



**ROMANIAN CONFERENCE
OF NEUROSURGERY**
with
International Participation



Under the High Patronage of the President of Romania

Mr. Traian Basescu



11-eme Cours Francophone en Roumanie

ABSTRACT BOOK



SINAIA SPA - PRAHOVA VALLEY

27.09-01.10.2006

ALCATOUR S.R.L.

Bd. Carol I, no. 27, Sinaia, ROMANIA
Tel.: +40.244.311.910
e-mail: office@alcatour.ro

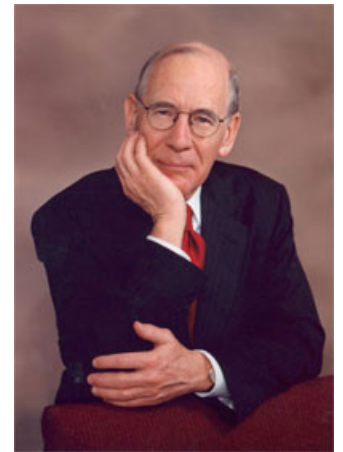
Hotel INTERNATIONAL

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GLANCE PROGRAMME

DATE	HOUR	CONFERENCE ROOM FORUM - EBWE PHARMA	CONFERENCE ROOM INTERNATIONAL	HOTEL LOBBY
27.09.	18:00-20:00	REGISTRATION - Cours Francophone		
	20:00	Dîner officiel - Restaurant Taverna Sarbului		
28.09.	08:30		Cours Francophone	
	12:30	Déjeuner		
	13:30		Cours Francophone	
	18:30		Fin du Cours et conclusions	
	16:00-20:00	REGISTRATION FOR THE CONFERENCE		
	20:00	WELCOME PARTY - INTERNATIONAL HOTEL RESTAURANT		
29.09.	08:30	OFFICIAL OPENING OF THE CONFERENCE		
	09:30	First Session. Part One: Gliomas		
	11:00	Coffee break		
	11:15	Honorary Member of RSN		
	11:30	Second Session : Neuroprotection	4th Session: Vascular	
	13:00	Working Lunch		
	14:00	Third session: Spinal	Resident round table and future in Neurosurgery	
	15:30	Coffee break		
	16:30			Poster Session
	17:00	Business Meeting RSN		
	20:00	GALA DINNER - INTERNATIONAL HOTEL RESTAURANT		
30.09.	08:30	First session. Part Two: Gliomas	Low back pain - round table	
	10:30	Coffee Break		
	11:00	Fifth session: Varia	Sixth session: Neurorehabilitation	
	13:00	Conclusions and closing remarks		
	13:30	Lunch		
	15:00	FREE AFTERNOON (Optional): Sightseeing Peles Palace		
	19:30	Rustic dinner at "Cutitu d'Argint" Restaurant		
01.10.	12:00	Departure of the participants		

HONORARY MEMBER of R.S.N.
Prof. Peter McLaren Black, M.D., Ph.D.



ABBREVIATED CURRICULUM VITAE
July 2006

Name: Peter McLaren Black, M.D., Ph.D.
Franc D. Ingraham Professor of Neurosurgery
Harvard Medical School

Initial Education:

1966 A.B. Harvard College, Cambridge, MA
1970 M.D. C.M. McGill University, Montreal, Canada
1978 Ph.D. Georgetown University, Washington, DC (Philosophy)

Training:

1970-1980 Neurosurgery Massachusetts General Hospital, Boston, MA

Professional Positions:

1980-1987 Attending in Neurosurgery, Massachusetts General Hospital, Boston, MA
1987- Professor of Neurosurgery and Chief, Brigham & Women's Hospital and
Children's Hospital, Boston, MA

Major Committee Assignments:

International, National and Regional:

1981 Consultant to the President's Commission for the Study of Ethical
Problems in Medicine and Biomedical and Behavioral Research
1995- Education Committee, World Federation of Neurosurgical Societies

- 1997 Neuro-Oncology Committee, World Federation of Neurosurgical Societies
- 1997 Liaison Committee, World Federation of Neurosurgical Societies
- 1997 Federation News Committee, World Federation of Neurosurgical Societies
- 2001 International Advisory Committee, American Association of Neurological Surgeons
- 2000- Chair, Bylaws Committee, World Federation of Neurosurgical Societies

Professional Societies:

- 1991- President, Boston Society of Neurology and Psychiatry
- 1993-1996 Chairman, Joint Section on Tumors, American Association of Neurological Surgeons and the Congress of Neurological Surgeons
- 1993- Member, Board of Trustees, Episcopal Divinity School
- 1994-1995 President, Society of University Neurosurgeons
- 1995 Annual Meeting Chairman, American Academy of Neurological Surgery

Editorial Boards:

- 1987-1990 Editor-in-Chief, Clinical Neurosurgery
- 1987- Ad Hoc Reviewer, The New England Journal of Medicine
- 1993- Editorial Board, Critical Reviews of Neurosurgery
- 1993- Associate Editor, Journal of Neuro-Oncology
- 1994- Chairman, Editorial Board, Neurosurgery
- 1994- Editorial Board, Techniques in Neurosurgery
- 1994-1998 Editorial Committee, Journal of Neurology, Neurosurgery, and Psychiatry

Awards and Honors:

- 1960 Associate of the Royal Conservatory of Toronto, Solo Performer, Piano
- 1964-1966 University Scholarship, Harvard College
- 1968-1970 University Scholarship, McGill University
- 1970 J. Francis Williams Prize in Medicine, McGill University
- 1973-1978 Teacher-Investigator Award, NINDS

