities of daily living. Unfortunately, they have not been shown to alter the natural course of the illness. Reasonably, numerous compounds with potential disease modifying effects are being investigated. Some of these compounds interfere with disease pathogenesis or progression, while others may have a neuroprotective effect that may delay onset of symptoms. Current studies involve extension of uses of currently approved compounds, some natural compounds, compounds approved for other medical conditions that may produce a benefit in AD, and also some novel compounds. To best understand emerging therapies for AD, it is easiest to subdivide them according to principal presumed target in AD. Principal targets at the moment are amyloid beta, oxidative stress and inflammation. However, some potential drugs may have multiple modes of action.

Development of new drugs are increasingly chosen to tackle molecular targets important in AD pathobiology. Amyloid oligomers, amyloid deposits, and neurofibrillary tangles are characteristic findings in AD. Hence, drugs that interfere with these proteinaceous aggregates are receiving the most attention: alpha, beta, and gamma secretase modulators; inhibitors of amyloid beta (A $\beta$ ) aggregation; anti-A $\beta$  immunologic strategies.

Oxidative stress and inflammatory reactions appear part of a loop of neurotoxicity with the proteinaceous aggregates. Antioxidants and anti-inflammatory compounds have thus received much attention. Finally, other compounds may work by a variety of other mechanisms. Certainly, some of the advances in AD therapy may translate into benefits for other dementias as well.

## PSYCHOPHARMACOTHERAPY OF PSYCHOTIC STATE IN PERSONS WITH ALZHEIMER'S DISEASE

MIHANOVIĆ M, Svrđlin P, Devčić S, Glamuzina Lj

*Psychiatric Hospital "Sveti Ivan", Zagreb, Croatia*  
*pbsvi@pbsvi.hr*

Dementia is characterized by impairments in cognition, function, and behaviour. An estimated 20 to 30 percent of patient with dementia( primarily patients with dementia of the Alzheimer's type) have hallucinations, and 30 to 40 percent have delusions, primarily of paranoid and unsystematized nature.

Psychotic symptoms are associated with more rapid cognitive and functional decline, increased mortality and important risk factors for institutionalization. Physical aggression and other forms of violence are common in demented patients who also have psychotic symptoms. Agitated, aggressive behaviours can pose a physical risk to patient and others. Antipsychotics have the best evidence for efficacy, not only for psychotic symptoms but for other BPSD (behavioural and psychological symptoms). Pharmacotherapy could be considered a first-line therapy in the context of psychosis which place patient and others at risk of harm. Metaanalyses of typical antipsychotics such as haloperidol suggest significant benefit.

In many studies, the efficacy rates appear equivalent to the adverse event rates (extrapyramidal symptoms). For this reasons typical antipsychotic use has declined with the advent of atypical antipsychotics. Although some metaanalysis have questioned the efficacy of the atypical antipsychotics, others have suggested significant benefits beyond placebo, especially for olanzapine and risperidone. An average dosage of 1 mg risperidone daily is significantly more efficacious than placebo and as effective as haloperidol. According to RCT data, more controversial than the question of efficacy is the question of their safety.

Atypical antipsychotics can be used after their relative risks and benefits have been considered. Emerging evidence indicates that ChEI and memantine may also be helpful in treating of psychotic symptoms in AD. In one study use of citalopram was associated with improvement in psychotic symptoms. In our case report we present Mr. D, 73, admitted to hospital because he was violent to his wife and refuse to eat. We performed several diagnostic tests, including CT scans and psychological assessment, and Alzheimer dementia was diagnosed. We considered the relative risks and benefits of antipsychotic use, and decided to give our patient risperidone, 2 mg a day. After 4 week of risperidone, aggressive behaviour and paranoid delusions resolved.

***ORAL PRESENTATIONS***

**NON-PHARMACOLOGICAL INTERVENTIONS IN**

**ALZHEIMER'S DISEASE**

**OP-7-(01-03)**

*NON-PHARMACOLOGICAL INTERVENTIONS IN AD (OP-7-01)*

## NON-PHARMACOLOGICAL MANAGEMENT OF DEMENTIA: A CLINICAL PERSPECTIVE

GRAHAM N<sup>1,2</sup>

<sup>1</sup> *Alzheimer's Disease International, London, UK*

<sup>2</sup> *Royal Free Hospital, London, UK*

*norigraham@aol.com*

Dementia affects people in different ways. The most common symptoms that occur in dementia no matter what the cause are cognitive: memory loss and difficulties with language. However the non-cognitive symptoms, the behavioural and psychological symptoms (BPSD), are also often presenting problems leading to diagnosis. These can be the most difficult to deal with on a long-term basis.

Their management requires obtaining a detailed life history as well as an accurate description of the problem behaviour both from the person with dementia and from the main carer. Their presence often leads to the prescription of medication almost as a knee-jerk reaction. This is often harmful.

In contrast this presentation will focus on non-pharmacological management with particular reference to behavioural approaches. I shall also recommend when drugs may be helpful.

*NEW ASPECTS IN BASIC RESEARCH OF ALZHEIMER'S DISEASE (OP-B-01)*

## INTEGRATIVE VALIDATION (IVA) ACCORDING TO NICOLE RICHARD

HARAŠIĆ K

*Care Centre, Baar, Switzerland*  
*k.harasic@gmx.ch*

Looking after sufferers from dementia is a huge challenge for their families and professional nursing staff that very often drives them to the end of their physical and psychological tether.

The loss of cognitive abilities means that patients are no longer able to conduct day-to-day activities without outside help. The usual forms of exchange and contact are no longer possible and new methods of communication have to be found.

One possibility to reach out to people suffering from Alzheimer's disease is "Integrative Validation" (IVA) according to Nicole Richard. This is a further improvement on the validation according to Naomi Feil, which was developed in the USA in the 1960s. Validation is a method of communicating with disorientated elderly people and dealing with them in an understanding and appreciative manner.

Integrative validation takes advantage of the resources to establish contact with people suffering from dementia and give them a feeling that they are appreciated. The care concept makes special use of specific communication techniques, which highlight the emotional messages, statements and actions of those affected. In contrast to ROT the reality of suffers from dementia is not corrected, but validated to emphasize appreciation (declared as valid).

Three steps are necessary:

1. To detect the feeling and drive of patients with dementia
2. To absorb, appreciate and validate feelings and drives
3. The individually expressed feeling is then generally validated (i.e. appreciated), e.g. using proverbs and sayings.

The effect of validation on sufferers is to strengthen trust, break down anxiety and stress and give a feeling of security. The validation method and "integrative" validation, which has evolved from this, has opened up a rethinking process and a change in perspective in the way people suffering from dementia are cared for.

## COGNITIVE AND BEHAVIOURAL INTERVENTIONS FOR CARERS OF PEOPLE WITH DEMENTIA

VERNOOIJ-DASSEN M, Drašković I, Downs M

*Nijmegen Alzheimer Centre, Scientific Institute for Quality of Healthcare, Radboud University Nijmegen Medical Centre, Nijmegen, The Netherlands  
m.vernooy-dassen@voha.umcn.nl*

**Background:** Carers for persons with dementia experience a range of stressors. Cognitive and behavioural interventions (CBIs) intend to help carers to build coping strategies by reframing self-defeating or distressing cognitions into self-affirming ones, thus reducing distress and supporting development of adaptive behaviour. Cognitive and behavioural interventions are based on the principles of Cognitive Behavioural Therapy (CBT). CBI, however, is no therapy. CBIs can be carried out by a variety of professionals.

**Objectives:** The objective of the review is to assess the effectiveness of Cognitive and behavioural interventions (CBI) with carers of people with dementia.

**Method: Search strategy.** The Cochrane Dementia and Cognitive Improvement Group's Specialized Register was searched on 19 December 2005. This Register contains records from all major health care databases and many ongoing trials databases and is updated regularly. **Selection criteria.** Randomised controlled trials of CBI for carers of community dwelling persons with dementia. **Data collection & analysis.** Three reviewers independently selected and assessed all references.

**Main results:** Twenty-nine trials were included in the review. The majority of interventions involved cognitive and behavioural components (CBI = 24), 3 interventions were exclusively Cognitive (CI), 1 was Behavioural (BI) and 1 was Cognitive Behavioural Therapy intervention (Akkerman 2004). Cognitive and behavioural interventions (CBIs) have been found to have favourable effects on carers', depression and sense of competence, and on reducing the institutionalisation rate of persons with dementia. No evidence of reductions in anxiety, perception of memory and behavioural problems, or carer burden was found.

Trends in the direction of reduction of carers' distress and depression were found. No conclusions can be drawn regarding the effects of CBIs on carers' quality of life, since only one study used this outcome.

**Reviewers' conclusions:** Meta-analyses provide some evidence that cognitive and behavioural interventions are effective in improving dementia carers' sense of competence, and in reducing depression, and the risk of institutionalization for persons with dementia. A major limitation of this review is the heterogeneity in the trials with respect to cognitive and/or behavioural interventions, the outcomes and measures, and the stressors of persons with dementia and their carers. Analyses are needed with larger samples and with more fine-grained differentiation between different sub-types of interventions and different durations.

Future research should focus on more elaborate process analyses aimed at identifying which (components of) CBIs are helpful for which kinds of carers, caring for relatives with which level of impairment. Our findings may inform clinical practice about the usefulness of CBIs. CBI-components can easily be included in different interventions and can be carried out by a variety of professionals.





***ORAL PRESENTATIONS***

**CARE FOR PEOPLE WITH DEMENTIA**

**OP-8-(01-04)**

## PROFESSIONALS' KEY COMPETENCES IN MULTIDISCIPLINARY DEMENTIA CARE: VALIDATION OF A SELF-APPRAISAL INSTRUMENT

DRAŠKOVIĆ I, Otero M, Bottema B, Lucassen P, Degen S, van Achterberg T,  
Olde Rikkert M, Vernooij-Dassen M

*Nijmegen Alzheimer Centre, Scientific Institute for Quality of Healthcare, Radboud  
University Nijmegen Medical Centre, Nijmegen, The Netherlands  
i.draskovic@iq.umcn.nl*

**Background:** Professionals involved in dementia care need to share competences in order to be able to collaborate and provide coherent care. Description of these competences could be very useful in establishing and maintaining dementia networks and multidisciplinary teams. So far, there are no instruments to measure these competences.

**Goal:** The aim of this study is to develop and validate an instrument measuring key competences in multidisciplinary dementia care.

**Methods:** The development of the questionnaire involved 3 phases: (1) development of a model of key competences; (2) selection of items; (3) psychometric assessment (reliability, construct validity, and discriminative validity). To test validity and reliability 51 primary care physician and 23 nursing home physician trainees completed the PKC-MDC.

**Results:** Three factors were extracted through factor analysis. Together, they accounted for 58% of the total variance. The number of items was reduced from 26 to 19. The three factors (sub-scales) were: 1. dementia patient care; 2. interaction with informal caregivers and 3. professional interactions. Internal consistency was high (Cronbach's alpha = 0.90). For the subscales 1, 2, and 3 alphas were 0.90, 0.70 and 0.70 respectively. ANOVA showed a significant effect of trainee group and a significant interaction effect between the trainee group and the competence type [ $F(2,216)=6.61$ ,  $MSe=0.48$ ;  $p<.005$ ]: difference between the two groups of trainees were significant for the subscales 1 and 3 but not for the subscale 2. This indicates good discriminative validity of the instrument.

**Conclusions:** The PKC-MDC is a reliable and valid instrument for self-appraisal of professionals' key competences in dementia care. Further validation in different professional groups involved in multidisciplinary dementia care is needed.

CARE FOR PEOPLE WITH DEMENTIA (OP-8-02)

## PROBLEMS OF PERMANENT LODGING OF AD PATIENTS

GILIĆ A, Škeljo A, Pletikosa M

*Home for Mentally Ill Adult Persons "Sveti Frane", Zadar, Croatia*

*ante.gilic@zd.t-com.hr*

The prevalence of AD (Alzheimer disease) patients in general population according to WHO report is 0,6%.

Republic of Croatia has some 4,5 million inhabitants and it is estimated that there are 80000 AD patients.

Proportion of persons older than 65 years is getting higher and higher, so it has risen from 7.5% in 1961 to 15.7% in 2001. With this constant growth of number of people older than 65 years there is growth of chances of developing AD.

Dementia is a complicated disease, characterized with deterioration of intellectual capabilities with behaviour and personality change, and it interferes with the everyday activities of the patient and significantly lowers the quality of life, with significant social decompensation. It is obvious that there will be a great number of people with AD who fail in there everyday functioning and that this will require more often hospitalizations and permanent care and placement of these patients into adequate institutions.

In our work given at Third Congress on AD in Brijuni we have reported about growing number of hospitalizations in psychiatric wards of General Hospital Zadar, General Hospital Bjelovar and Clinical Hospital Osijek.

The number of psychiatric beds is small and it is reserved primarily for the patients with acute psychiatric disorders.

The number of beds in other specialized institutions of medical and social care is also not adequate and there is a waiting list for each one of these institutions.

In the Republic of Croatia there is no specialized institution for caring for people with fully developed AD. On the other hand, there are opinions of the Ministry of health and social security, i.e. of the Department for social security that AD patients shouldn't be placed in Homes for adults with psychiatric disturbances, and that makes the choice of an institution even more difficult and the number of available beds for permanent placement of AD patients even smaller.

In the example of lodging a female patient with fully developed AD into the Home for adult persons Sveti Frane the authors have shown that this action was of benefit for the patient, her relatives, with a certain additional efforts from the home staff.

CARE FOR PEOPLE WITH DEMENTIA (OP-8-03)

## CARE FOR PERSONS WITH DEMENTIA IN THE DAY CENTRE OF THE HOME FOR ELDERLY AND IMPAIRED PERSONS

Grubišić Juhas V, APOSTOLOVSKI D, Drandić V

*Home for Elderly and Impaired Persons "Alfredo Štiglić", Pula, Croatia  
vesna.grubisic.juhas@pu.t-com.hr*

The Day centre of the Home for elderly and impaired persons "Alfredo Štiglić" Pula is a service of half-institutionalised social care for a maximum of 25 persons. It primarily takes care of mobile and hardly mobile older persons that are not able to satisfy their needs by themselves, persons with dementia and persons with the Alzheimer's disease.

For the last 5 years, since the Day centre was founded, 90 beneficiaries have been taken care of - 20 of them with the Alzheimer's disease, 3 suspected to have the Alzheimer's disease, and 30 with other types of dementia.

The Day centre provides 10 hours' care - transportation of the beneficiaries, meals, health care, and occupational activities. A special characteristic of the work in the Day centre is work with families through individual talks with the members of the team of experts - nurse of the Day centre, physician - coordinator of the primary health care, manager of the Day centre - psychologist, social worker of our institution, and the psychiatrist of the Pula General Hospital.

In this paper we present concrete work of a nurse with the beneficiary with the Alzheimer's disease - starting from her first day in the Day centre.

We also present issues related to work with families, as well as positive and negative sides of working with persons with dementia and mentally healthy persons in the same group. Questions about care for older persons who live alone, norms for the cadre, institutionalising of persons with dementia and spatial conditions are opened.

The aim of the paper is to present our model of providing care to persons with the Alzheimer's disease and to point to the issues of providing care in the institutions of social care. This paper points to the issues of their human rights' protection, as well as to the necessity of providing professional support to families of persons with the Alzheimer's disease.

CARE FOR PEOPLE WITH DEMENTIA (OP-8-04)

## PSYCHOSOCIAL ASPECT OF ELDERLY CARE FOR THE FAMILY MEMBER WITH ALZHEIMER'S DISEASE

LAKLIJA M, Milić Babić M, Rusac S

*Department of Social Work, Faculty of Law, University of Zagreb, Zagreb, Croatia  
maja.laklija@pravo.hr*

Caring for a family member with Alzheimer's disease and related dementias (ADRD), as many authors describe, is one of the most devastating and challenging experiences one person can endure. The care for people with AD requires complete commitment and drastically changes the life of entire family, according to the stage of disease.

Family constitutes the major caregiving response to the needs of the elderly who are no longer self-sufficient (Aguglia et al., 2004). As many studies confirmed, three-quarters of the caregiver's day is devoted to the patient, that proportion tends to increase linearly as the disease progresses (Aguglia et al., 2004). The burden of performing various tasks, affect all spheres of the caregiver's life - psychological, professional, financial (that caregivers are often obliged to reduce the number of hours worked or even to leave their jobs to be able to look after their relatives), and relational (Aguglia et al., 2004, Shua-Haim et al., 2001; Juozapavicius & Weber, 2001). Therefore, taking care of family member with Alzheimer's disease is very demanding and stressful roll for caregivers, who also become a victim of disease, and who need to find better ways of coping with and managing the progressively deteriorating stages of Alzheimer's disease (Juozapavicius & Weber, 2001; Feeny et al., 2003).

The aim of this research was: identification of the common problems that caregivers are facing in dealing with care for Alzheimer, to take the wider social-demographical context of the caregiver, stressors, mediators, consequences and the possible facilitators of the care giving process.

This research puts focus on the caregiver's experience, on understanding the difficulties which they are facing in everyday care for the family member, taking into consideration feelings, distress sings (depression, grief, care giving stress), care giving influence on the caregivers physical health and the quality of the support from the family members, institutions and wider community.



***ORAL PRESENTATIONS***

**QUALITY OF LIFE IN DEMENTIA**

**OP-10-(01-02)**

*QUALITY OF LIFE IN DEMENTIA (OP-10-01)*

## QUALITY OF LIFE AND THE CARE PROVIDED FOR PERSONS WITH DEMENTIA

RADOVANČEVIĆ LJ

*Croatian Association for the Promotion of Patients' Rights, Zagreb, Croatia*

Quality of life is a notion that covers more than "health". Although "health" implies not only the absence of illness but also well-being in general and, WHO's definition of quality life implies wellness. Chronic organic psychic syndrome, presenile dementia and Alzheimer's certainly disrupt the quality of the patients' life. Many of these individuals lack a satisfactory level of quality of life, and they are in a certain way disabled, handicapped and unable to lead a normal life like most people.

The quality of life of persons with deteriorated health is lower than that of an average healthy person. A person suffering from dementia becomes dependent on the help of persons who are closely or less closely related to that person and on social and state institutions. They need not only material help but also other types of help, which sometimes cannot be compensated financially. This fact makes these disorders even graver and the possibility to enable a better and more dignified life harder.

The emotional sphere - which is deeper than the intellectual sphere - is present in the patient for a longer period, meaning that persons with dementia suffer on the emotional plain as well. Emotional deprivation is a frequent occurrence, and the need for emotional input is increased. Social care for persons suffering from dementia has to be provided on the familiar, municipal, city, county and state levels.

Medical care is essential and consists of medicaments, psychiatric and psychiatric help as well as help on all other necessary areas and form all specialties, depending on the ailments on the somatic and psychiatric plane, the material status of the patient, level of provision, etc.

Social care is provided in the form of accommodation, financial support, improvement of spoiled interpersonal, familial and other relations, legal help, such as the forensic regulation of the possibly unsettled issues of depriving of legal capacity, appointment of a caretaker, testamentary solutions, caring for the patient until their death, etc. Therefore, the activities aimed at improving the quality of life of persons suffering from dementia are some of the prerogatives of gerontology departments.



Alzheimer's is a cruel disease, which affects people without regards for their achievements and success in life, their wealth and happiness. It often deprives the patients of their dignity, pride, honour and appearance, their power and their perspective on life, thus lowering the quality of life of the person on all plains of life.

*QUALITY OF LIFE IN DEMENTIA (OP-10-02)*

## QUALITY OF LIFE: EQUALLY IMPORTANT FOR THE ILL AND FOR FAMILY MEMBERS

ŠOLJAN I<sup>1</sup>, Josipović-Jelić Ž<sup>2</sup>

<sup>1</sup> *Europapress Holding Ltd., Zagreb, Croatia*

<sup>2</sup> *Policlinic "Medicol", Zagreb, Croatia*  
*ivanan@eph.hr*

Oldness, which is a natural physiological process, is characterized by physical and psychological changes which come under illness. One of them, striking mainly elderly people, is dementia caused by neurodegenerative brain disease. Its course is chronic and progressive. A lot of people deal with aging problems and dementia which is demonstrated by memory loss, changes in conduct and personality, getting lost in familiar places, being unable to deal autonomously with everyday activities as well as personal security, hygiene and nutrition neglect.

The most common among dementias is Alzheimer's (AD) which symptoms reveal slowly and aggravate to the point of forgetfulness, serious thinking and judgement disorders, and finally to the point of total incapacity for autonomous functioning. AD lasts from 2 to 10 and more years. At the beginning it is controllable by medications but, as disease advances, patient needs 24 hour care and very often one family member has to devote himself/herself to constant care of the ill. AD dictates both patient's and family member's lives. It usurps brains and memories from the ill but emotions, wishes and basic peculiarities pictured through warmth, looks, but also feeling of lost, anxiety and fear remain.

On the other side, guardians state that they lost joy for life and feel helpless and unwilling for pain and suffering. Guardians and family members need to be patient, avoid confrontations with patient and establish daily routine. Patient should be talked with in plain words about family, friends, and current news instead of being criticized. Sense for humour should be encouraged, contact with other healthy but also other AD patients' family members should be provided, simple commitments stimulated.

It is also important that personal hygiene, neat and appropriate clothing, proper diet and physical therapy against decubitus and contractures are provided. Although AD patients need medical institutions' help as well as social care, it is guardian's care, which is an ultimatum for their wellbeing.

***ORAL PRESENTATIONS***

**ALZHEIMER'S DISEASE ASSOCIATIONS**

**AND SUPPORT GROUPS**

**OP-11-(01-04)**

*AD ASSOCIATIONS AND SUPPORT GROUPS (OP-11-01)*

## COUNSELING CENTER FOR FAMILY MEMBERS/CAREGIVERS OF PATIENTS WITH ALZHEIMER'S DISEASE

DAJČIĆ M, Dajčić T

*Alzheimer Disease Societies Croatia, Zagreb, Croatia*  
*mira.dajcic@vip.hr*

The counselling is among more important elements of care for patients with Alzheimer's. It is intended for family members and other caregivers.

The counselling manager has to have great experience in life and the duration of illness from the beginning to the end of the patient's life, medical knowledge and maximum empathy, as well as the confidence necessary to transfer all that onto family members/caregivers of the patients.

When working with the family members it is important to introduce them to basic characteristics of the disease, the early symptoms of the disease, the phases of progressive development, as well as the end of the disease, which can go on for over 10 years.

The patient has to be taken care of throughout the day, i.e. 24/7 for a whole decade and more, which is a terrifying experience for the patient's family as well as for all those involved in the patient's care.

Alzheimer's disease is something that has been spoken about for the last 100 years, and for the last 20 - 30 years the medical science has been intensively searching for the cause and medicine for the disease, while the society is providing, to some extent, the help and the accommodation for patients in the phase when home care is no longer possible by opening Homes for Alzheimer's Patients.

Individual stationary accommodation for Alzheimer's patients is necessary because of the very nature of the development of the disease which brings unforeseeable changes to the psychophysical condition of the patient, and it also requires a greater level of care for the patient and a greater number of nurses qualified for dealing with this kind of patients.

The nurse should be highly skilled in registering verbal and non-verbal expressions of patients and has to know how to respond accordingly. Expressed nurse empathy and the respect for the patient is of utmost importance, as well as preserving the patient's dignity.

Patient accommodation should be comfortable, secure and quiet, and it should have the same effect on the patient. Mental and physical rehabilitation should be provided for as long as possible.

The counselling centre of the Croatian Alzheimer's Disease Association has been active for 9 years, holding monthly meetings with family members, including a hotline for advice on the disease as well as for helping with the mourning phase, by delivering adequate written material intended for family members, by holding public events related to the problem, and informing the public through electronic and printed media.

Prevalence of this disease in the world, in our country as well, is continually increasing, no one is safe nor can the disease be avoided by leading a different life. The medical science still cannot find the right way of treatment.

This disease is a major health and social issue and the only way to fight it is to inform the public on the severity of the disease, the patient care through education of the people in connection with the patient, and on the necessity of providing humane accommodation for Alzheimer's patients.

## TEN YEARS OF ALZHEIMER'S DISEASE ASSOCIATION OF SLOVENIA - WHERE ARE WE?

KOGOJ A

*Department of Geriatric Psychiatry, University Psychiatric Hospital Ljubljana, Ljubljana-Polje, Slovenia  
ales.kogoj@mf.uni-lj.si*

**Background:** "Forget me not" the Alzheimer's Disease and Related Disorders Association of Slovenia, was established in 1997. In the first ten years five branches were set up. Dementia is being slowly but progressively recognised as a health care and social care problem in Slovenia, unfortunately not as a priority.

**Methods:** Data about current programs, future plans, financing and obstacles in their activities were obtained from all branches in a qualitative form.

**Results:** Educational programs and lectures for caregivers are most desired in the early working stages of a branch. Such programs have an immediate, but limited effect on greater number of caregivers, helping them to better understand dementia and to cope with everyday problems - mainly behavioural and psychological symptoms.

A wish to visit self-help groups is usually expressed later. Such groups may be located in nursing homes, however, they are not intended primarily for caregivers of the residents. They may consist of as little as five members, yet the members report that the support they receive from the group is priceless.

All branches are confronted with several problems. Their financing consists of donations (mainly pharmaceutical industry) and public funds received through local municipalities, Ministry of Labour, Family and Social Affairs, and Foundation of humanitarian organisations.

Competing also for small amount of public funds is quite demanding and yield no long-term guarantees. Membership fees significantly differs between the branches, with lower fees in less developed regions of Slovenia (north-eastern part).

All branches were started by health-care professionals with or without experiences with dementia in their family. While those members have done great, they are now confronted with a lack of volunteers who would develop the activities further. Due to the lack of interest in two branches even the positions on the managing committee could not be filled.

**Conclusions:** In the first ten years the Association made a progress in the development of programs and their attainability all over Slovenia. Insecure future of financing and the lack of volunteers present the main obstacles for the progress of the Association in the future.

*AD ASSOCIATIONS AND SUPPORT GROUPS (OP-11-03)*

## ALZHEIMER DISEASE SOCIETIES CROATIA - WHAT HAVE WE DONE SINCE LAST CONGRESS

MIMICA N<sup>1</sup>, Dajčić M<sup>2</sup>, Šimić G<sup>3</sup>, Mladinov M<sup>3</sup>, Glamuzina K<sup>4</sup>, Novy-Radonić E<sup>5</sup>,  
Trešćec-Ivičić M<sup>6</sup>, Vidas Kačanski A<sup>7</sup>

<sup>1</sup> *University Department of Psychiatry, Psychiatric Hospital "Vrapče", Zagreb, Croatia*

<sup>2</sup> *Alzheimer Disease Societies Croatia, Zagreb, Croatia*

<sup>3</sup> *Croatian Institute for Brain Research, School of Medicine, University of Zagreb, Zagreb, Croatia*

<sup>4</sup> *Nursing Home for Older and Incapable People "Medveščak", Zagreb, Croatia*

<sup>5</sup> *Neuropsychiatric Hospital "Dr. Ivan Barbot", Popovača, Croatia*

<sup>6</sup> *Specialized Neurological Office "Dr. Morana Trešćec-Ivičić", Zagreb, Croatia*

<sup>7</sup> *Psychiatric Hospital Rab, Rab, Croatia*

*ninoslav.mimica@bolnica-vrapce.hr*

We will try to stress the major activities of Alzheimer Disease Societies Croatia (ADSC) in the last two years. Our main goal remain the same - we want to help people with dementia (PWD), their families and care-givers, we fight stigma, and bring education to target and general population. We still don't have paid staff, so the whole work is done by volunteers.

In our Counseling centre we have monthly meetings for families of PWD and all other interested. The ADSC has reprinted two booklets, in large number and we distributed them for free in public places. Till know our members have for many times spoken to media (TV, radio, newspapers) and we have organized numerous lectures, participate on various Meetings, Conferences and Congresses - all in the aim to raise awareness on dementia, and to present our work for PWD and their caregivers.

We have applied for and got several projects in connection with dementia. The ADSC was given a possibility to apply to host the Alzheimer's Disease International Conference in 2010, but the final decision was done in favor of Greece. Last year we celebrate the World Alzheimer's day (September 21<sup>st</sup>) on "Cvjetni trg" - one of most popular squares in Zagreb. We have also organized the humanitarian public happening called "Summer evenings on Zrinjevac" in which we raise money for the ADSC. Our web-site ([www.alzheimer.hr](http://www.alzheimer.hr)) is rebuild and we have now much more visitors.

On our help-line (091 569 16 60) we are receiving calls every day, we are regularly replying to numerous letters coming through e-mail ([alzheimer@alzheimer.hr](mailto:alzheimer@alzheimer.hr)).



Our work is also internationally recognized, so we become a full member of Alzheimer's Disease International (ADI) in 2006.

And finally we are no more seeking a place for our office, because recently we got, from the Government of Zagreb nice place in the center of town (Vlaška 24a). The only problem is that this place need to be renovated before we can move in and start with our work. So, till then we are still working on the old address (Šalata 12).

*AD ASSOCIATIONS AND SUPPORT GROUPS (OP-11-04)*

## SUBSIDIARY OF CROATIAN ASSOCIATION FOR ALZHEIMER'S DISEASE

VIDAS KAĆANSKI A

*Psychiatric Hospital Rab, Rab, Croatia  
ankica.vidas-kacanski@ri.t-com.hr*

Subsidiary of Croatian association for Alzheimer's disease in Primorsko-goranska county with its centre in Rab, in Psychiatric hospital Rab, Kampor 224, Rab, was established in year 2002 with initiative of helping people suffering from Alzheimer's disease.

The aim of work and actions of Society is helping patients and their families, enforcement of health and social education of family members and other people who take care of (social workers, psychologists, medical staff and other). Organization of psychogeriatric symposium, which is traditionally being held on island Rab, on whom domestic and international experts from area of protection of mental health exchange the newest information, which can be applied in the area of psychogeriatrics. The 4th symposium is being prepared for the year 2009.

Appreciable part of the work program of Society is early diagnostic and therapy work bounded to maintaining functionality of their residual abilities, knowledge and skills, which are needed in their every day environment.

The program under the name "Getting old with dignity" is active since year 2005 with accent on thesis that getting old is biological process, which starts within the moment we are born.

Within such entity, the base purpose of this program is epidemiological research on level of Primorsko-goranska county with trend of integration of Ličko-senjska county; including establishment residence for old people with psychic disturbances, as well as program of an early discovery of psychic disorders.

Continuously helping to patients and their family members is in drug supply, orthopedic accessories, resources for health and care and in February of 2008 humanitarian concert has been held on island Rab.