1988	Fellowship of the American College of Surgeons
1993-	Best Doctors in America
1995-	Distinguished Service Award, Joint Section on Tumors, American Association of Neurological Surgeons and Congress of Neurological Surgeons
1997	Dennis Thomson Compassionate Care Scholar, Brigham and Women's Hospital
1999	Honorary Membership in Federation of Latin American Neurosurgical Societies
2000	Honorary Member, Turkish Neurosurgical Society
2004	Honored Guest, International Hands-On Workshop, Naples, Italy
2004	Pioneer Award, Children's Brain Tumor Foundation
2004	Honored Guest, Spanish Society of Skull Base Surgery
2004	Honored Guest, S. African 18th Biennial Congress of Neurosurgery
2005	ROFEH International Humanitarian Award
2006	Honored Guest, Congress of Neurological Surgeons Annual Meeting

Report of Research:

Dr. Black's major research interests are in brain tumor biology and treatment; brain imaging and image-guided surgery; and cerebrospinal fluid physiology and hydrocephalus. He directs a molecular biology brain tumor laboratory (the Black Laboratory) that has 6-10 members and attempts to use anti-angiogenic therapy, blockade of receptor mechanisms and better understanding of the cell cycle to stop tumor growth. It is committed to using human brain tumor tissue to try to find new treatments for brain and pituitary tumors. He also has an extensive clinical research program in brain tumors and in hydrocephalus: through improved imaging, 3D- reconstruction, intraoperative MRI, and cortical mapping he tries to understand brain function better and do less invasive, more effective surgery.

Present Research Funding Information:

NIH/ NCI [PI: Martuza]

09/01/01-8/30/06

Clinical Research Training Program in Neuro- Oncology

Mentor

The goal of this project is to train physician-scientists in brain tumor biology and experimental Therapeutics.

The Brain Science Foundation
Meningioma: Research, Treatment and Patient Care Initiative
This is a multi-disciplinary program employing basic science, genetics, epidemiology and imaging techniques to improve the diagnosis and treatment of meningioma.

10/1/03-9/30/08

Program Director

The Hagerty Foundation
Center for Glioma Research
The focus of this program is to advance research in molecular diagnostics, surgical techniques and novel therapies to improve the long-term outcome of patients with malignant and benign gliomas.

1/1/04-12/31/06

Program Director

NIH/NCI
1R01CA108633 [PI:Chakravarti]
Signal Transduction Pathways in Glioblastoma
The major goal of this project is to examine the role of P13K signaling in treatment resistance in GBM.

05/01/05-4/30/10

Co-investigator

NIH/NCI
1U01CA81452 [PI: Kieran]
Harvard Pediatric Brain Tumor Center
The goal of this project is to establish a pediatric brain tumor clinical trials center as part of a NCI consortium.

04/01/04-03/31/09

Co-Investigator

NIH/NCRR
P41RR13218 [PI: Kikinis]
Neuroimaging Analysis Center
The goal of this project is to establish a clinical neuroimaging analysis center within the Surgical Planning Laboratory to develop novel platforms to integrate imaging modalities into surgery.

08/01/03-07/31/08

Co-Investigator

NIH/NINDS
1R01LM007861 [PI:Zou]
Improved Tumor Resection in Image-Guided Neurosurgery
This proposal uses three-dimensional reconstruction to improve removal of low-grade gliomas.

9/30/03-9/29/06

Co-Investigator

1RO1108633 [PI: Black]

Meningioma: Risk Factors and Quality of Life

This is an integrated RO1 studying the epidemiology of meningiomas with a primary focus on exposure to ionizing radiation and hormones and additional risk factors.

Self Report of Teaching

Dr. Black teaches post-doctoral neurosurgical fellows each year in clinical brain tumor work, image-guided surgery, or brain tumor research, he has trained 62 fellows from 18 countries over 25 years. He gives a month long course called Neurosurgery as Neuroscience to Harvard Medical School fourth year students and co-direct the medical student clerkships on our service. He teaches in a number of postgraduate courses for fully trained neurosurgeons including co-directing an annual post-graduate course in brain tumors. He is part of the education committee of the World Federation of Neurosurgical Society, teaching neurosurgery in developing countries.

Visiting Professorships / Named Lectureships:

- 2003 Japan American Neurological Friendship Lecture – San Diego, CA
- 2003 Invited Speaker, American Society of Neuroradiology, Washington, D.C.
- 2003 Grand Rounds, Georgetown University, Washington, D.C.
- 2003 Keynote Speaker, 3rd International Symposium of Brain Tumor Pathology, Tokyo, Japan
- 2003 Invited Speaker, American Brain Tumor Association, Chicago, IL
- 2003 Invited Speaker, Harvard Medical Alumni Association, Boston, MA
- 2003 Invited Speaker, Cleveland Clinic International Symposium, Cleveland, OH
- 2003 Invited Speaker, German Society for Computer & Robotic Assisted Surgery, Nerumberg, Germany
- 2002 Invited Speaker, Tuberous Sclerosis Alliance, Boston, MA
- 2004 Invited Speaker, Tuberous Sclerosis Allianace, New York, NY
- 2004 Visiting Professor, NINDS/NIH, Washington, D.C.
- 2004 Visiting Professor, Illinois Neurological Institute, Peoria, IL
- 2004 Invited Lecturer, 4th International Hands-On Workshop, Naples, Italy
- 2004 Invited Lecturer, World Federation of Neurological Surgeons, Shanghai, China
- 2004 Invited Lecturer, Oncology/Neuroscience Conference, Istanbul, Turkey

2004 Surgical Grand Rounds, Boston, MA

2004 Neurosurgery Grand Rounds, Children's Hospital, Boston, MA

2004 Invited Speaker, Rehab Services, Brigham & Women's Hospital, Boston, MA

2004 Invited Speaker, 6th Spanish Skull Base Society, Malaga, Spain

2004 Invited Speaker, 18th Biennial S. African Congress of Neurosurgery,
Sun City, Africa

2004 Grand Rounds, Department of Rehabilitation, Boston, MA

2004 Invited Speaker, 1st Annual Neurooncology Symposium, Hackensack Medical
Center, Hackensack, NJ

2004 Invited Lecturer, Royal Academy of Medicine, Best Doctors, Madrid, Spain

2004 Keynote Speaker, RUNN Course, Woods Hole, MS

2004 Invited Speaker, Mt. Sinai Medical Center, New York, NY

2004 Invited Speaker, WFNS Tumor Section, Jaipur, India

2004 Invited Speaker, Brain Tumor Society Symposium, Boston, MA

2004 Grand Rounds, Emerson Hospital, Concord, MA

2003 Invited Speaker, Florida Brain Tumor Association, Ft. Lauderdale, FL

2005 Grand Rounds, MetroWest Medical Center, Framingham, MA.

2005 Grand Rounds, Newton Wellesley Hospital, Newton, MA.

2005 Visiting Professor, UAMS, Little Rock, AR

2005 Invited Speaker, World Federation of Neurooncology, Edinburgh, UK

2005 Invited Speaker, Glioma 2005, Sydney, Australia

2005 Rodenstock Lecturer, Nuremberg, Germany.

2005 Invited Speaker, 6th BWH Neuroscience Conference, Boston, MA

2005 Invited Speaker, Neuroscience 2005, Torquay, UK

2005 Invited Speaker, Hydrocephalus Symposium, Bethesda, MD

2005 Invited Speaker, Neurooncology Symposium, Athens, Greece

2005 Invited Speaker, JAMA Clinical Crossroads, Boston, MA

2005 Invited Speaker, 13th World Congress, Marrakesh, Morocco

2006 Abbasy Lecturer, Baystate Medical Center, Springfield, MA

2006 Invited Speaker, University of Messina, Italy

2006 Invited Speaker, UCLA, Los Angeles, CA

2006 Visiting Professor, Thomas Jefferson University, April 2006

2006 Invited Speaker, American Society of Stereotactic and Functional
Neurosurgery, Boston, MA

2006 Invited Speaker, 20th Hellenic Congress, Thessaloniki, Greece

Bibliography:

Dr. Black has been an author on over 400 original articles – the last three years are listed here:

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3. Inskip PD, Tarone RE, Hatch EE, Wilcosky TC, Fine HA, Black PM, Loeffler JS, Shapiro WR, Selker RG, Linet MS. Sociodemographic indicators and risk of brain tumors. *Int J Epidemiol*, 225-33, 2003.
4. Inskip PD, Tarone RE, Brenner AV, Fine HA, Black PM, Shapiro WR, Selker RG, Linet MS. Handedness and risk of brain tumors in adults. *Cancer Epidemiol Biomarkers Prev*, 223-5, 2003.
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9. Tan T-C, Black PM. Image-Guided Craniotomy for Cerebral Metastases: Techniques and Outcomes. *Neurosurgery* 53:82-90, 2003.
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suberoylanilidehydroxamic acid (SAHA) inhibits tumor growth in an orthotopic glioma model. Submitted J Neuro, 2006.

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Dr. Black has a long-standing historical relationship with Romanian Neurosurgery that he treasures.

Dr. Bagdasar was one of Harvey Cushing's original trainees, so there is a continuous lineage from Peter Bent Brigham to Romania. In 1996 Dr. Black participated in the World Federation Education Course. He was honored by the visit of Dr. Ciurea to Boston for the 2005 Congress of Neurological Surgeons where he had the pleasure of giving an honorary membership to Dr. Ciurea.

SURGERY FOR LOW-GRADE GLIOMAS: TECHNIQUES AND OUTCOME

Peter M. Black, MD, PhD

Brigham and Women's Hospital, Boston, MA

Rationale for aggressive surgery.

It seems increasingly clear that aggressive surgery for low-grade gliomas is helpful in prolonging patient survival and improving quality of life. Our approach to these tumors has changed over the last 15 years and we now recommend aggressive removal early in the course of tumor discovery. There are three major reasons for this:

- 1) Low grade gliomas progress to higher grade and early removal may slow progression.
- 2) Seizures may be significantly helped by aggressive removal.
- 3) Contemporary imaging and anesthesia techniques make removal safe and effective.

Techniques.

For successful aggressive surgery for these tumors the neurosurgeon needs to know the location and extent of the tumor and the location of eloquent areas. Important techniques have been developed to allow this to be done with maximum effectiveness.

1. Identifying the tumor: For low-grade gliomas at most sites, image-guided surgery is a prerequisite. This can be done in the traditional operating room with a navigation system. However, we have found that intraoperative imaging is more satisfactory technology and have now carried out over 150 procedures for low-grade gliomas in that setting. The GE Signa system that we use allows real-time updates with 0.5 tesla field strength. With it the tumor can be removed sequentially with repeated imaging to access small areas that may be left. A navigational system built into the room allows real-time navigation.

2. Identifying eloquent areas: Brain mapping either preoperatively with functional MR and diffusion tensor imaging or intraoperatively with intravenous sedation anesthesia can make surgery even adjacent to eloquent regions safe.

In pre-operative assessment, functional MR with diffusion and tensor imaging is a very useful and important technique. With this, white matter tracks can be followed and identified in preparation for safe resection. This is quite a labor-intensive initiative

however, and should be saved only for cases in which there is real doubt in whether craniotomy is safe.

Outcome.

With imaging to identify the tumor, and mapping to know where eloquent areas are, the surgeon can approach low-grade gliomas much more effectively. In a series of 156 procedures for low-grade glioma performed in the intraoperative MR at Brigham and Women's Hospital, There was residual imaged tumor that was not apparent to the naked eye in 40% of patients. Factors that changed the ability to do resection included proximity to eloquent areas, but most importantly the tracts underneath. We noted a significant improvement in survival time in patients that had had complete resection as demonstrated by imaging; patients with complete resection were 17.6 times more likely to be alive at 5 years than historical control patients.