In psychogeriatric department of Psychiatric hospital Rab patients who suffer from late Alzheimer's disease are being cured from this region and beyond. Society plans a phone-operating consultancy. Since we have daily more and more patients with Alzheimer's disease followed with Alzheimer's dementia we try to get recovery drugs for treatment of dementia on positive list.

***ORAL PRESENTATIONS***

**FREE TOPICS**

**OP-12-(01-02)**

FREE TOPICS (OP-12-01)

## THE ASSESMENT OF TESTAMENTARY CAPABILITIES IN ALZHEIMER'S DEMENTIA PATIENTS

FOLNEGOVIĆ ŠMALC V<sup>1,2</sup>, Varda R<sup>3</sup>, Folnegović Grošić P<sup>4</sup>

<sup>1</sup> University Department of Psychiatry, Psychiatric Hospital "Vrapče", Zagreb, Croatia

<sup>2</sup> School of Medicine, University of Zagreb, Zagreb, Croatia

<sup>3</sup> Psychiatric Office "Dr. Dalibor Zubac", Rijeka, Croatia

<sup>4</sup> University Hospital "Dubrava", Zagreb, Croatia

*klinika@bolnica-vrapce.hr*

**Introduction:** Nowadays most of European countries, including Croatia, face both absolute and relative increase of people with Alzheimer's disease (mostly due to contemporary «white plague» social effect). That is the very, but not the only reason for the parallel increase in number of forensic cases of Alzheimer's disease. It is a rare custom in our culture that one seeks psychiatric examination in terms of one's mental functioning, possible psychiatric disorders and testamentary capabilities before making a testament.

**Aim:** It is our primary intention to examine the expertise coherence of a small group of forensic experts skilled in assessing testamentary capabilities of Alzheimer's patients. The secondary goal is to determine the decisive parameters in court practice.

**Methods:** The great majority of testamentary forensic cases stem from people who died intestate. The expertises of that kind are *a priori* of a modest quality because they are based on psychiatric assesment *tempore acta* mostly formed out of statements of individuals without technical knowledge and clinical whisdom.

A more convenient situation occurs when one can request medical records, or even better if one owes it. That is the reason for frequent successive additional forensic assesments either with individual experts or in expert teams (individuals, forensic institutions, universities).

**Results:** These are preliminary results of our pilot study that will soon be fully completed with 35 subjects. In 4 cases we found the preferred situation with preserved testatory capabilities both with forensic examination during making of the will and within a subsequent trial. *Non liquet* is the conclusion in 6 cases that were assesed *post mortem* but with existing medical records. The earlier opinion was equally *non liquet* only in 1 out of these 6 cases. In further 5 cases we found the defined coherence.

**Conclusions:** The psychiatric forensic expert takes into account the abundance or paucity of mental functioning data of the subject *tempore acta* while determines his testamentary capabilities. In case of a *post mortem* forensic procedure without enough relevant psychiatric data it is our recommendation to establish a *non liquet* conclusion as a standard.

FREE TOPICS (OP-12-02)

## MAGNETIC RESONANCE IMAGING OF THE BRAIN IN DIAGNOSING AND EVALUATION OF THERAPEUTIC EFFICIENCY IN ALZHEIMER DISEASE

HENIGSBERG N<sup>1,2</sup>, Kalember P<sup>3</sup>, Kovačić Z<sup>1,2</sup>, Radoš M<sup>4</sup>

<sup>1</sup> *Psychiatric Hospital "Vrapče", Zagreb, Croatia*

<sup>2</sup> *Croatian Institute for Brain Research, School of Medicine, University of Zagreb, Zagreb, Croatia*

<sup>3</sup> *Policlinic "Neuron", Zagreb, Croatia*

<sup>4</sup> *Clinical Hospital Center Zagreb, School of Medicine, University of Zagreb, Zagreb, Croatia*

*neven.henigsberg@zg.t-com.hr*

Magnetic resonance imaging (MRI) of the brain represents non-invasive neuroradiological method, which has high sensitivity and specificity in the diagnosing of Alzheimer disease. Imaging based volumetry, magnetic resonance spectroscopy (MRS), and functional magnetic resonance imaging (fMRI) are neuroradiological methods, which have been proven as very accurate biomarkers, which correlate with the clinical symptoms.

The ratio of N-acetyl aspartate and creatinine as well as myo-inositol and creatinine, when measured by magnetic resonance spectroscopy, have very high specificity in the diagnosing of Alzheimer disease. Furthermore, this is confirmed pathohistologically postmortem.

Recently, the use of these parameters mentioned above is of the great interest in the research, especially in a combination with genetics markers, in the prediction of further progress of disease. Additionally technological development provide the use of neuroradiological neuroimaging methods in the therapeutics response to drugs in the patients with Alzheimer disease.

***POSTER PRESENTATIONS***

**BASIC RESEARCH AND NEUROPATHOLOGY**

**OF ALZHEIMER'S DISEASE**

**PP-1-(01-06)**

## THE ROLE OF LIPID RAFTS ON APP PROCESSING AND AMYLOID- $\beta$ FORMATION

KOŠIČEK M<sup>1</sup>, Goate A<sup>2</sup>, Hećimović S<sup>1</sup>

<sup>1</sup> Division of Molecular Medicine, "Ruđer Bošković" Institute, Zagreb, Croatia

<sup>2</sup> Department of Psychiatry, Washington University School of Medicine, Saint Louis, Missouri, USA

marko.kosicek@irb.hr

Retrospective epidemiological studies have recently shown that cholesterol-lowering drugs (statins) may decrease the prevalence of Alzheimer disease (AD) and that hypercholesterolemia may be a risk factor for AD. It has been also observed that cholesterol accumulation in lysosomal storage disorder Niemann Pick type C (NPC) leads to increase A $\beta$ , like in AD. In addition, lipid rafts, a cholesterol and sphingolipid rich membrane microdomains, have been found as a site of A $\beta$  formation. Since cholesterol levels have shown to modulate APP processing and A $\beta$  production, both in vitro and in vivo, we hypothesized that cholesterol-effect on A $\beta$  may be mediated through lipid rafts. To test this we monitored APP localization and A $\beta$  formation in lipid rafts between CHO NPC1-null (M12) and CHOwt cells by the two methods: lipid raft isolation and confocal microscopy.

We showed that M12 cells exert an NPC-like phenotype: they have increased levels of cholesterol, increased C99/CTF $\beta$  and increased A $\beta$  levels compared to CHOwt cells. Lipid rafts were isolated using zwitterionic (CHAPSO) or nonionic (Triton X-100, Lubrol-WX) detergent in a discontinuous sucrose gradient. By western blotting we show that only a minor fraction of APP and A $\beta$  were localized in lipid rafts in both CHOwt and CHO NPC1-null cells. In addition, we did not observe altered lipid raft compartmentalization of APP between CHOwt and M12 cells. Using confocal microscopy we confirmed that in CHO cells less APP and A $\beta$  are found in lipid rafts, suggesting that lipid rafts may not be a primary site of APP processing. In addition, we did not observe any substantial difference between APP and lipid raft, as well as A $\beta$  and lipid raft colocalization between CHOwt and CHO NPC1-null cells.

In **summary**, our results show that increased formation of A $\beta$  upon cholesterol accumulation in NPC1-deficient CHO cells does not involve lipid rafts, suggesting that the mechanism of cholesterol-effect on A $\beta$  may not be mediated through these cholesterol and sphingolipid rich membrane microdomains.



BASIC RESEARCH AND NEUROPATHOLOGY OF AD (PP-1-02)

## THE CHOLESTEROL-EFFECT ON AMYLOID- $\beta$ FORMATION UPON NPC1 DYSFUNCTION INVOLVES ALTERED APP LOCALIZATION

MALNAR M<sup>1</sup>, Košiček M<sup>1</sup>, Goate A<sup>2</sup>, Hećimović S<sup>1</sup>

<sup>1</sup> Division of Molecular Medicine, "Ruder Bošković" Institute, Zagreb, Croatia

<sup>2</sup> Department of Psychiatry, Washington University School of Medicine, Saint Louis, Missouri, USA

*martina.malnar@irb.hr*

Cholesterol accumulation in lysosomal storage disorder Niemann Pick type C (NPC) leads to increased levels of amyloid- $\beta$  (A $\beta$ ) peptide, a causative factor of Alzheimer's disease. To elucidate the mechanism(s) of increased A $\beta$  upon NPC1 dysfunction, we monitored amyloid precursor protein (APP) processing between CHO NPC1-null (M12) and CHOwt cells. As previously reported, we observed increased levels of total cholesterol, increased C-terminal APP fragment C99 (CTF $\beta$ ) and increased levels of A $\beta$  in M12 compared to CHOwt cells. Although levels of the  $\gamma$ -secretase dependent formation of A $\beta$  were significantly increased in M12 vs. CHOwt cells (by 4-fold,  $p < 0,01$ ), we observed similar levels of the  $\gamma$ -secretase dependent formation of AICD in these cells.

When C99, a direct  $\gamma$ -secretase substrate, was transfected into the cells a similar increase of A $\beta$  was observed in M12 compared to CHOwt cells, indicating that the effect on A $\beta$  upon NPC1 loss may be dependent on increased  $\gamma$ -secretase activity and not on high C99 levels. However, *in vitro*  $\gamma$ -secretase assay and pulse chase assay showed that  $\gamma$ -secretase activity is not altered in M12 cells. To further test whether the effect on A $\beta$  in M12 cells is related to cholesterol levels we monitored A $\beta$  production under cholesterol starved/fed conditions.

Our results show that neither cholesterol depletion in M12 cells nor cholesterol overload in CHOwt cells results in substantially decreased /increased A $\beta$  levels, respectively, indicating that the effect on A $\beta$  upon NPC1 dysfunction is not directly related to high cholesterol levels. Moreover, we observed a markedly decreased level of APP on the cell surface in M12 vs. CHOwt cells, suggesting that less APP could be processed through the  $\alpha$ -secretase pathway in M12 cells. Indeed, we confirmed this finding by showing that the levels of the APP cleavage products by  $\alpha$ -secretase (sAPP $\alpha$  and C83) were substantially lowered in CHO NPC1-null cells. Overall, our results show that increased levels of A $\beta$  upon cholesterol accumulation in NPC1-deficient cells are not directly related to cholesterol levels. We assume that upon NPC1 loss cholesterol may have an indirect effect on A $\beta$  by altering APP localization and shifting APP processing through the  $\beta$ -secretase pathway.

## COGNITIVE TRAINING AND BRAIN INSULIN RECEPTOR IN RAT MODEL OF SPORADIC ALZHEIMER'S DISEASE

OSMANOVIĆ J<sup>1</sup>, Riederer P<sup>2</sup>, Šalković-Petrišić M<sup>1</sup>

<sup>1</sup> Department of Pharmacology, Clinical Hospital Center Zagreb, School of Medicine, University of Zagreb, Zagreb, Croatia

<sup>2</sup> Department of Clinical Neurochemistry, Clinic and Polyclinic of Psychiatry, Psychosomatic and Psychotherapy, University of Wuerzburg, Wuerzburg, Germany  
josmanov@mef.hr

**Aims:** Growing body of evidence indicates that physical and mental activities have beneficial effects on cognitive impairments in sporadic Alzheimer's disease (sAD) but underlying mechanism is not clear. Brain insulin system dysfunction in regions involved in learning and memory has been recently reported in sAD and its experimental model, streptozotocin intracerebroventricularly (STZ-icv) treated rats. Time-dependent development of alterations in insulin receptor (IR) signaling downstream the phosphatidylinositol-3 kinase pathway resulting in tau hyperphosphorylation and amyloid beta (A $\beta$ ) angiopathy three months after STZ-icv treatment have been found. This study was aimed to investigate the effect of cognitive training on the STZ-icv induced early changes of brain IR.

**Methods:** Adult male Wistar rats were treated with STZ-icv (1 mg/kg) while the controls received vehicle only. Half of the control and STZ-treated group was rendered to intensive 4-day long mental training in the Morris Water Maze Swimming test, two and four weeks after the drug treatment, while the other half of each group remained untrained. IR protein expression in hippocampus and temporal cortex was determined by immunoblotting 1 month after STZ-icv treatment. Data were analysed by Mann-Whitney U-test ( $p < 0.05$ ).

**Results:** Significant cognitive deficit has been found two (-36.4%) and four (-35.6%) weeks following the STZ-icv treatment. In comparison to the controls, the expression of IR protein in hippocampus was significantly decreased ( $121.7 \pm 2.4$  vs.  $97.3 \pm 1.5$ ) in all STZ-icv treated animals regardless their previous training condition, while no change was found in temporal cortex between the control and STZ-icv treated rats in both trained and untrained animals.

**Conclusion:** Decreased IR expression in hippocampal and unchanged in cortical tissue one month following the STZ-icv treatment suggests region-specific pattern of brain IR alterations in experimental sAD model.

No difference in hippocampal IR expression between the STZ-icv trained and untrained rats in this experiment could suggest that either cognitive training longer than one month or more intensive training within 1 month is needed to induce the beneficial effect on cognitive deficits, since in AD patients this effect has been observed in follow-up studies lasting 2-9 years.

Supported by Croatian MZOS (108-1080003-0020) and DAAD

## PLATELET SEROTONIN CONCENTRATION AND MONOAMINE OXIDASE ACTIVITY IN EARLY-, MID- AND LATE-STAGE OF THE ALZHEIMER'S DISEASE

PRESEČKI P<sup>1</sup>, Mück-Šeler D<sup>2</sup>, Mimica N<sup>3,4</sup>, Mustapić M<sup>2</sup>, Pivac N<sup>2</sup>,  
Folnegović Šmalc V<sup>3,4</sup>

<sup>1</sup> Department of Psychiatry, General Hospital Pula, Pula, Croatia

<sup>2</sup> Division of Molecular Medicine, "Ruđer Bošković" Institute, Zagreb, Croatia

<sup>3</sup> University Department of Psychiatry, Psychiatric Hospital "Vrapče", Zagreb, Croatia

<sup>4</sup> School of Medicine, University of Zagreb, Zagreb, Croatia

paola.presecki@gmail.com

Post mortem brain studies found the loss of serotonergic neurons and the decrease in the brain serotonin (5-HT) concentration in patients with Alzheimer's disease (AD). Blood platelets have been proposed as an easy obtainable peripheral model for some processes in the central serotonergic neurons. The aim of the study was to determine platelet 5-HT concentration and platelet monoamine oxidase type B (MAO-B) activity in early-, mid- and late- stage of AD.

The study included 93 (25 men, 68 women) patients with AD (NINCDS-ADRDA and DSM-IV-TR criteria). The patients were subdivided according to the mini-mental state examination (MMSE) scores into groups: a) 39 patients (mean  $\pm$  SD age  $66.3 \pm 11.2$  years) in early-stage of AD with MMSE  $> 18$  (mean  $\pm$  SD,  $20.6 \pm 1.5$ ), b) 25 patients ( $74.9 \pm 9.7$  years) in mid-stage of AD with MMSE scores from 10-17 ( $14.3 \pm 2.1$ ), and c) 29 patients ( $82.0 \pm 7.9$  years) in late-stage of AD with MMSE scores  $< 9$  ( $2.0 \pm 1.9$ ). Platelet 5-HT concentration and platelet MAO-B activity were determined spectrofluorimetrically. Results were evaluated using Kruskal-Wallis ANOVA on rangs and Mann-Whitney's test and Spearman's coefficient of correlation.