New surgical techniques and understanding of glioma biology are beginning to change our attitude to more aggressive surgery early on for low-grade gliomas.

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MOLECULAR BIOLOGY OF LOW-GRADE GLIOMAS

*Peter M. Black, MD, PhD, Rona Carroll, PhD, Mark Johnson, MD, PhD
Brigham and Women's Hospital, Boston, MA*

Low-grade gliomas are fascinating tumors because of what they can tell us about neural development and also because of their molecular instability. We will review work from our laboratory and others on these interesting tumors.

Important questions include:

1. Can we make any comments about the cell of origin of these tumors?
2. How many molecular subtypes of low-grade gliomas are there? Do they have different prognoses?
3. Is there an intrinsic instability in the low-grade glioma genome? What drives this?

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THE VALUE OF ULTRASOUND AND NEURONAVIGATION IN SURGERY OF SUPRATENTORIAL GLIOMAS

Helmut Bertalanffy, Ulrich Sure

Department of Neurosurgery, Philipps University, Marburg, Germany

Recently, neuronavigational systems belong to most neurosurgical operating rooms worldwide. Initially, image guidance has been used for the planning of craniotomy and corticotomy and for resection control of brain tumours, particularly for skull base lesions. Further developments implemented the microscope as well as neuroendoscopic or stereotactic instruments. Fused and overlay imaging techniques consisting of various image data sources (MRI and CT) were developed. Mainly because of the brain shift caused by CSF loss during surgery, intraoperative imaging was added to the classical navigation technology. Intraoperative low and high field MRIs as well as CTs have been tested meanwhile. The combination of classical neuronavigation and intraoperative ultrasound is a recent innovation in image guidance technology. Usually, this technique requires two hardware components (neuronavigation and ultrasound system). Here, we introduce a new simplified technology of a so called one-platform navigation system developed by our institution in collaboration with the industry. An ultrasound device (IGSonic Device Box) is integrated into the VectorVision2 navigation system (BrainLab, Munich, Germany). The IGSonic Probe 10V5 is connected to the VectorVision Navigation station via an IGSonic Device Box. Once the ultrasound probe is calibrated, the navigated ultrasound displays the sonographic image of the intracranial anatomy on the navigation screen in a composed overlay fashion. It depicts vascular structures within the ultrasound plane by a Duplex mode. Ultrasound can also be operated independent in a standalone fashion. Furthermore, our most recent technique uses various intraoperatively created 3D ultrasound image data set updates and allows navigation independent from preoperatively acquired data. The system combines intraoperative ultrasound data sets with preoperatively acquired neuronavigation data sets in plug and play fashion. It provides a cost-effective intraoperative imaging modality that offers anatomical orientation by various composite images, including the display of the amount of brain shift. In our institution, the comprehensible interface led to a routine use of the technology by several neurosurgeons that had not been familiar with the ultrasound technology before.

The integration of an ultrasound device into an existing navigation system has been successfully applied in many cases of supratentorial gliomas. The system offers a user-

friendly interface and cost-effective intraoperative imaging feedback when compared to competing intraoperative imaging modalities. Although brain shift can be visualized by an image overlay technology as demonstrated by the present system, future developments should aim at fusion techniques of both intra- and preoperative image data sets.

NEUROSURGICAL DILEMMA IN SUPRATENTORIAL LOW GRADE GLIOMAS

Prof. A. V. Ciurea, M.D. , A. Iliescu, M.D.* , Teodora Coman, M.D.* , F. Brehar M.D.* ,*

*V. Bacovia, M.D.**,, R. Rizea, M.D.**

Hospital "Bagdasar-Arseni", Bucharest, Romania

** 1-st Neurosurgical Clinic; ** Histopathological Dpt.*

Background:

Authors review the literature referring to low grade glioma (LGG) and synthesize the new data insisting on clinic, histopathological and neuroimaging aspects. The authors also try to present an exact delimitation of efficiency of actual therapeutically procedure.

Introduction:

The term LGG suggests a glioma with slow biologic growth and from clinically point of view, the appearance of a lesion in a patient with seizures which remains unchanged for many years. Surgically, the lesion may be cured with total resection, but not in all the cases.

The important questions in LGG are: What is the delimitation of LGG?; What kind of pathognomonic symptoms does it cause?; How is the evaluation of a patient suspected of having a LGG?; How is the perfect decision whether a patient should have a surgical removal or just a biopsy?; Does surgical removal alone ever cure LGG?; If the recurrences appears, is another surgery recommended?; What is the efficiency of radiotherapy and chemotherapy in LGG?

Pathologically: Low grade gliomas include astrocytoma, oligodendroglioma, mixed tumors (oligoastrocytoma). Also LGG include a variety of unusual lesions, such as ganglioglioma and neurocytoma. Low-grade astrocytomas are infiltrative lesions with a population of regular, uniform cells, a slight increase in cellularity, and minimal pleomorphism. The astrocytes may show a fibrillary or protoplasmic morphology, or they may be mixed with abnormal oligodendrocytes or ependymal cells.

Location: LGG may occur in any parts of the brain, including the optic nerve, cerebellum, hypothalamus, cerebral hemispheres, or brainstem. Patients with NF-1 or NF-2 are at increased risk for these lesions, especially for low-grade astrocytomas of the optic pathways.

Neuroimaging: MRI reveals either a hypointense or isointense lesion on T1-weighted images, with a larger area of T2 shortening being hyperintense in appearance. Gadolinium enhancement is variably present. Generally there is a small peritumoral edema. Treatment: The options are: observation alone, biopsy and/or resection, surgery plus irradiation, chemotherapy alone, or some combination of all three modalities of surgery, irradiation, and chemotherapy. LGG often are not able to gross total surgical resection and usually require additional therapy, such as irradiation. Surgical approach of LGG depends on the location, the age of the patient, the extent of resection possible in connection with eloquent critical area.

Material & Methods:

Authors collect a cohort of 216 cases LGG (fibrillary astrocytoma, oligodendrioglioma and oligoastrocytoma) for a period to 10 years (1995-2005). All cases were operated and histopatologically confirmed in Neurosurgery Clinic I. This cases represented 14,32 % of 1508 operated - PBT (primary brain tumors) - cases in the same period.

Fibrillary astrocytomas (grade II): The frequent cohort of age at adults (86 cases) is 17-21 years without sex preponderance; but with supratentorial incidence, comparatively with childrens (66 cases), preponderance in girl and the group most affected was 10-16 years with subtentorial incidence. The supratentorial grade II astrocytoma represents the total amount 67 cases (childrens & adults).

Also in LGG, we present supratentorial oligodendriogliomas grade II (21 cases) and oligoastrocytoma grade II (17 cases).

The study was devoted only to supratentorial to 105 cases LGG (67 fibrillary astrocytomas; 21 cases oligodendriogliomas and 17 cases oligoastrocytomas). Surgical option represent - total removal: 39 cases (37,3 %), partial removal 66 cases (62,7 %) in connection with eloquent area; no biopsy in our data; no peroperative mortality.

The outcome at 6 month (GOS): good recovery 87 cases (82,8%), moderate disability 15 cases (14,2%), severe disability 3 cases (2,8%), vegetative state 0%, death 0%. The follow-up of the total cohort of LGG was between 6 month – 8 years; 18 patients was missing from study in time.

Recurrence were noticed in 36 cases (34,2 %) all with partial removal. For these cases the policy was: second surgery, radiotherapy and chemotherapy.

Conclusions:

Low-grade astrocytomas that can be removed totally may be managed with surgery alone. If the decision is made for surgery, the goal should be total removal. Incompletely removed tumors may be managed with irradiation or by observation alone (MRI).

In infants and young children, after surgery, chemotherapy may be useful in controlling symptomatic lesions, while deferring irradiation until the child is over the age of 5 years.

Despite the optimism associated with the treatment of lower-grade lesions, many patients still die of this disease in time. The extension of the remnant tumor will be connected with high grade malignancies transformation.

New approaches are needed in the management of these tumors, with clinical research trials designed to answer questions concerning the optimal extent of resection, the timing and dose of radiation therapy, and the use of chemotherapy.

Key words: supratentorial, low grade gliomas, microsurgery, MRI

LOW GRADE GLIOMAS: ROLE OF RADICAL SURGERY AND MOLECULAR BIOLOGY

Dr. Keki E. Turel, Dr. Nootan Kumar Sharma, Dr. Joy Varghese,

Dr. Shashank Joshi, Dr. Anand Kakani

India

Low grade gliomas (LGG) are a heterogenous group of diseases characterised by relatively slow growing primary brain tumors of astrocytic and oligodendroglial origin. Patients usually present with easily controllable seizures and remain stable for years whereas others progress rapidly into high grade gliomas. The cause of LGG is unknown. The only molecular genetic alteration consistently observed with LG astrocytoma is mutation of T53 and 1p & 19q deletion in oligodendroglioma. Radical surgical excision is the ideal treatment for these tumors. Delaying surgery can lead to dedifferentiation or malignant transformation. The main goals of surgery in these tumors is to obtain histological diagnosis, maximal cytoreduction, reduction of intracranial pressure, relief from seizures, improvement of neurological deficit and to prevent further malignant transformation. Intraoperative localisation is not so easy in most of these tumors as it is

not always possible to differentiate them from normal brain. The use of intraoperative USG and MRI has made this possible to achieve better results. The role of radiotherapy and chemotherapy is still controversial except in Oligodendroglioma and Oligoastrocytomas. 238 gliomas were operated by us from 1987-2005. Of these 65 (29%) were low grade gliomas, including Astrocytoma 49 (75.3%), Oligodendroglioma 11 (17%), Oligoastrocytoma 3 (4.7%) and Ganglioglioma 2 (3%). 155 patients were followed. Of these 61 were LGG. Total excision was achieved in 63%. 33 LGG (70%) constituted bulk of all long term surviving gliomas. We will present our surgical technique and results.

NEUROSURGICAL MANAGEMENT OF RECURRENCES IN LOW GRADE GLIOMA

*Ass Prof. Gorgan Mircea MD, Ph D, Neacsu Angela MD, Bucur Narcisa MD, Ph D,
Craciunas Sorin MD, Luca Ionut MD, Bodea Nicoleta MD, Pruna Viorel MD
First Neurosurgical Clinic
Clinic Emergency Hospital "Bagdasar- Arseni" Bucharest*

Keywords: low grade glioma, interval to recurrence, malignant progression

Low-grade gliomas (LGG) are a heterogeneous group of relatively slow-growing primary tumors of astrocytic and/or oligodendroglial origin.

An important feature of astrocytomas is their inherent tendency to recur after surgical resection. Many WHO grade II (low grade diffuse) astrocytomas and nearly all high grade anaplastic astrocytomas and glioblastoma (WHO grades III and IV respectively) recur at some points. Another interesting feature is that upon recurrence, some tumors retain the same histological grade, whereas a significant proportion undergo malignant progression i.e. regrow into a more anaplastic form so that the grade of the recurrent tumor is higher than the original tumor (15,26).

The authors analyze 38 case series of recurrent astrocytic tumors in patients with low grade gliomas operated between 1995-2005 by the same team in the Fourth Neurosurgical Department of the Clinic Emergency Hospital "Bagdasar- Arseni" Bucharest. All cases received adjuvant therapy after the first operation.

The most frequent location was frontal (20 cases), peak of age was between 21-40 years (29 cases), and the most frequent encountered tumor was fibrillary astrocytoma (17 cases). The mean recurrence time of this very heterogeneous group of tumors was 4,2

years (1,7 years for gemistocytic astrocytoma grade II, and 9 years for fibrillary astrocytoma grade II).