A sex difference in platelet 5-HT concentration, but not in MAO-B activity, was found in patients with AD. Female patients had lower 5-HT concentration than male patients. A significant decrease in platelet 5-HT concentration was found in female AD patients in the late-stage of disease compared to platelet 5-HT values in female patients with early- and mid-stage of AD. Platelet MAO-B activity was significantly reduced in female patients in late-stage of AD compared to MAO-B activity in early stages of AD.

Due to the small number of male patients, their platelet 5-HT concentration and MAO-B activity did not differ according to the different stages of AD.

There were significant correlations between MMSE scores and platelet 5-HT levels or MAO-B activity.

The results showed reduced platelet 5-HT and MAO-B values during the course of AD, which correlate with the severity of dementia. Platelet 5-HT concentration and MAO-B activity should be further evaluated as markers for severity and/or clinical progress of AD.

## INTRACEREBROVENTRICULAR APPLICATION OF A SMALL DOSE OF BOTULINUM TOXIN TYPE A PRODUCES LONG TERM COGNITIVE IMPAIRMENT IN RAT

REBIĆ V<sup>1</sup>, Riederer P<sup>2</sup>, Lacković Z<sup>3</sup>

<sup>1</sup> Department of Psychology, Faculty of Humanities and Social Sciences, University of Zagreb, Zagreb, Croatia

<sup>2</sup> Department of Clinical Neurochemistry, Clinic and Polyclinic of Psychiatry, Psychosomatic and Psychotherapy, University of Wuerzburg, Wuerzburg, Germany

<sup>3</sup> Laboratory of Molecular Neuropharmacology, Department of Pharmacology and Croatian Institute of Brain Research, School of Medicine, University of Zagreb, Zagreb, Croatia  
verebic@ffzg.hr

**Aim of the study:** Recent research suggest botulinum toxin (BTX) could be useful in the treatment of certain brain diseases (Bozzi *et al.*, *Neurotox Res*, 2006; Verderio *et al.*, *Traffic* 2007), but others have confirmed that central application of BTX type B can produce memory impairment (Ando *et al.*, *J Neurosci Res*, 2002) and impaired novel objects recognition (Luisetto *et al.*, *Behav Pharmacol*, 2004). So far, only short term effects of the BTX intracerebroventricular application were reported. Aim of this study was to investigate onset time and duration period of the deficits caused by central application of small doses of the BTX type A in the rat brain.

**Method:** Male Wistar rats were injected intracerebroventricularly with 2 U/kg of BTX A or a saline solution. Morris water maze test was used to monitor learning and memory capacities. Water maze task was performed 15<sup>th</sup> day after the surgery; one month after the surgery and from that point on once per month for 12 months in total. Additionally, rotarod and hot plate test were used in the assessment of possible gross motor and thermal sensitivity deficits, respectively.

**Results:** Dose of 2U/kg of BTX A produced significantly impaired performance in the Morris water maze test. Impairment develops slowly over time, becoming significant after two months, and last up to 12 months without any sign of recovery. No changes in motor performance or thermal sensitivity were detected.

**Conclusion:** In the present experiments, we have for the first time demonstrated that icv application of a small dose of BTX-A in rats produce slow onset and apparently permanent cognitive impairment.

*BASIC RESEARCH AND NEUROPATHOLOGY OF AD (PP-1-06)*

## LARGE PYRAMIDAL NEURONS IN THE ASSOCIATIVE PREFRONTAL CORTEX PRESERVE DENDRITIC MORPHOLOGY DURING NORMAL AGING

ZEBA M<sup>1,2</sup>, Kostović I<sup>1</sup>, Uylings HBM<sup>3,4</sup>, Petanjek Z<sup>1,5</sup>

<sup>1</sup> *Croatian Institute for Brain Research, School of Medicine, University of Zagreb, Zagreb, Croatia*

<sup>2</sup> *Croatian Studies, University of Zagreb, Zagreb, Croatia*

<sup>3</sup> *Department of Anatomy and Neuroscience, VU University Medical Center, Amsterdam, The Netherlands*

<sup>4</sup> *Department of Psychiatry and Neuropsychology, Brain and Behaviour Institute, University of Maastricht, Maastricht, The Netherlands*

<sup>5</sup> *Department of Anatomy, School of Medicine, University of Zagreb, Zagreb, Croatia  
martinazeba@yahoo.com*

In the present study, we have analyzed changes in dendritic morphology and spine density on large layer IIIc and layer V pyramidal neurons of human prefrontal cortex (Brodmann area 9). Postmortal tissue of adult (38-64 years, n=8) and aged subjects (72-91 years, n=7) was processed by rapid Golgi method. None of the subjects had clinical record of psychiatric and neurological disorders, nor were any neuropathological deviations detected in their brains postmortem.

From each layer, 10-15 well impregnated pyramidal neurons per subject were three-dimensionally reconstructed using Neurolucida system. Soma size, total dendritic length, total segment number, individual segment length and spine density were quantitatively analyzed, separately for basal dendritic tree and apical side branches.

In aged group the mean values of spine density were 20-25% lower in both apical side branches and basal dendrites in layer IIIc pyramidal neurons. This difference was nearly at the statistically significant level. However, from 7 aged subjects only 2 cases with highest values had the spine density around mean level of adult group and in the remaining aged subjects the dendritic spine density values were lower than in all mature adult subjects.

At the other hand, for both layers, all dendritic morphology parameters were comparable in both, the adult and aged group, so no significant difference was statistically obtained. For the layer V the spine density was also around the same in individuals of both groups.

Our data show that there is a large population of cortical neurons that preserve their dendritic structure during normal aging. However, majority of aged individuals show a trend for decrease in spine density of layer IIIc pyramids. Therefore, we conclude that synaptic elements of processing higher cognitive functions might be less resistant to aging process and this might depend on level of cognitive stimulation during aging.



***POSTER PRESENTATIONS***

**EARLY DIAGNOSTIC OF ALZHEIMER'S DISEASE**

**PP-2-(01-07)**

*EARLY DIAGNOSTICS OF AD (PP-2-01)*

## THE ROLE OF THE CEREBROSPINAL FLUID BIOMARKERS IN A TERTIARY MEMORY CLINIC: OUR 4- YEAR EXPERIENCE

BOBAN M<sup>1,2</sup>, Grbić K<sup>2</sup>, Mladinov M<sup>2</sup>, Hof PR<sup>3</sup>, Süßmair C<sup>4</sup>, Ackl N<sup>4</sup>, Bader B<sup>5</sup>,  
Danek A<sup>4</sup>, Šimić G<sup>2</sup>

<sup>1</sup> *Department of Neurology, Clinical Hospital Center Zagreb, School of Medicine,  
University of Zagreb, Zagreb, Croatia*

<sup>2</sup> *Croatian Institute for Brain Research, School of Medicine, University of Zagreb,  
Zagreb, Croatia*

<sup>3</sup> *Mount Sinai School of Medicine, New York, New York, USA*

<sup>4</sup> *Neurology Clinic and Polyclinic, Ludwig-Maximilians-University Munich, Munich,  
Germany*

<sup>5</sup> *Center for Neuropathology and Brain Research, Ludwig-Maximilians-University  
Munich, Munich, Germany*

*maboban@mef.hr*

**Background:** Alzheimer's disease (AD) is the most prevalent type of dementia. Although diagnostic markers for AD have been continuously improving, they still do not guarantee a definite diagnosis. However, it is safe to say that known biological markers from cerebrospinal fluid (CSF) can differentiate AD from other primary causes of dementia with high reliability and validity. As such, they were recently, together with structural and functional neuroimaging and genetic testing, included as an ancillary method in the clinical diagnostic criteria for AD.

**Objective:** To assess the usability of CSF total tau protein (t-tau), tau protein phosphorylated at threonine 181 (p-tau-181) and beta-amyloid in a mixed population of patients with suspected dementia referred to a tertiary memory clinic.

**Patients and methods:** Fifty-four consecutive patients with various primary causes of the dementia syndrome were included in the study. A retrospective diagnosis was established using the consensus criteria without prior knowledge of the CSF results. Lumbar puncture was performed as a part of the routine clinical workup. Levels of t-tau, p-tau-181 and beta-amyloid in CSF were measured using commercially available ELISA kits from Innogenetics, Ghent, Belgium and Biosource International, Camarillo, CA, USA.

**Results:** Except for beta-amyloid, the overall sensitivity of the other two markers for diagnosis of AD was in range from 77 to 92%.

The specificity of each of these markers per se was relatively low in differentiating AD patients from amnesic mild cognitive impairment (MCI) subjects, whereas rather high when discriminating AD from other causes of dementia (on average better than 85%). Moreover, combination of two or three abnormal marker's values was found to further increase the specificity, as expected.

**Conclusion:** Based on our 4-year experience in a tertiary memory clinic, we concluded that measurement of total-tau, p-tau-181 and beta-amyloid concentrations in CSF is of an extraordinary diagnostic value. However, since the rate of conversion from MCI to AD is on average less than 15% per year, subjects with suspected dementia whose CSF biomarkers' values are within the normal ranges should be carefully followed-up at least for the next 5-7 years.

## HOW PRECISELY WE CAN RECOGNISE ALZHEIMER'S DISEASE

DEJANOVIĆ N

*Health Center Vinkovci, Vinkovci, Croatia  
dejanovic@yahoo.com*

**Background:** The fact that first symptoms, or first serious signs of the disease, are initially noticed and "diagnosed" by nonprofessionals and family members of the patient is well-known. Education and assistance to nonprofessionals and family members in early diagnosis of Alzheimer's disease would probably be positive.

**The aim** of this research/report is to check how precisely we can recognise Alzheimer's disease. The basic proposition of the report is to see how "The poster with 10 signs about the changes in everyday behaviour that indicate Alzheimer's disease" can help family members. The poster was created according to the directions of International and Croatian Society for Alzheimer's disease. The given results could be an indicator in improvement of early diagnosis and treatment of AD in Croatia.

**Methods:** Family members of the patients (with working diagnosis of dementia) were shown the poster with 10 signs and they were asked to mark the function areas where they noticed the changes.

**Results:** Given results show that family members of the patients noticed/recognized correctly the areas with the changes in function, but they couldn't define them, in other words they didn't define the changes as early signs of the disease.

**Conclusion:** The presentation of the poster with "10 signs" of Alzheimer's disease to wide population would probably significantly influence the recognition and diagnosis of Alzheimer's disease, and thus lead to easier treatment and overall care of the patients as well as the improvement of their and their families' quality of living.

*EARLY DIAGNOSTICS OF AD (PP-2-03)*

## NEUROSONOLOGICAL EVALUATION OF PATIENTS WITH COGNITIVE IMPAIRMENTS

DEMARIN V, Bašić-Kes V, Morović S

*Clinical Hospital "Sestre Milosrdnice", Zagreb, Croatia*  
*vdemarin@kbsm.hr*

Normal aging is associated with cognitive changes. In many countries the most important medical and social problem is increased number of people with cognitive impairment and dementia. A raised life expectancy of the population is one of the reasons for that increase.

Older patients are at higher risk of developing cognitive changes. Interestingly among elderly individuals of the same age, some have normal cognitive function while other have severe deterioration of their cognitive abilities.

Exact identification of different kind of dementia as well as differentiation between normal aging process and mild cognitive changes is very important.

Dementia includes a heterogeneous group of disorders, the most common being Alzheimer dementia (AD) and vascular dementia (VD).

The cardiovascular risk factors, such as diabetes mellitus, hypertension, hypercholesterolemia, atrial fibrillation, smoking are risk factors not exclusively for VD, but also for AD.

The identification of vascular pathology is important because early management of risk factors may delay onset or reduce the severity of vasculopathy.

Intracranial haemodynamics of the aging brain can successfully be assessed using Transcranial Doppler Sonography (TCD), functional TCD with various functional tests, and TCD detection of cerebral emboli. Extracranial circulation can be assessed by means of color doppler flow imaging (CDFI).

## BETA STIFFNESS INDEX IN PATIENTS WITH DEMENTIA

JURASIĆ MJ, Martinić Popović I, Morović S, Trkanjec Z, Šerić V, Bene R, Demarin V

*Clinical Hospital "Sestre Milosrdnice", Zagreb, Croatia*  
mjjurasic@kbsm.hr

**Background and aim:** Changes of arterial stiffness indicate alteration in arterial mechanics predisposing to the evolution of vascular end events, such as increased stroke occurrence. The aim of this study was to explore whether beta stiffness index could be selected to monitor pathomorphologic vascular changes in demented patients.

**Patients and methods:** There were 38 patients included in this study; 16 with Alzheimer's disease (AD) and 22 with vascular dementia (VAD): 22 women and 16 men, aged  $72.53 \pm 7.87$  yrs. Control group consisted of 33 clinically healthy controls (25 women and 8 men), aged  $68.85 \pm 3.52$  yrs. Risk factors were noted and ultrasound measurements on common carotid artery (CCA) were performed using Aloka ProSound ALPHA 10 with 13 MHz linear probe.

**Results:** Twenty-four patients had arterial hypertension, 9 had atrial fibrillation, 3 had diabetes and 18 had hyperlipoproteinaemia. In controls, hypertension was present as a single risk factor in 15 subjects. Average body mass index was  $26.14 \pm 3.89$  kg/m<sup>2</sup>, and there were no significant differences compared the control group. Average blood pressure was  $135.58 \pm 20.48$  mmHg over  $78.53 \pm 10.42$  mmHg, differing significantly in diastole with the control group. Mean intima media thickness (IMT) was  $0.84 \pm 0.27$  mm and average CCA diameter was  $8.63 \pm 1.43$  (right CCA),  $8.37 \pm 1.30$  (left CCA), which were significantly higher than in controls ( $p < 0.05$ ). Mean Beta Stiffness was  $10.71 \pm 4.95$  (right CCA),  $11.56 \pm 6.51$  (left CCA), also significantly higher than in controls ( $p < 0.05$ ).

**Conclusions:** Both systolic and diastolic CCA diameter as well as beta stiffness index were significantly lower in non-demented subjects. As vascular changes are present in both AD and VAD, parameters like diameter change and beta stiffness index could be useful in preliminary assessment and follow-up of patients with cognitive decline.

EARLY DIAGNOSTICS OF AD (PP-2-05)

## DEPRESSION IN MIDDLE AGE: POSSIBLY ALZHEIMER'S DISEASE OR MULTI-INFARCT DEMENTIA ?

PAVLOVIĆ E<sup>1</sup>, Jonovska S<sup>1</sup>, Bilić D<sup>2</sup>

<sup>1</sup> *Psychiatry Department, University Hospital Rijeka, Rijeka, Croatia*

<sup>2</sup> *Health Center "Buzet", Buzet, Croatia*  
*edopavlovic@net.hr*

**Aim:** The aim of this pilot study, which is retrospective clinical trial, was to establish the neuroplastic effect of tianeptine in patients suffering of severe depression accompanied with cognitive and mnemonic disturbances.

**Subjects and methods:** Participants in this study were male and female depressed outpatients aged upper than 18 years controlled during July 2006 at Policlinic Department of Clinic for Psychiatry of Clinical Hospital Centre in Rijeka, Croatia. The main included criteria was the diagnosis of depression treated with tianeptine at least 6 months as well as the depression accompanied with cognitive and mnemonic disturbances. Tianeptine has been prescribed at the effective dose of 25 or 37.5mg/day.