The authors precise the time of follow-up -median 6,8 years, and surviving time (median 5,3 years), morbidity (13,15%-5 cases) and standard mortality 5,26% (2 cases). 21 cases (55,26%) remained in the same tumoral grade, and 17 cases (44,73%) presents malignancy progression. All gemistocytic astrocytomas presented malingnant progression at recurrence.

12 recurrences supported total resection at initial surgery, 7 cases remained in the same grade, and 5 progressed to a higher grade.

23 cases of recidive benefit from subtotal resection at initial operation, 13 of them remained in the same grade, and 10 progressed to a more aggressive tumor. From 3 cases with biopsy followed by chemo and radiotherapy, 1 remained in the same tumoral grade and 2 progressed to a more aggressive tumoral grade.

None of the Grade I tumors showed evidence of malignant progression. Our results indicate that both tumor progression and histopathological dedifferentiation were less commonly seen when a total resection could be achieved. Data from this study demonstrate that tumor progression occurs in 44,73% of a heterogenic group of infiltrative LGGs subjected to next surgeries. Gross- total resection with postoperative adjuvant therapy was associated with increased time to second surgery, and low incidence of progression of malignancy.

THE ROLE OF CYTOREDUCTIVE SURGERY IN GLIOBLASTOMAS. RESULTS FROM A PHASE- III MULTICENTER STUDY.

H.-J. Reulen, W. Stummer, U. Pichlmeier

The German Glioblastoma Study Group

Background: There is ongoing controversy regarding the role of cytoreductive surgery in determining prognosis of patients suffering malignant gliomas. The ALA study is a two-armed, randomized, group-sequential Phase III trial and demonstrated that patients benefit significantly in terms of resection radicality and survival from fluorescence-guided resection. Early postoperative MR was devoid of residual,contrast-enhancing tumor in 65% of patients in the ALA-group as compared to 36% in the white -light group($p<0.001$) and median survival was significantly prolonged.(1)The data of this controlled clinical trial

allowed to readdress the above question by comparing patients with complete vs incomplete resection.

Methods: Data on 251 patients qualifying for the per protocol of 270 patients randomised into the ALA study set formed the basis of the present analysis. Prognostic factors were identified that might influence survival and lead to selection bias (MRI-characteristics, age, KPS, proximity to eloquent brain regions, histology and post-operative MRI) and used for uni- and multivariate analysis of overall survival. Based on the results of multivariate analysis, prognostic groups were constructed combining various covariates for predicting survival.

Results: In patients without residual tumor on early MRI, overall survival was significantly prolonged to patients with residual tumor (17.9 vs 12.9 months, $p < 0.0001$). Patients were balanced regarding neurological status (NIH Stroke Score) and tumor morphology (size, edema, proximity to ventricles) but were not for age, Karnofsky Status and tumor location (eloquent vs. non-eloquent). In multivariate analysis, the survival advantage of patients without residual tumor remained significant ($p = 0.0014$), in addition to age (≤ 55 years vs. > 55 years, $p = 0.01$), and KPS (70-80 vs. > 80 , $p = 0.0063$), but not eloquent tumor location (non-eloquent vs. Eloquent). Grouping of favourable and unfavourable prognostic factors resulted in survivals ranging between 6.8 and 20.0 months.

Conclusions: Fluorescence-guided resection using 5-ALA allowed a larger number of complete resections without endangering patients. Complete resection (absence of contrast-enhancing tumor in early post-operative MRI) was identified as the strongest predictor of progression-free and overall survival. The present data, generated within a truly prospective setting, provide the highest level of evidence so far that resections influence survival.

MALIGNANT GLIOMAS: ROLE OF RADICAL SURGERY AND MOLECULAR BIOLOGY

*Dr. Keki E. Turel, Dr. Nootan K. Sharma, Dr. Joy Varghese, Dr. Shashank Joshi,
Dr. Anand Kakani
India*

Malignant tumors are the most common primary brain tumors in adults and constitute more than 50% of them. These tumors include heterogenous group of tumors

viz; Anaplastic astrocytoma, Glioblastoma multiforme, Glosarcoma and malignant Oligodendroglioma. These tumors grow by invasion, limiting the efficacy of surgery and other local therapies. The management of malignant gliomas includes cytoreduction through surgery, radiotherapy and/or chemotherapy. Radical resection of these tumors is a challenge for the modern neurosurgeon and is possible only rarely due to its widespread involvement of brain by infiltration. The survival depends on various factors, viz; age, KPS, histology, molecular biology (EGFR, TP53 mutation, PTEN) and surgical excision. The role of radical surgery and favourable biology have been studied in our series of 238 gliomas which were operated by us from 1987-2005. 155 patients were followed. 49 patients were long term survival out of which 16 (30%) were malignant gliomas. We will present our surgical technique and results.

SURGERY OF INSULAR GLIOMAS

F. Tomasello

Department of Neurosurgery, University of Messina, ITALY

Surgical removal of insular tumours is a formidable challenge for neurosurgeons. Until the early ninety's these tumours were considered unresectable and only a biopsy was suggested. Yasargil was the first author to describe the surgical resection of these tumours and to report excellent results in 80 patients using a transsylvian route through a fronto-temporal (pterional) approach. In the last ten years only few authors reported their experience in the surgical management of these difficult lesions.

We report the personal experience of the author in a series of 16 patients (8 M, 8 F, age range 37-72) operated on for intrinsic insular tumours. The series includes 4 cavernomas, 3 low grade gliomas and 9 high grade gliomas (5 anaplastic astrocytomas and 4 glioblastoma multiforme). According to Yaşargil classification of limbic and paralimbic tumors, lesions in this series should be classified as type 3B, insular with opercular extension (5 cases), 5A insular with fronto-orbital and/or temporo-polar extension (5 cases) and 5B extended to the limbic system (2 cases). A gross total resection was obtained in 8/12 (67%) and a subtotal resection in 4/12 (33%) patients harbouring a glioma. A total resection was obtained in 4/4 (100%) patients harbouring a cavernoma. At the early follow-up (one month) 4 patients (28.6%) displayed a new neurological deficit; at three months follow up two patients improved to a normal neurological examination and the surgical morbidity decreased to 14.3%. No patient died within 3 months after surgery.

In our experience and accordingly to other recently published series, early post-operative morbidity decreases significantly over 3 months after surgery. This aspect suggests a more conservative approach for high grade lesions where a short post-operative survival time is expected and a more aggressive strategy for low-grade gliomas and cavernomas. Moreover as described by Yaşargil, low grade gliomas usually grow into the anatomical limbic system sparing the deep mesial and neocortical structures; this feature allows in such cases a relatively safe removal maintaining the resection within the anatomic landmarks of the tumour. In our opinion direct cortical and subcortical stimulation, as well as continuous phase-reversal monitoring, often do not provide adequate warning of ensuing neurological compromise, but merely report the loss of neurological function. Moreover, even awake craniotomy may not be adequate, as a deficit may occur during an irreversible manoeuvre. As described in the literature it is certainly suggested that avoidable complications are related to disruption of the surrounding structures and their vascular supply. Thus, a topographic and anatomical approach remains a necessary component of surgery on tumours of the insula.

PROLIFERATION MARKERS IN GLIOMAS

V. Ciubotaru, I. Ogrezeanu*, C. Tanase**, C. Codorean**, I. Cusciac**

**"Bagdasar-Arseni" Emergency Clinical Hospital, Department of Neurosurgery, Bucharest, Romania*

*** "Victor Babes" National Research Institute of Pathology, Bucharest, Romania*

Forty to fifty percent of primary central nervous system tumors are gliomas. In high grade gliomas prognosis is poor, radiation and chemotherapy appear to extend the life of the patient. Although high grade gliomas are characterized by abundant glial pleomorphism, numerous mitotic figures and giant cells, vascular hyperplasia and focal areas of necrosis, the final diagnosis and grading of gliomas are assisted by immunohistochemistry, study of the molecular biology of these tumors being also an important step for the understanding of the genesis and biological behavior of these diseases. The Ki-67 proteins, which are markers of the cellular proliferation, and p53, which is the product of the tumor suppressor gene TP53, are both important tumoral markers.

This study intends to identify and quantify the Ki-67 and p53 proteins in gliomas of different grades of malignancy. Ki-67 and p53 proteins in 20 patients with surgically resected gliomas were studied through immunohistochemistry. They have been previously

classified concerning their histological grade (WHO). Surgical specimens were immunostained for Ki-67 (MIB-1; 1:50) and proliferating cell nuclear antigen (PCNA; prediluted). Proliferative activity (nuclear immunostain) was measured.

With a median of 12% and 24% for MIB-1 and PCNA respectively, for all neoplasms in the study, the mean percentage positive nuclear area for MIB-1 and PCNA was 3.06% and 13.11% in low-grade (II) astrocytomas, 14.34% and 29.68% in highgrade (III) astrocytomas, and 18.77% and 44.11% in glioblastoma multiforme (grade IV). One-way analysis of variance showed a significant correlation between the histological grade and MIB-1 and between the histological grade and PCNA. Both markers, Ki 67 and PCNA should be used to evaluate the tumor grade in combination with established histopathological criteria for malignancy in gliomas. Proliferation in astrocytomas, measured as MIB-1 and PCNA, correlates significantly with histological grade, providing useful additional information for diagnosis evaluation of the tumor recurrence susceptibility. Consequently a correct treatment and prognosis could be assessed.

20 cases of astrocytic tumors were immunostained for Ki67 and PCNA to measure the proliferative activity. The aim of the study is to investigate the correlation between the proliferation markers and histological grading. Grade I and II astrocytomas have a relatively benign appearance with homogeneous grouping of cells and little atypia or anaplasia. Grade III and IV astrocytomas have a greater degree of anaplasia than the benign forms but do not contain focal necrosis as seen with glioblastoma, the final diagnosis and grading of gliomas are assisted by immunohistochemistry. The immunomarked cellular nuclei were quantified by the program Imagelab-softium for the absolute parametric reason between the nuclei of the positive cells and the total amount of tumoral cells, being counted 1000 cells. The lineation used has been transversal not controlled. For the statistical analysis the variables were divided into groups. For the Ki-67 they were absent, <5% and >5% and for p53 they were absent (0), <25% (1+), between 25 and 50% (2+), between 50 and 75% (3+), and higher than 75% (4+). Ki-67 was present in 37 cases (78.72%) evidencing a correlation with a higher malignancy degree ($p < 0,001$). p53 was present in 14 cases (35.13%) with a higher correlation with astrocytoma grade IV ($p = 0.59$). There has not been a statistically significant correlation between p53 and Ki-67, as well as among these variables, age and gender. The hypotheses of a greater presence of Ki-67 and p53 in astrocytic neoplasms with a higher degree of malignancy, except for the correlation between grade III and p53, is corroborated by the results of this study.

MICROSURGICAL APPROACH FOR SUPRATENTORIAL GLIOMAS - PERSONAL EXPERIENCE

*Ion Poeta, Ianovici Nicolai, Ziyad Faiyad, Florin Gramada, Marcel Ivanov, Alexandru Chiriac
Clinical Hospital "St. Trinity", Neurosurgical Department,
Iasi, Romania*

Keywords: low grade glioma, anaplastic astrocitoma, glioblastoma, supratentorial, microsurgery, radiosurgery

Since 2 years the armamentarium against supratentorial gliomas enlarged in our experience by using 3D imaging preoperative planning, neuronavigaton, intraoperative echography, temodal and radiosurgery (LINAC or gamma knife) in order to improve results with standard microsurgical resection.