The evaluation included the following instruments:

1. Sociodemographic Questionnaire;
2. The Montgomery and Asberg Depression Rating Scale (MADRS);
3. Organic Disorder Questionnaire;
4. Cognitive and Mnemonic Disturbances Questionnaire and
5. Compliance Questionnaire. Qualitative variables were described using percentages.

**Results:** The pilot study pattern included 51 patients (m-17 or 33%, f-34 or 66%) mostly in the age group of 41-60 years (49%; m-59%, f-44%) married and employed with high school education. They have suffered from severe depression (DSM-10: F09) and severe physical disease (one or more) at the same time.

Most of the female patients were treated with tianeptine with a dose of 25 mg/day and male patients with a dose of 37.5 mg/day. Most of them previously have used some other antidepressants. Both gender groups have had adequate treatment of the organic diseases which were predominantly cardiovascular diseases, and surgical treatments in male patients.

About one third of patients (31%; m-29%, f-32%) had very severe cognitive and mnemonic disturbances which didn't fall off after tianeptine treatment and 29% of them (m-24%, f-32%) felt cognitive and mnemonic disturbances every day constantly. The compliance was good in both gender groups but female patients collaborated better than male ones.

**Discussion or instead of conclusion:** Are results of this pilot study able to show at an atypical depression and could the results draw one's attention to Alzheimer disease or multi-infarct dementia in middle age, too (?).



EARLY DIAGNOSTICS OF AD (PP-2-06)

## BREATH HOLDINH INDEX AND EVALUATION OF COGNITIVE DECLINE

ZAVOREO I, Lovrenčić Huzjan A , Bosnar Puretić M, Bašić-Kes V, Demarin V

*Clinical Hospital "Sestre Milosrdnice", Zagreb, Croatia*  
*izavoreo@kbsm.hr*

**Background:** The aim of the study was to evaluate role of breath holding index (BHI) in recognizing patients who are at risk for developing cognitive impairment of vascular type.

**Patients and methods:** We included 20 volunteers who were examined at our Neurology Department. They were divided into 2 groups, in first group were healthy volunteers at age 35 - 45 and in the second group were volunteers at age 65 - 75. In first group we selected patients with BHI values  $1.7 \pm 2$  and in the second group with values  $1.1 \pm 0.5$ . Mini mental State Exam (MMSE) and Montreal Cognitive Assesment (MoCA) were performed as well as standard laboratory workup, CT scan, Color Doppler and Power Doppler of the main head and neck vessels and Transcranial Doppler. We excluded individuals with severe carotid stenosis.

**Results:** We excluded recent ischemic lesions in our population (CT scan), there was no statistically significant difference in conventional risk factors and gender between two groups. There was statistically significant difference between two groups in MoCA ( $29 \pm 1$  vrs  $24 \pm 1$ ), no statistically significant difference was found in MMSE ( $29 \pm 1$  vrs  $28 \pm 1$ ).

**Conclusion:** These results show that impaired cerebrovascular reactivity (decline in BHI) can be predictor of cognitive decline as a result of microvessel disfunction.

*EARLY DIAGNOSTICS OF AD (PP-2-07)*

## THE ROLE OF NEUROPSYCHOLOGICAL ASSESSMENT IN THE DIAGNOSIS OF ALZHEIMER DEMENTIA

ŽAKIĆ MILAS D

*Psychiatric Hospital "Vrapče", Zagreb, Croatia  
goran.milas@pilar.hr*

Clinical criteria for the diagnosis of probable Alzheimer Disease requires that the dementia must be a) established by the clinical examination; b) documented by the Mini-Mental State Examination (MMSE) or some similar examination; and c) confirmed by neuropsychological tests.

There must be a deficit in two or more areas of cognition, one of which must be memory. Also, there must be seen progressive worsening of these functions- e.g. memory, problem solving, visual perception, attention, praxis. There are three major clinical applications of neuropsychological assessment to the diagnosis of Alzheimer Disease and other dementias: a) early detection, b) possible differential diagnosis, c) measuring severity and/or progression of the illness.

A useful guideline for the early neuropsychological presentation of Alzheimer Disease is memory impairment plus one other area of in cognitive functioning: constructional praxis, word fluency, verbal abstraction, visuo-motor performance. We will present typical progression of Alzheimer's Dementia across specific neuropsychological domains and associated neuropsychological tests.

***POSTER PRESENTATIONS***

**EPIDEMIOLOGY AND RISK FACTORS FOR  
ALZHEIMER'S DISEASE**

**PP-3-(01-07)**

## HIPERGLYCEMIA IN PATIENTS WITH ALZHEIMER'S DISEASE VS PATIENTS WITH VASCULAR DEMENTIA

BENE R, Trkanjec Z, Martinić Popović I, Strinek M, Ažman D, Demarin V

*Clinical Hospital "Sestre Milosrdnice", Zagreb, Croatia*  
*rbene@kbsm.hr*

**Background and aim:** Many recent studies show that, even if Diabetes mellitus (DM) did not increase the risk of incident Alzheimer's Disease (AD) in the Framingham cohort overall, DM may be a risk factor for AD in the absence of other known major AD risk factors. On the other hand, DM is a well known risk factor for developing Vascular Dementia (VaD). The aim of this study was to evaluate serum levels of glucose in patients with AD and VaD.

**Patients and method:** 47 patients with diagnosis of dementia were included in this study. AD was diagnosed in 23 patients (12 male, 11 female) and VaD in 24 patients (6 male, 18 female).

**Results:** In the group of patients with diagnosed Alzheimer's dementia, 19 patients had glucose values within normal range, while 4 patients had elevated levels of glucose. Mean value of total plasma glucose in this group was 5.92. In the group of patients with diagnosed vascular dementia, 17 patients had glucose values within normal range, while 7 patients had elevated levels of glucose. Mean value of glucose in this group was 6.36.

Glucose level in serum is higher in the group with vascular dementia but the difference is not statistically significant.

**Conclusion:** Our results indicate that increase in serum glucose level is a risk factor for both type of dementia, although slightly more pronounced in patients with vascular dementia.

## VASCULAR ORIGINS OF DEMENTIA

BUDIŠIĆ M, Jurasic MJ, Martinić Popović I, Morović S, Šerić V, Bene R, Demarin V

*Clinical Hospital "Sestre Milosrdnice", Zagreb, Croatia  
mbudisic@kbsm.hr*

**Background and aim:** Risk factor occurrence in different types of dementia may indicate as to which type it is evolving and to early identify subjects at risk of cognitive loss. The aim of this pilot study was to determine the possible associations of specific single or multiple vascular risk factors in patients with AD and VAD.

**Patients and methods:** Thirty-eight patients were included in the study: 16 with AD (8 men and 8 women, mean age 72.19 +- 6.86 years), and 22 with VAD (14 women and 8 men, mean age 70.20 +- 15.50 years). Besides routine risk factor assessment, ultrasound measurements on common carotid artery (CCA) was done using Aloka ProSound ALPHA 10, with 13 MHz linear probe.

**Results:** The frequency of RF among AD patients showed hyperlipoproteinaemia to be the most common (6 out of 16 patients) followed by arterial hypertension (AH) in 5/16, multiple RFs were present in 4 patients with AD (2 RF in one, and 3 or more RF in 3). In VAD group, AH was the most common RF (19 out of 22), followed by hyperlipoproteinaemia (12/22) and atrial fibrillation. Two RF were registered simultaneously in 10 patients and 3 patients had 3 or more RFs at the time of assessment.

**Conclusion:** Our results on a small sample of patients indicate that the frequency of vascular RFs tends to be more prominent in VAD, with multiple RFs (2 or more) present in more than half of the patients. Though vascular RFs contribute to both types of dementia, it is possible that the influence of particular multiple RF patterns could strongly contribute to pure vascular cognitive decline.

## HOSPITAL TREATMENT OF ALZHEIMER'S DISEASE IN ZAGREB

LEPPÉE M<sup>1</sup>, Čulig J<sup>1</sup>, Štimac D<sup>1</sup>, Orban M<sup>1</sup>, Erić M<sup>2</sup>, Paležac L<sup>3</sup>

<sup>1</sup> *Institute of the Public Health "Dr. Andrija Štampar", Zagreb, Croatia*

<sup>2</sup> *Medical Faculty University Novi Sad, Novi Sad, Serbia*

<sup>3</sup> *School of Medicine, University of Zagreb, Zagreb, Croatia*  
*marcel.leppee@stampar.hr*

**Aim:** Senile dementia of Alzheimer's type poses a major public health problem, as besides disabling it entails high costs for patient care, especially in the terminal stage of disease. The aim of the paper is to present and analyze the rate of Alzheimer's disease in Zagreb hospitals, and to point to the extent of this public health problem.

**Methods:** Data on the patients with Alzheimer's disease treated at Zagreb hospitals from 2000 till 2006 were included in the study. Data were obtained from the database of inpatient records, referring to particular persons and entered in respective forms for each individual hospitalized patient. The main diagnoses are described by the codes provided by ICD-X, the given diagnosis being G30 including F00\*.

**Results:** About hundred patients with Alzheimer's diseases, with 5500 hospital days, were treated at Zagreb hospitals per year. The average duration of treatment was 53.9 days. Alzheimer's disease was more common in the >70 age group, who accounted for 70% of all Alzheimer patients, and women accounted for 65% to 70% of Alzheimer patients, which could be ascribed to the higher life expectancy in women.

**Conclusion:** The aging trend observed in the general population is expected to result in an ever increasing incidence of Alzheimer's disease, thus requiring an interdisciplinary approach in the treatment of this disorder. The societies of Alzheimer patients and day-care facilities play an important role in the management of the disease, offering the patients medical care, helping them in daily activities, and assisting them in the process of socialization.

*EPIDEMIOLOGY AND RISK FACTORS FOR AD (PP-3-04)*

## DEMENTIA, IS THERE A VASCULAR ORIGIN?

MOROVIĆ S, Jurasić MJ, Martinić Popović I, Šerić V, Demarin V

*Clinical Hospital "Sestre Milosrdnice", Zagreb, Croatia*  
*smorovic@kbsm.hr*

**Background and aim:** As vascular component appears to be significant in both Alzheimer's disease (AD) and vascular dementia (VAD), in this pilot study we aimed to further explore vascular characteristics of patients with both types of cognitive decline using non-invasive neurosonological methods. Arterial beta stiffness index was selected as a potential risk factor for increased stroke occurrence

**Patients and methods:** There were 38 patients included in this study; 16 diagnosed with Alzheimer's disease (AD; 8 women, 8 men, aged  $72.19 \pm 6.86$  years) and 22 with vascular dementia (VAD; 14 women, 8 men, aged  $70.20 \pm 15.50$  years). Vascular risk factors were assessed and ultrasound measurements on common carotid artery (CCA) were performed using Aloka ProSound ALPHA 10 with 13 MHz linear probe.

**Results:** Among AD patients there were 5 with arterial hypertension (AH), 3 with atrial fibrillation (AF), 2 with diabetes mellitus (DM), 6 with hyperlipoproteinaemia and 1 smoker. Nineteen VAD patients had AH, arterial hypertensives, 6 had AF, 12 had hyperlipoproteinaemia and one was diabetic. We found no statistically significant differences between the groups regarding average body mass index (BMI), blood pressure, pulse pressure, intima media thickness (IMT), CCA diameter or arterial beta stiffness indices. However, the trend of BMI increase, slight blood and pulse pressure decrease, CCA diameter increase and beta stiffness index increase was noted in VAD patients.

**Conclusion:** Even though there was no significant difference found among the two explored subgroups of patients with dementia, there was a tendency of greater systolic and diastolic diameters noted in VAD as well as greater stiffness, especially when measured in the right CCA. This indicates that VAD patients have more prominent vascular changes that may help differentiate the type of dementia and further monitor these individuals.

## RISK ASSESSMENT AND PREVENTION OF ALZHEIMER'S DISEASE

PRESEČKI P<sup>1</sup>, Šain I<sup>1</sup>, Peharda T<sup>1</sup>, Breški D<sup>1</sup>, Mimica N<sup>2,3</sup>

<sup>1</sup> *Department of Psychiatry, General Hospital Pula, Pula, Croatia*

<sup>2</sup> *University Department of Psychiatry, Psychiatric Hospital "Vrapče", Zagreb, Croatia*

<sup>3</sup> *School of Medicine, University of Zagreb, Zagreb, Croatia*

*paola.presecki@gmail.com*

Alzheimer's disease (AD) devastate the patient and caused the emotional, physical and financial burden of the patients family. In clinical work we are faced with questions: "Why does AD occur in some people and not others? How can patients minimize their risk to avoid AD?". Aim of our work is to represent the risk assessment and prevention of AD based on an hypothetical story. Mrs. B states to the psychiatrist her preoccupation about getting AD like her father. What can we advise Mrs. B?

In addition to no modifiable genetic risk factors for AD, modifiable protective and risk factors for AD have been identified. For the evaluation of genetic risk in an individual, it is necessary to receive information about the diagnosis of AD and the age of onset in affected family members. The risk to a person who has a first-degree relative with late-onset AD is rather higher than the risk in the general population but much lower than the risk to someone with a familial pedigree of early-onset disease.

Familial late-onset pedigrees can occur with no responsible genes identified. Early-onset AD which may have a significant genetic component, exhibit autosomal dominant transmission over more than one generation. Early-onset AD and familial AD are not synonymous. Sporadic cases of early-onset AD can occur with no family history and no genetic mutations. Possible modifiable protective factors for AD are: social activities, physical activity, ongoing intellectual stimulation, higher education, moderate alcohol intake, anti – inflammatory drugs, omega-3 fatty acid intake, ginkgo biloba intake. Likely modifiable risk factors for AD including: vascular risk factors (smoking, diabetes, obesity, hypertension, cardiac bypass surgery, metabolic syndrome) and head injury. Each of this protective or risk factors can have most importance at diverse times in the life course of an individual.

Delaying the devastating symptoms of AD is becoming a realistic goal thanks to the progress in the identification of AD risk factors and their treatment. Genetic testing can be recommended to confirm the diagnosis of AD in individuals with a strong family history or clinical signs of dementia.



*EPIDEMIOLOGY AND RISK FACTORS FOR AD (PP-3-06)*

## EPIDEMIOLOGICAL REVIEW OF DEMENTIAS IN CROATIA

SILOBRČIĆ RADIĆ M, Hrabak-Žerjavić V

*Croatian National Institute of Public Health, Zagreb, Croatia*  
*maja.silobrcic-radic@hzjz.hr*

**Aim:** To present morbidity trends of dementias in Croatia analyzing cases registered in primary health care and hospitals during the several years period.

**Methods:** The health statistical data for Alzheimer's disease /dementia, delirium not induced by psychoactive substances /superimposed on dementia, vascular and unspecified dementia were presented by methods of descriptive epidemiology.

**Results:** In the primary health care, a total of 10,451 cases of dementia were registered in 2006; 87% persons were older than 65 years. In the period 2000-2006 a continued increasing trend in number of cases and rates of dementia is noticeable (141.7 - 235.5 / 100,000).

In 1995 and 1996 when Alzheimer's dementia in Croatia has been registered as a separate diagnostic category, the number of hospitalisations was extremely low (38, and 35 respectively). After the rapid increase in hospitalisations (1997), hospital morbidity has been oscillated. The highest, equal number of cases was registered in 2001, 2004 and 2005 (rate 6.9, 6.8 and 6.9). There were 252 hospitalisations (rate 5.7) in 2006. In 1995, 229 hospitalisations (rate 4.8) for delirium superimposed on dementia were recorded. Over the following years the increasing trend in the hospitalization varied in range from 414 (1999) to 674 cases (2003). In 2006, there were 467 hospitalisations (rate 10.5).

A total of 696 hospitalisations of vascular dementia were recorded in 1995. The hospitalisation trend was continually decreasing until 2000 (267 cases), and after that the hospitalisations slightly increased. In 2006, there were 407 hospitalisations (rate 9.2). In 1996 the highest number of hospitalisations (1,111, rate 23.2) for unspecified dementia was recorded. From 1997 (594 cases) an oscillating declining trend of hospitalisations has been noticed. There were 431 registered hospitalisations (rate 9.7) in 2006.

**Conclusion:** Several community studies indicate that 4-8% population 65+ years suffer from moderate to severe dementia and about the same percentage from mild dementia. In Croatia, according to primary health care data 1.3% population 65+ years suffered from dementia in 2006.

Also, the relatively low hospitalisation rate has been registered. This underreporting of dementias is mostly the result of incorrectly coding of dementias as well as hospitalising of old persons with somatic diseases as primary diagnosis.

*EPIDEMIOLOGY AND RISK FACTORS FOR AD (PP-3-07)*

## IS HIGH CHOLESTEROL LEVEL A RISK FACTOR FOR ALZHEIMER DISEASE?

TRKANJEC Z, Martinić Popović I, Bene R, Jurasić MJ, Lisak M, Šerić V, Demarin V

*Clinical Hospital "Sestre Milosrdnice", Zagreb, Croatia*  
*ztrkanjec@kbsm.hr*

The aim of this study was to evaluate HDL, LDL and total cholesterol serum levels in patients with AD and VaD. 111 (n = 111) patients with diagnosis of dementia were included in this study. AD was diagnosed in 64 patients and VaD in 47 patients.

We have analysed the level of total, LDL and HDL cholesterol in all patients. In the group of patients with diagnosed Alzheimer's dementia, 24 patients had cholesterol values within normal range, while 40 patients had elevated levels of cholesterol. Mean value of total plasma cholesterol in this group was 5.53 (SD = 1.2) with LDL plasma cholesterol of 3.64 (SD = 0.91), and HDL plasma cholesterol of 1.39 (SD = 0.34).

In the group of patients with diagnosed vascular dementia, 21 patients had cholesterol values within normal range, while 26 patients had elevated levels of cholesterol. In this group, mean value of total plasma cholesterol was 5.9 (SD = 1.04), plasma HDL cholesterol value of 1.44 (SD = 0.57) and LDL cholesterol value of 3.7 (SD = 0.88).

Total cholesterol, LDL cholesterol and HDL cholesterol levels are higher in the group with vascular dementia but the difference is not statistically significant.

Our results indicate that total and LDL cholesterol levels are risk factors for both type of dementia, although slightly more pronounced in patients with vascular dementia.



***POSTER PRESENTATIONS***

**CLINICAL CHARACTERISTICS OF ALZHEIMER'S DISEASE**

**AND CASE REPORT**

**PP-5-(01-04)**

## STRUCTURAL BRAIN ABNORMALITIES IN HOMICIDAL PATIENT: FORENSIC CASE REPORT

RADELJAK S, Žarković-Palijan T, Kovač M, Kovačević D

*Department of Forensic Psychiatry, Neuropsychiatric Hospital "Dr. Ivan Barbot",  
Popovača, Croatia*

**Background:** With the availability of new functional and structural neuroimaging techniques researchers have begun to localize brain areas that may be dysfunctional in offenders who are aggressive and violent. Recent studies have revealed that the areas associated with aggressive and/or violent behaviour, particularly impulsive acts, are located in the prefrontal cortex, medial temporal regions and limbic regions.

Key regions commonly found to be impaired in population of violent homicide offenders include prefrontal cortex, temporal gyrus, amygdala-hippocampal complex, and anterior cingulate cortex. These findings are explained in the context of negative emotion regulation.

Collectively, these studies suggest that impulsive violent acts stem from diminished recruitment of the prefrontal cortex "inhibition" systems. Arachnoid cysts are rare, benign space - occupying lesions formed by arachnoid membrane containing cerebrospinal fluid. The aetiology of psychotic disturbance can be due to a functional or organic condition. Recent findings have confirmed link between large arachnoid cysts compressing specific brain structures (prefrontal and temporal cortex) and development of psychotic symptoms. There is no scientific data in literature on the case of homicidal forensic patient with large arachnoidal cyst and lesion of frontal and temporal brain regions.

**Clinical presentation:** Here we present a first forensic clinical case of 29-year old man, a homicidal patient with arachnoidal cysts (Galassi III) occupying large portion of the right brain hemisphere. The patient is presented with acute psychotic behavior after he killed his father and was escorted to our department for psychiatric evaluation under the terms of Croatian Criminal and Mental health Law.

The patient was catatonic upon admission to the hospital and completely non-cooperative (mute). After interviewing patient's family members we have collected data regarding visible changes in his behavior in the last two years accompanied with frequent attacks of headache.

MRI study revealed voluminous mass in the right brain hemisphere compressing the adjacent brain structures, mainly right frontal and temporal cortex.

Brain scans revealed lesions in frontal and temporal cortex in the right brain hemisphere and lesion of the white brain matter in insular region of both hemispheres. Neurologic exam (EEG) showed cerebral dysrhythmic abnormalities above frontal and temporal brain regions. The patient was ordered antipsychotic therapy (olanzepin) and scheduled for further psychiatric observation.

**Conclusion:** The clinical case we have presented here represents highly probable link between structural brain changes as the result of large congenital arachnoidal cyst and homicidal forensic patient with psychotic symptoms, which are due to compressing effect of large arachnoid cyst on the right frontal and temporal brain regions and consequent lesion of those structures.

Furthermore, the lesion of the insular cortex white matter could explain lack of impulse control by frontal cortex inhibition of deep limbic brain structures. Moreover, we have shown multiple structural brain abnormalities commonly found to be impaired in violent/aggressive patients with negative emotion regulation, typical for impulsive homicide offenders.

Finally, we have presented first psychiatric forensic case closely related to structural brain abnormalities which supports neuroscientific hypothesis that impulsive homicide offenders lack the prefrontal "inhibitory" machinery that stop them from committing violent transgressions.

## THE CLINICAL APPROACH TO DEMENTIA

TREŠĆEC-IVIČIĆ M

*Specialized Neurological Office "Dr. Morana Trešćec-Ivičić", Zagreb, Croatia  
morana.ivicic@gmail.com*

The physician presented with a patient suffering from dementia and amnesia must adopt an examination technique designed to expose to full the intellectual defect. Suspicion of dementing disease is aroused when the patient presents multiple complaints that seem totally unrelated to one another and to any known syndrome, when irritability, nervousness and anxiety are vaguely described by a patient, the symptoms do not fit exactly into one of the major psychiatric syndromes, when the patient is incoherent in describing the illness and the reasons for consulting the physician.

Three categories of data are required for the definition and differential diagnosis of dementing brain disease:

1. A reliable history of the illness (anamnesis and heteroanamnesis)
2. Findings on mental examination, i.e. the so-called "mental status" as well as on the rest of the neurological examination, and GDS (Geriatric Depression Scale)
3. Ancillary examinations: CT scanning, MRI, EEG and appropriate laboratory procedures to rule out luetic, toxic, metabolic and endocrine disorders.

The primary responsibility of a physician is to diagnose the treatable forms of dementia and to institute appropriate methods of therapy. Once it is established that the patient has untreatable (degenerative disease of the brain) Alzheimer disease a responsible member of the family should be informed of the medical facts and prognosis (if the diagnosis is sufficiently certain for this to be done).

The case reports showing the above mentioned problematic will be presented.



CLINICAL CHARACTERISTICS OF AD AND CASE REPORT (PP-5-03)

## LOW VALUES OF VITAMIN B<sub>12</sub> AND SYMPTOMS OF DEMENTIA

UZUN S<sup>1</sup>, Kozumplik O<sup>1</sup>, Jakovljević M<sup>2,3</sup>

<sup>1</sup> University Department of Psychiatry, Psychiatric Hospital "Vrapče", Zagreb, Croatia

<sup>2</sup> Psychiatric Clinic, Clinical Hospital Center Zagreb, School of Medicine, University of Zagreb, Zagreb, Croatia

<sup>3</sup> School of Medicine, University of Zagreb, Zagreb, Croatia  
suzana.uzun@bolnica-vrapce.hr

The purpose of this case report is to emphasise the importance of controlling the value of vitamin B<sub>12</sub> in people suffering from dementia.

The patient at the age of 68 years are treated under the diagnosis of dementia during past year. She was hospitalized after she forgot to exclude gas stove at home and have a fire in the kitchen. Neighbours called the fire department and they had to forcefully enter the apartment, because the patient was scared and refuse to unlock the door. She was on the balcony and called help. At the start of hospital treatment laboratory analysis were done, electroencephalography (EEG) and CT brain. Values of laboratory parameters showed higher values of cholesterol and low value of vitamin B<sub>12</sub>. Findings CT brain showed atrophy of the brain. According to date from family members the patient began to "lose" a year ago, but she was work independently and physicians were not consulted.

Last month the patient become more anxious with slepp distrubences. The reduced value of vitamin B<sub>12</sub>, according to data from literature has impact on the cognitive functioning. After the admission therapy with flufenazinom started in daily dosage of 3 mg, zolpidem with the evening dosage of 5 mg and vitamin B<sub>12</sub> in the daily dosage of 500 mg every other day during one week, then once a week. In addition to the therapy the patient started to feel better, he slep better, and gradually has come to a better functioning of the patient.

Hospital treatment lasted 7 weeks, according to the revocation resumed regular outpatient controls that have noticed further improve the psychiatric state of the patient with better social functioning. Gradually dosage of flufenazin was reduced to 2 mg per day, zolpidem is excluded from the therapy, and vitamin B<sub>12</sub> therapy continued through 6 months. Ordinarily they controlled the value of vitamin B<sub>12</sub> and other laboratory parameters.

**References:**

1. Clarke R. B-vitamins and prevention of dementia, *Proc Nutr Soc*, 2008 Feb;67(1):75-81.
2. Clarke R, Birks J, Nexo E, Ueland PM, Schneede J, Scott J, Molloy A, Evans JG. Low vitamin B-12 status and risk of cognitive decline in older adults, *Am J Clin Nutr*, 2007 Nov;86(5):1384-91.
3. American Psychiatric Association. *DSM-IV-TR: Diagnostic and statistical manual of mental disorders*, revised fourth edn. Washington, DC: American Psychiatric Association, 2000.

*CLINICAL CHARACTERISTICS OF AD AND CASE REPORT (PP-5-04)*

## RISPERIDON IN TREATMENT OF DELUSIONS IN ALZHEIMER DISEASE

VIDAS KAĆANSKI A

*Psychiatric Hospital Rab, Rab, Croatia  
ankica.vidas-kacanski@ri.t-com.hr*

This is a case report of 80-years old female patient with Alzheimer disease with predominant psychotic expression. During treatment of psychotic expression of disease patient has been treated with various types, dosage and combination of antipsychotics. On all kinds of antipsychotics she has developed severe side effects of treatment. Because of insufficient remission, complex and progressive clinical picture, as well as because of pharmacotherapeutic resistance, during hospitalization implementation with risperidon has been proceeded.

With risperidon we have succeeded to reduce psychopathological elements with consequentially slowing down progression of disease. Even if during treatment with risperidon memory and cognitive dysfunction has not been healed, because of reducing of symptoms, physiological and social functions has been preserved during longer period of time.

With this case report we illustrate efficiency of risperidon in treatment of Alzheimer disease on patient with psychotic elements with presence of therapeutic resistance on other antipsychotics.



***POSTER PRESENTATIONS***

**PHARMACOTHERAPY OF DEMENTIA**

**PP-6-(01-02)**

## ANTIPSYCHOTIC TREATMENT OF DEMENTIA OF THE ALZHEIMER'S TYPE WITH PSYCHOTIC FEATURES ON A HOSPITAL WARD - COMPLIANCE WITH TREATMENT GUIDELINES

NOVY-RADONIĆ E<sup>1</sup>, Henigsberg N<sup>2</sup>, Erdeljić V<sup>3</sup>, Radonić E<sup>2</sup>

<sup>1</sup> *Neuropsychiatric Hospital "Dr. Ivan Barbot", Popovača, Croatia*

<sup>2</sup> *Croatian Institute for Brain Research, School of Medicine, University of Zagreb, Zagreb, Croatia*

<sup>3</sup> *Clinical Hospital Center Zagreb, School of Medicine, University of Zagreb, Zagreb, Croatia*

*ernestina.novy-radonic@zg.t-com.hr*

Psychotic symptoms are present in at least 25% of mildly demented and 50% of patients with advanced Alzheimer's disease. Treatment guidelines recommend the use of only one agent at time, targeted to the lowest possible dosage to control symptoms. Although newer atypical antipsychotic drugs offer decreased extrapyramidal symptoms, there is no clear evidence which indicates a superior efficacy or adverse event profile of atypical antipsychotics by comparison to conventional antipsychotics. Therefore, the decisions should be made on a case-by-case basis. The aim of this survey was to test the compliance with this treatment guidelines on a hospital ward.

Pharmacotherapy data were collected from medication lists of patients treated at The Female Prolonged Treatment Ward, Neuropsychiatric Hospital "Dr. Ivan Barbot", Popovaca. Included were the data for patients with Dementia of the Alzheimer's Type with Psychotic Features who showed at least minimal clinical improvement (CGI  $\geq$  3) and either none or minimal side effects that did not significantly interfere with patients functioning. Basic demographic and clinical data were collected as well (age, duration of illness, number of hospitalizations). The period of data collection covered all medication lists between years 2003 and 2008, and 51 patients fulfilled the criteria. Descriptive statistics was used to analyze demographic, clinical and pharmacotherapy data.

Prescribed antipsychotics included promazine, flufenazine, clozapine, risperidone and quetiapine. Majority of patients (70.59%) received monotherapy, and promazine was most frequently prescribed. In combination therapy, second antipsychotic was promazin for all patients. Delivered daily doses were close to lowest marketed doses.

Antipsychotic treatment during the observed period was in compliance with treatment guidelines. Since the inclusion criteria included at least minimal clinical improvement and none or minimal side effects, the data from this sample support the conclusion that both conventional and atypical antipsychotics have good safety and efficacy profiles in the treatment of psychotic features in Alzheimer's Dementia.

## TREATMENT OF PSYCHOTIC EPISODE IN PATIENT WITH DEMENTIA

UZUN S<sup>1</sup>, Kozumplik O<sup>1</sup>, Jakovljević M<sup>2,3</sup>

<sup>1</sup> University Department of Psychiatry, Psychiatric Hospital "Vrapče", Zagreb, Croatia

<sup>2</sup> Psychiatric Clinic, Clinical Hospital Center Zagreb, School of Medicine, University of Zagreb, Zagreb, Croatia

<sup>3</sup> School of Medicine, University of Zagreb, Zagreb, Croatia

suzana.uzun@bolnica-vrapce.hr

**Objective:** to present case report about patient with dementia and psychotic symptoms.

**Case report:** Patient V-K (female, born 1941), with diagnosis of dementia according to DSM-IV-TR, was hospitalized in Psychiatric Hospital Vrapče because of psychotic episode. At admission the patient had voices and delusions of reference, and was agitated and aggressive. The therapy with fluphenazine was initiated in daily dosage of 5 mg, with zolpidem 5 mg in the evening. Clinical Global Impression (CGI) and Positive and Negative Syndrome Scale (PANSS) were used in order to assess efficacy of treatment. The patient was told about possible side effects of therapy and was advised to report any side-effect.

Assessments were made at the beginning of treatment, and after that on a weekly basis until discharge from the hospital (after seven weeks).

The improvement, according to PANSS and CGI, was significant after three weeks of therapy, and remained significant until discharge from the hospital. There were no side-effects except mild sedation at the beginning of therapy. After discharge from the hospital, outpatient treatment was initiated. The dosage of fluphenazine was reduced to 2.5 mg, and the patient's condition remained stable.

**Conclusion:** fluphenazine was a good choice for the treatment of psychotic episode in the patient with dementia.

### References:

1. Kozumplik O, Uzun S, Folnegović Šmalc V. Brief psychiatric rating scale and Clinical global impressions in evaluation of symptoms of patients with schizoaffective disorder taking quetiapine versus haloperidol. *Schizophrenia Research* 2008; 98:164.



2. Uzun S, Kozumplik O, Folnegović Šmalc V. Patients with manic episode with aggression as dominant symptom: what can we do? *Schizophrenia Research* 2008; 98:175.
3. Kozumplik O, Uzun S, Folnegović Šmalc V, Jakovljević M. Nuspojave psihofarmaka: zašto su značajne i kako ih izbjeći?, Hrvatsko društvo za kliničku psihijatriju, Hrvatsko društvo za biologijsku psihijatriju i psihofarmakoterapiju, Tonimir, Zagreb, 2008.



***POSTER PRESENTATIONS***

**CARE FOR PEOPLE WITH DEMENTIA**

**PP-8-(01-04)**

*CARE FOR PEOPLE WITH DEMENTIA (PP-8-01)*

## INSTITUTIONAL AND NON-INSTITUTIONAL CARE FOR PERSONS WITH ALZHEIMER'S DEMENTIA

GLAMUZINA K

*Nursing Home for Older and Incapable People "Medveščak", Zagreb, Croatia  
krasanka.glamuzina@zg.htnet.hr*

Although all the values connected with a human being have been mentioned in the contemporary world, not enough has been done in creating the circumstances in which welfare for Alzheimer patients would be accepted in the way promoting the concept 'dignity of the ill'.

Apart from its medical character, illness is a striking welfare requirement and it can only be fully treated within a comprehensive engagement and understanding from the part of its welfare environment.

The purpose of this paper is to indicate the role of the state and local government in dealing with problems of the ill and problems of their family members, at present and in the future.

The proposals presented, would ensure 'good welfare' for the future, which is a fundamental human right and value, and an obligation of every organized state.

Some of its most welcome aspects are: quality of living, personal values, social support, humanity and dignity, managing symptoms, pain and emotions.

The account of basic conclusions is to ensure better understanding of importance and role of institution and non-institution, the role of family in welfare for the ill, and the effect of planning necessary professional help and support.

CARE FOR PEOPLE WITH DEMENTIA (PP-8-02)

## WHEN I NO LONGER KNOW WHO I AM, WHERE I AM...

GOLJAK J, Sučević V

*Psychiatric Hospital "Vrapče", Zagreb, Croatia  
klinika@bolnica-vrapce.hr*

The three phenomena which appear to the people of older age are:

- \* social isolation
- \* loss of independence and self initiative
- \* growing demands to the adaptation on unfamiliar situations

These problems have influence on quality of life both patients and their families. There fore it is necessary to include work therapist, physiotherapist, psychologist and educated nurses/technicians. New researches show how dementia can initiate creativity.

Working - occupation activities which patient can do in early and middle stage of disease are of extremely importance.

Working therapy provides and encourage patient to develop, reacquire and keeps skills that are necessary to participate in all aspects of life.

Sociotherapy is a part of integrate somatic, psychological and social treatment having the aim to integrate the older persons on the best possible way into the new situations.

## OUT-INSTITUTIONAL CARE FOR PEOPLE WITH ALZHEIMER'S DISEASE

MLADINOV M<sup>1,2,3</sup>, Mimica N<sup>1,3,4</sup>, Novy-Radonić E<sup>1,5</sup>, Treščec-Ivičić M<sup>1,6</sup>,  
Glamuzina K<sup>1,7</sup>, Dajčić M<sup>1</sup>, Šimić G<sup>1,2,3</sup>

<sup>1</sup> Alzheimer Disease Societies Croatia, Zagreb, Croatia

<sup>2</sup> Croatian Institute for Brain Research, School of Medicine, University of Zagreb,  
Zagreb, Croatia

<sup>3</sup> School of Medicine, University of Zagreb, Zagreb, Croatia

<sup>4</sup> University Department of Psychiatry, Psychiatric Hospital "Vrapče", Zagreb, Croatia

<sup>5</sup> Neuropsychiatric Hospital "Dr. Ivan Barboš", Popovača, Croatia

<sup>6</sup> Neurology Practice, Healthcare Centre Trnje, Zagreb, Croatia

<sup>7</sup> Nursing Home for Older and Incapable People "Medveščak", Zagreb, Croatia

mmladinov@hiim.hr

Patients with Alzheimer's disease have insufficient care provided by the Croatian health care system and there is a clear need for improving the support and care for these patients. The trend in dealing with this problem is home care. The advantage of this approach is the possibility for family members to participate in caregiving, as well as the opportunity for the patient to live at home in a well-known environment, where there are no needs for a major lifestyle change.

Unfortunately, because of the wide spectrum of cognitive and behavioral symptoms, it is difficult and challenging to provide care for patients with Alzheimer's disease. The aim of our project is to give education and training for caregivers in Croatia. Together with education, we are also trying to qualify care-givers to engage more in evaluation of the patient's state of health and to make plans for the treatment. We achieve this by organizing lectures and workshops covering important topics of caregiving like communication with patients, hygiene, preparing meals and eating, household duties, etc.

The end users of our program are professional caregivers, family members, social workers, nurses and volunteers. Apart from patients' benefit, our program is supposed to have a number of benefits for the society as well. Among others, the need for patients hospitalization is postponed, which decreases the health care expenses.

CARE FOR PEOPLE WITH DEMENTIA (PP-9-03)

## ALZHEIMER'S PATIENT AT GENERAL PSYCHIATRIC INTENSIVE CARE UNIT - CASE REPORT

REPOVEČKI S

*Psychiatric Hospital "Vrapče", Zagreb, Croatia  
senka.repovecki@zg.t-com.hr*

A female patient diagnosed with Alzheimer's dementia with late onset (F00.1) was hospitalized at the general psychiatric intensive care unit for 5 days during June 2008. She is 75 years old widow. Her only daughter demanded release from hospital despite medical recommendations.

The patient was admitted to hospital after having been settled in a general nursing home where she spent only 3 days. Before that she had been living alone for several years and the daughter could not report the beginning of the disease precisely, but she reports that her mother had started forgetting things much more in the last 6 months.

At admission the patient was very anxious, intimidated, bitter and paranoid towards her daughter, she was disoriented in terms of space and time. During her first day at the ward she didn't get around well.

Her daughter was the only family member that was coming to visit her. While talking to the daughter we noticed that she was surprisingly uninformed about the nature and the course of the disease. She was also quite unsatisfied with her mother's situation at the ward, in her opinion, other inmates were disturbing her mother, the room was too noisy and overcrowded, she founds her mother sleepy, slowed down and with poor appetite.

Difficulties occurring in everyday nursing practice at general psychiatric intensive care units when caring for an Alzheimer's patient:

- Overcrowded rooms (8 patients in a room)
- Lack of personnel for caring both for acutely psychotic patients and Alzheimer's patients
- Intolerance of other inmates
- In confuse states during the night even physical duels occur with other patients
- Alzheimer's patients are particularly sensitive to noise and regular violent situations and other psychotic patients understand poorly their strange mental condition and vice versa

The aim of this case report is to show the difficulties of Alzheimer's patients and their caregivers when these patients are admitted to general psychiatric wards with acutely psychotic patients. It is the nursing personnel that deals with most difficult situations, especially during night hours.



***POSTER PRESENTATIONS***

**NON-ALZHEIMER DEMENTIA**

**PP-9-(01-02)**

NON-ALZHEIMER DEMENTIA (PP-9-01)

## ALZHEIMER'S DEMENTIA: AS BARRIER BETWEEN EXTERNAL AND INTERNAL STIMULI

DRAGAČ-PAIĆ V<sup>1</sup>, Labura D<sup>1</sup>, Valić-Rajić D<sup>2</sup>

<sup>1</sup> *Psychiatric Hospital Ugljan, Ugljan, Croatia*

<sup>2</sup> *Croatian Institute for Health Insurance, Branch Office Zadar, Zadar, Croatia*  
*bernard.kotlar@zd.t-com.hr*

The patient is 57 years old Mrs. F.M., retired teacher, married, mother of two daughters, 28 and 24 years old, from middle class family, inhabitant of one smaller Dalmatian place, almost always in good health, cheerful and enthusiastic person, negative psychiatric heredity. She fell ill suddenly and Alzheimer's Dementia was diagnosed. CT of head was done and the atrophic lesions were found on cerebrum cortex, other diagnostics in order.

On the cognitive field memory disorder and space orientation disorder happened. She became intensively disorientated, she didn't often know where she was (for example, she didn't know her way home from the market). Sudden blockade of the receptors didn't allow the recognition of the situation. She became anxious, apathetic, as well as all the members of her family who used to be very harmonious and caring. Significant confusion developed. In her lucid moments she used to say for herself that she was having leaden legs, stiffen mouth, frozen brain and feeling like a snail.

Self-comprehension and self-experience were hardly comparable with the person she used to be. She started to be anxious; fear and depression intensified. Everyday functioning became burden for her. But that person wasn't completely aware of the difficulties as a result of her disease. Environment, especially family and dear friends experienced that situation very hard and dramatically. She wasn't the same person. She wasn't comparable with the former person.

The defects of qualitative life became more obvious, after two years so-called Initial phase of Alzheimer's Dementia developed in more manifested disease. Independence in life and functioning disappeared completely due to the serious damages of intellectual functions; reasoning, memory and memorizing in particular. Space disorientation was one of more serious damages. She couldn't find her bed; she had moving difficulties and began to fall in the house. Members of the household were very patient, they were taking care of her but they were exhausted, too. Her speech ability was reduced to muteness. She wasn't able to dress herself. Finally, her family asked for the professional medical help for patient and themselves.

After the fracture of the right hip she was hospitalized and surgery was done. She didn't return to her home. Later on she was taken care of in one private nursing home for disabled ones. Her family suffered a lot, so they regularly visited the psychiatrist.

During the 3.5 years period from the first signs of Alzheimer's dementia the patient died of hypostatic pneumonia.

Even today, her family visits the psychiatrist. All family members feel guilt regarding her, making mistakes about dear person who they lost.

NON-ALZHEIMER DEMENTIA (PP-9-02)

## DIFFERENTIAL DIAGNOSTIC DILEMMA - VASCULAR DEMENTIA OR ORGANIC AFFECTIVE DISORDER

LOVROVIĆ D, Juretić-Pešćica M, Bosanac D

*Psychiatric Hospital "Lopača", Dražice, Croatia*  
*dlovrovic@vip.hr*

**Objective:** To point out the necessity of differential diagnostic considerations of affective states in demented patients.

**Method:** A 79-year-old patient with vascular dementia (VaD) was studied. Variations in the sense of amnesic syndrome of dementia type accompanied by executive functioning disorder were recorded. Patient had a Hachinski score of 12. Clinical history indicated cerebrovascular disease, which was verified by diagnostic analysis. Subject satisfied criteria for VaD. Diagnostic interview pointed at depressive affect as dominant characteristic of clinical picture. Also, an organic affective disorder was taken into differential diagnostic consideration. Psychological evaluation indicated narrow and specific organically conditioned deficit of visual memory, while other memory modalities were lowered in accordance with chronological age. Behavioural and emotional deficit in the sense of apathy, mild communication difficulties and reduced need for social contacts was also recorded. Due to the entire clinical picture, an antidepressive drug was introduced in therapy and within the period of two weeks it was adjusted to therapy dose.

**Result:** Within the period of one month, affective improvement and deficit retraction were evident. At the initial stage of therapy, as well as later on, MMTE testing was done. Result of the first testing indicated dementia, whereas retesting before discharge refuted the previous results.

**Conclusion:** The case is intriguing concerning the diagnostics itself. What in the initial clinical picture appeared as dementia later on proved to be pseudodementia camouflaged by depressive symptoms and aloofness towards the actual situation. Introduction of antidepressive drug resulted in retraction of anhedony and depressed mood, whereas cognitive functions were in accordance with age.

***POSTER PRESENTATION***

**ALZHEIMER'S DISEASE ASSOCIATIONS**

**AND SUPPORT GROUPS**

**PP-11-(01)**

*AD ASSOCIATIONS AND SUPPORT GROUPS (PP-11-01)*

## ALZHEIMER DISEASE SOCIETIES CROATIA - OUR PLANS FOR NEAR FUTURE

MIMICA N<sup>1</sup>, Dajčić M<sup>2</sup>, Šimić G<sup>3</sup>, Mladinov M<sup>3</sup>, Glamuzina K<sup>4</sup>, Novy-Radonić E<sup>5</sup>,  
Trešćec-Ivičić M<sup>6</sup>, Vidas Kačanski A<sup>7</sup>

<sup>1</sup> *University Department of Psychiatry, Psychiatric Hospital Vrapče, Zagreb, Croatia*

<sup>2</sup> *Alzheimer Disease Societies Croatia, Zagreb, Croatia*

<sup>3</sup> *Croatian Institute for Brain Research, Medical School, University of Zagreb, Zagreb, Croatia*

<sup>4</sup> *Nursing Home for Older and Incapable People "Medveščak", Zagreb, Croatia*

<sup>5</sup> *Neuropsychiatric Hospital "Dr. Ivan Barbot", Popovača, Croatia*

<sup>6</sup> *Specialized Neurological Office "Dr. Morana Trešćec-Ivičić", Zagreb, Croatia*

<sup>7</sup> *Psychiatric Hospital Rab, Rab, Croatia*

*ninoslav.mimica@bolnica-vrapce.hr*

After nine years of struggling for a adequate place for our office the Alzheimer Disease Societies Croatia (ADSC) has got, from the Government of Zagreb, the nice place in the centre of the town, only 5 minutes walk from the main square. We are very happy with this location, but due to fact that this office (in Vlaška 24a) was for many years out of function, we really need to renovate the whole place. So, we are going to ask for money from the Government, but also from all other possible sponsors, including the pharmaceutical industry. We also need to buy furniture and all technical equipment for our office. We will try to raise the money with applying to some projects and with some humanitarian events and donations.

In the next years we will try to improve rights regarding persons with dementia (PWD). Namely, we are going to fight for the right that the PWD have antidementia drugs on reimbursement list. At the moment, in Croatia, all PWD need to buy those drugs. There is also problem in Croatia that PWD have no status of handicapped people or people with special needs and according to that they can not have adequate rights.

There are no Nursing homes for PWD in Croatia, and this is of course a great problem, so the ADSC is going to lobby for change. In meantime we are asking for the change of the law and possibility that every Old people home in Croatia must admit a small percentage of PWD.

Because our main goal will still remain the same - we will continue to help PWD, their families and careers, we will fight stigma, and bring education to target and general population. When our new office in Vlaška 24a will be in order our Counseling centre will work more frequently, and more educative lectures will be given there.

*NEW ASPECTS IN BASIC RESEARCH OF ALZHEIMER'S DISEASE (OP-B-01)*

We are going to continue with celebrating the World Alzheimer's day (on September 21<sup>st</sup>), but in the future we will move to the main square. Our web-site ([www.alzheimer.hr](http://www.alzheimer.hr)) needs updates all the time, and of course we are going to answer to our e-mail ([alzheimer@alzheimer.hr](mailto:alzheimer@alzheimer.hr)) and SOS-telephone (091/ 569 16 60) regularly. Every two years we are going to organize the Croatian Congress on Alzheimer's disease with international participation.

We will also continue to work internationally, so Croatian representative will go every year to Alzheimer's Disease International Conferences, and every two years we are going to organize the Croatian Congress on Alzheimer's disease with international participation.





***POSTER PRESENTATIONS***

**FREE TOPICS**

**PP-12-(01-04)**

FREE TOPICS (PP-12-01)

## DO WE KNOW THE SIMPTOMS OF DEMENTIA?

GJURČEVIĆ M, Gabud Gjurčević S, Kokanović B

*General Hospital "Dr. Josip Benčević", Slavonski Brod, Croatia  
mato.gjurcevic@sb.t-com.hr*

Female patient L. LJ. born 1939, 4 grade of elementary school, retired person, married, mother of three children, hypertonic.

From case history and medical documentation:

A year before hospital treatment patient started complaining of dizziness, weakness, unrest, uncertainty, sideslip, vision disorders, double pictures, and lethargy. Members of her family noticed her slow movements and speech. Therefore neurological, neuroradiological and psychological analysis has been performed.

Brain CT: no signs of acute ischemia and haemorrhage, mild cortical atrophy. CDFI of carotides - stenosis 50% ACI left side, 20% right side.

Psychological analysis: cognitive and mnesic functions are on the below average level. Mental and motoric functioning flaringly slow.

Neurological finding: Dg: Dementia syndrome, Sy depressivum.

Because of depressive symptoms patient is in psychiatric treatment since June 2006 under dg: Chronicle depressive psychosyndrom, th: tianeptin and sulpirid.

Despite regular intake of prescribed medicaments, patients condition didn't improve what is perceived in control examinations. During examination in urgent outpatient clinic of clinical hospital, hospitalization is recommended but because of filled hospital section, another institution was recommended to patient, possibly PB Popovača.

Hospitalized in October 2006 after examination in urgent psychiatric outpatient clinic, at the psychiatry ward in Slavonski Brod hospital.

After use psychiatric medicaments (sertraline, maprotilin, sulpirid, diazepam), patient has better basic mood, and depressive symptoms are reduced. But, permanently is present amimic face, adynamism, slow and uncertain pace, double pictures, postural instability, hard word pronouncing. We performed MMS: 25/30.

After neurologist consultation, she is transferred to neurological hospital section because of suspicious on Parkinson's disease and beginning of antiparkinson treatment medicaments.

From neurologist discharge summary: dominating in clinical finding are poorness of movements, hypomimical face expression, dysatria, postural uncertainty, what suggests disorder of exstrapiramidal motor control. MMS 25/30 excludes dementia.

We did not perceive expected improvement of motorical symptoms with levodopa therapy and with adding agonists dopaminergic receptors. We diagnosed atypical Parkinsonism, which is confirmed at KBC Rebro after extensive hospital diagnostic analysis.

This patient's case initiated consideration:

- insufficient knowing symptoms and lightly diagnosing dementia.

FREE TOPICS (PP-12-02)

## CEREBRAL AMYLOID ANGIOPATHY AS CAUSE OF MULTIPLE INTRACEREBRAL HAEMATOMAS - CASE REPORT

KIĐEMET-PISKAČ S, Detoni J

*General Hospital Varaždin, Varaždin, Croatia  
spiskac@gmail.com*

Male patient, age 75, admitted on neurology department with signs of quantitative disturbed consciousness in a range of comma. He had deviation of the head and eye bulbuses to the right, bilateral positive Babinski sign, and extreme high blood pressure. Neuroradiological procedure showed multiple intracerebral haematomas of right temporal lobe, left frontal lobe, bilateral parietal lobe, and one small haematoma of right basal ganglia area...

According to literature, spontaneous multiple intracerebral haematomas of different arterial localization are rare with incidence of 2-3 % of all hemorrhagic strokes. Provocative pathological and pathogenetical mechanism is unknown. Usually, they are connected with haematological diseases, anticoagulant treatment, inadequate medication usage, and cerebral amyloid angiopathy.

Our patient didn't have any of mentioned provocative pathological factors; heteroanamnestic date revealed gradual development of dementia and occasionally higher blood pressure without signs of hypertonic changes of eye fundus. In our opinion, multiple intracerebrale haematomas of these patients connected with cerebral amyloid angiopathy (CAA).

There is a connection between CAA and beta amyloid accumulation in tunica media and adventitia of small and medium large blood vessels of cerebral cortex and leptomeningeal tissues. Although, it could be asymptomatic, CAA is mainly likely connected with dementia, transient cerebral disturbances and intracerebral haemorrhages.

Patophysiological deposition of amyloid in tunica media and adventitia of blood vessels, leads to thinning of basal membrane shrinkage of blood vessel and fragmentation of lamina elastica interna. Fibrinoid necrosis and formation of microaneurysmatic lesions comes out of mentioned patophysiological process. Conclusively, that could provoke intracerebral haemorrhage, especially of lobar localisation as we showed in this case report.

FREE TOPICS (PP-12-03)

## COGNITIVE CHANGES AND GENETIC MARKERS IN AMYOTROPHIC LATERAL SCLEROSIS: PRELIMINARY RESULTS OF A PROSPECTIVE STUDY

LIŠČIĆ MR<sup>1</sup>, Štukovnik V<sup>2</sup>, Babić A<sup>3</sup>, Nedić G<sup>3</sup>, Mustapić M<sup>3</sup>, Pivac N<sup>3</sup>, Zidar J<sup>2</sup>,  
Mück-Šeler D<sup>3</sup>

<sup>1</sup> Institute for Medical Research and Occupational Health, Zagreb, Croatia

<sup>2</sup> Institute of Clinical Neurophysiology, University Clinical Centre Ljubljana,  
Ljubljana, Slovenia

<sup>3</sup> Division of Molecular Medicine, "Ruđer Bošković" Institute, Zagreb, Croatia  
rliscic@imi.hr

**Background:** Amyotrophic lateral sclerosis (ALS) is a progressive and ultimately fatal neurodegenerative disease. The overlap between ALS and dementia is demonstrated by the presence of cognitive, behavioral dysfunction and change of personality in up to 50% of ALS patients. Behavioral features are mostly due to changes in catecholaminergic and serotonergic system.

**Objective:** To identify genetic correlates of cognitive changes with the emphasis on executive function in ALS patients.

**Materials and methods:** In a prospective study, two tests of executive functions (Controlled oral word association - FAS test; Tower of London (TOL), and a screening instrument for dementia (Dementia rating scale II, DRSII) were applied on 15 ALS patients (9 male, 60.5 ± 5.8 years), as defined by El Escorial Criteria.

T-1021 C polymorphism of DBH gene, 102 C/T polymorphism of 5-HT<sub>2A</sub> receptor gene, val<sup>66</sup>met (G/A) polymorphism of COMT gene and val<sup>158/108</sup>met (G/A) polymorphism of BDNF gene were correlated with the cognitive tests.

**Results:** ALS patients carrying GG, GA and AA genotype of the BDNF gene polymorphism were 73%, 20% and 7%, respectively. The frequency of GG, GA, AA genotype for COMT gene polymorphism was 33%, 53% and 14%, respectively. The DBH gene polymorphism distribution was 47%, 47% and 6% for CC, CT and TT genotype, respectively.

The frequency of CC, CT, TT genotype for 5-HT<sub>2A</sub> gene polymorphism was 30%, 60% and 10%, respectively. 57% of patients showed deficient word generation capability, 21% were impaired on TOL and 33% on total move score. 40% were impaired at DRS II Conceptualization subtest and 20% on DRS-II Memory subtest. No significant ( $p > 0.05$ ) relationship between genes polymorphism and variables of executive functional tests was found.

**Conclusion:** The preliminary findings reveal a tendency for executive cognitive deficits in group of ALS patients. The genetic variation may influence behavior and memory conditions. Further studies on a larger sample, however, are needed in order to confirm it.

FREE TOPICS (PP-12-04)

## COGNITIVE IMPAIRMENTS AND DRUG ADDICTION: A STUDY CASE

RUŽIĆ K<sup>1</sup>, Tatalović Vorkapić S<sup>2</sup>, Dadić Hero E<sup>3</sup>, Lovrović D<sup>4</sup>, Bosanac D<sup>4</sup>

<sup>1</sup> *Psychiatry Department, University Hospital Rijeka, Rijeka, Croatia*

<sup>2</sup> *Teacher Education College Rijeka, Rijeka, Croatia*

<sup>3</sup> *Faculty of Medicine, Department of Social Medicine, Rijeka, Croatia*

<sup>4</sup> *Psychiatric Hospital "Lopača", Dražice, Croatia*

*klementina.ruzic@ri.htnet.hr*

Considering the frequently determined connection between different cognitive impairments (from simple ones to those reflected dementia) and drug abuse, the aim of this case study was to describe the complex relationship between drug addiction and specific cognitive impairments. So, focus of this analysis was on anamnesis data and diagnostic findings.

The patient was 42 years old male, highly educated and married. He was very productive in his field of work, working as media editor. The anamnesis data were predominated with alcohol and all kind of drug abuse, even from high school days. He went through several drug abuse treatments with periodic recidivisms. For the past seven years, besides the methadone therapy that has been prescribed to him, he occasionally consumed heroin.

On the admission day at Emergency Ambulance, patient came unusually confused with speech difficulties and febrile (40°C). During medical exam he falls into coma because of what he was hospitalized at Intensive Care Unit (he was intubed for 31 days and lost 30 kilos). After methadone has been administered, he got confused with hallucinations. He has been discharged from neurology Department with Dg. Coma Cerebrale. On Psychiatry Department after methadone has been cancelled, the patient state has been normalized but with evident mnemonic and intellectual deficits.

Psychological assessment showed psychopathic and hysteric personality structure with several cognitive impairments in: concentration, short-term memory, visual-constructive and visual-motor abilities, abstract thought and planned behavior, that generally reflected organic cerebral dysfunction. The case was discussed in terms of addictive and dementia symptomatology.





***AUTHOR'S INDEX***

van Achterberg T .....	48
Ackl N .....	80
Apostolovski D .....	50
Ažman D .....	90
Babić A .....	131
Bader B .....	80
Bašić-Kes V .....	83, 87
Bene R .....	84, 90, 91, 97
Bilić D .....	85
Boban M .....	80
Bosanac D .....	36, 122, 133
Bosnar Puretić M .....	87
Bottema B .....	48
Breški D .....	94
Budišić M .....	91
Cooley M .....	18
Čulig J .....	92
Dadić Hero E .....	133
Dajčić M .....	58, 62, 116, 124
Dajčić T .....	58
Danek A .....	28, 80
Degen S .....	48
Dejanović N .....	82
Demarin V .....	16, 83, 84, 87, 90, 91, 93, 97
Detoni J .....	130
Devčić S .....	40
Deželjin M .....	21
Downs M .....	44
Dragač-Paić V .....	120
Drandić V .....	50

Drašković I .....	44, 48
Erdeljić V .....	108
Erić M .....	92
Folnegović Grošić P .....	66
Folnegović Šmalc V .....	19, 21, 66, 74
Gabud Gjurčević S .....	128
Gilić A .....	49
Gjurčević M .....	128
Glamuzina K .....	62, 114, 116, 124
Glamuzina Lj .....	40
Goate A .....	16, 70, 71
Goljak J .....	115
Graham N .....	42
Grbić K .....	80
Grubišić Juhas V .....	50
Harašić K .....	43
Hećimović S .....	16, 70, 71
Henigsberg N .....	68, 108
Hof PR .....	80
Hoyer S .....	23
Hrabak-Žerjavić V .....	95
Ivičić N .....	18
Jakovljević M .....	38, 103, 110
Jonovska S .....	85
Josipović-Jelić Ž .....	56
Jukić V .....	29
Jurasić MJ .....	84, 91, 93, 97
Juretić-Peščica M .....	36, 122
Kalember P .....	68
Kapur L .....	20
Kidemet-Piskač S .....	130
Kogoj A .....	60

Kokanović B .....	128
Kostović I .....	77
Košiček M .....	16, 70, 71
Kovač M .....	100
Kovačević D .....	100
Kovačić Z .....	68
Kozumplik O .....	103, 110
Labura D .....	120
Lacković Z .....	76
Laklija M .....	51
Leppée M.....	92
Lisak M .....	97
Liščić MR .....	131
Lovrenčić Huzjan A .....	87
Lovrović D .....	122, 133
Lucassen P .....	48
Lušić I .....	39
Lykken GI .....	18
Malnar M .....	16, 71
Martinić Popović I .....	84, 90, 91, 93, 97
Mihanović M .....	40
Milić Babić M .....	51
Mimica N .....	19, 21, 62, 74, 94, 116, 124
Mladinov M .....	62, 80, 116, 124
Momčilović B .....	18
Morović S .....	83, 84, 91, 93
Mück-Šeler D .....	19, 21, 74, 131
Mustapić M .....	19, 21, 74, 131
Nedić G .....	21, 131
Novy-Radonić E .....	62, 108, 116, 124
Olde Rikkert M.....	48
Orban M .....	92

Oruč L .....	20
Osmanović J .....	23, 72
Otero M .....	48
Paležac L .....	92
Pavlović E .....	85
Peharda T .....	94
Petanjek Z .....	77
Petek Tarnik I .....	16
Pivac N .....	19, 21, 74, 131
Pletikosa M .....	49
Pojškić N .....	20
Prejac J .....	18
Presečki P .....	19, 74, 94
Radeljak S .....	100
Radman I.....	30
Radonić E .....	108
Radoš M.....	68
Radovančević Lj .....	54
Rebić V .....	76
Repovečki S .....	117
Riederer P .....	23, 72, 76
Rusac S .....	51
Ružić K .....	133
Silobrčić Radić M .....	95
Strinek M .....	90
Sučević V .....	115
Süßmair C .....	80
Svrddlin P .....	40
Šain I .....	94
Šalković-Petrišić M .....	23, 72
Šerić V .....	91, 93, 97
Šimić G .....	26, 62, 80, 116, 124

Škeljo A .....	49
Šoljan I .....	56
Štimac D .....	92
Štukovnik V .....	131
Tatalović Vorkapić S .....	133
Titlić M .....	16
Trešćec-Ivičić M .....	62, 102, 116, 124
Trkanjec Z .....	16, 84, 90, 97
Uylings HBM .....	77
Uzun S .....	103, 110
Valić-Rajić D .....	120
Varda R .....	66
Vernooij-Dassen M .....	44, 48
Vidas Kačanski A .....	62, 64, 105, 124
Vitezić D .....	32
Windisch M .....	33
Zavoreo I .....	87
Zeba M .....	77
Zidar J .....	131
Žakić Milas D .....	88
Žarković-Palijan T .....	100

### **ACKNOWLEDGEMENT**

Organizing and Scientific Committee  
would like to express their gratitude  
to all institutions and firms who made this  
**4<sup>th</sup> Croatian Congress on Alzheimer's Disease**  
**with international participation,**  
and its scientific and social events possible.