We analyze 45 consecutive surgical cases operated on by the firs author during this interval comparing with several examples from our previous series. 9 cases were reinterventions. According with entire or main part of the tumor, localization was: lobar in 25 cases (6 rolandic), basal ganglia in 7 cases, insular in 6 cases, cingular in 2 cases, callosal in 3 cases, and diencephalic in 2 cases. Initial histology for this tumours was low grade glioma 8 cases, anaplastic astrocitoma 14, glioblastoma 23 cases. Immediate and long term surgical results are evaluated analyzing pre end postoperative images evolution together with neurological status.

Imagistic recurrence / regrows alone was not a surgical indication. When an associated neurological deterioration occurred we did reintervention in cases with compression but we did not operate cases with eloquent structures invasion. Some mix compression /invasion cases were discussed together with patient and family concerning our advise for surgical indication.

Comparing with previous series together with new methods there is a global outcome improuvement but not a cure in this lesions. A case of worsening, possible related with radiosurgery is also present in this series.

SUPRATENTORIAL GLIOMAS - OUR EXPERIENCE

Florian St. I., MD, PhD; Andraşoni Zorinela MD, Oşlobanu A. MD, Matei C. MD, Abrudan C. MD

Cluj-Napoca County Hospital, 1st Neurosurgical Department

University of Medicine and Pharmacology "Iuliu Hatieganu" – Cluj-Napoca

This article presents the author`s experience in this field based on 228 cases operated between 01.01.2002-31.12.2005 at the Neurosurgical Clinic of University Cluj-Napoca Hospital. The male:female ratio of our case series is 2:1. Our peak incidence is in the 6th decade. The clinical findings were, in most of the cases, intracranial hypertension (150 cases, 65%), seizures (72 cases, 31%), motor weakness (138 cases, 61%), different types of aphasia (58 cases, 25%). In 143 (63%) of cases the tumor was located only in one lobe (frontal, temporal, parietal and occipital lobes), while, in 68 of cases (30%) it was a multilobar location and in 17 of cases (7%) a callosal or diencephalic tumor. Neurosurgical intervention conducted to total removal of the tumor in 199 of cases (87%) and subtotal in 29 of cases (13%). According to their histological features our case series include pilocytic astrocytomas 14 cases (6%), grade II WHO astrocytomas 40 cases (17%), anaplastic astrocytomas, WHO grade III 54 cases (24%), glioblastoma multiforme 87 cases (39%), ependimomas 11 cases (5%), oligodendrogliomas 14 cases (6%), mixed oligoastrocytomas 8 cases (3%). In malignant astrocytomas and in case of incomplete removal of low grade gliomas, surgery was followed by radiation therapy and chemotherapy. Mortality occurred in 2% of cases, and for the 178 of cases (78%) the outcome was GOS 5 (good recovery) and GOS 4 (moderate disability). The follow up included: neurological examination, enhanced CT or MRI and oncological examination monthly, for the first 6 months, and then each 6 months.

CLINICAL ASPECTS AND BIOLOGY OF CEREBRAL CAVERNOUS ANGIOMAS

Helmut Bertalanffy, M.D.

Department of Neurosurgery, Philipps University, Marburg, Germany

Cerebral Cavernous Malformation (CCM) is a disease characterized by capillary-venous lesions with a clinical tendency for hemorrhage causing neurological deficits, seizures and stroke. CCM appears as both sporadic (50–80%) and hereditary autosomal dominant conditions. Cavernomas may occur in various locations supratentorially and infratentorially, both in eloquent and noneloquent regions of the brain. Particularly due to

their propensity for repeated bleeding, treatment is indicated in many cases. As radiosurgery is ineffective in preventing hemorrhage from a cavernoma, microsurgical removal of the lesion is the therapy of choice. From the surgical point of view, the following aspects are most important: the neuroradiological imaging, the precise localization of the lesion, the selection of the appropriate surgical approach, as well as the microsurgical technique of removing the lesion, especially when located in eloquent regions. Particularly deep-seated lesions (for instance those within the insula, the basal ganglia, the thalamus and the brainstem) are far more challenging for the surgeon than superficial ones. To localize the lesion intraoperatively, modern tools such as neuronavigation and navigated ultrasound have gained increasing importance. Presently, the author's series comprises 92 patients operated on for a CCM within the brainstem and over 200 cases in various other locations. CCM was previously considered as a static and nondeveloping lesion. Increasing evidence shows growth and de novo formation of lesions in both family and sporadic CCM. Several studies have demonstrated endothelial proliferation, and furthermore the expression of angiogenesis growth factors including VEGF and its receptor (Flk-1) as well as FGF2 and TGF- β 1 in CCM. These data support the notion that CCM is a dynamically developing disease involving neoangiogenesis. Three CCM genes have been identified and shown to encode the KRIT1 (CCM1), MGC4607 (CCM2) and PDCD10 (CCM3) proteins. Approximately 42-49%, 13-22% and less than 10% of familial form of CCM are estimated to show mutations in CCM1, CCM2 and CCM3 genes, respectively. Identification of the three CCM genes represents an important step towards to the elucidation of the molecular basis of CCM.

IMPORTANT MEASURES TO AVOID CEREBRAL ISCHEMIC STROKE AND REBLEEDING IN INTRACRANIAL ANEURYSMS

Prof. A.V.Ciurea, M.D.; A. Tascu*, M.D.; A. Chefneux**, M.D.; R. Radulescu*, M.D., R. Rizea*, M.D., A. Gheorghita***, MD, Carmen Radoslav***, MD*

Clinical Emergency Hospital 'Bagdasar-Arseni', Bucharest

** Neurosurgical Department*

*** Neuroangiology Department*

****Neuroanaesthesiology Department*

Background

The pathology of intracranial aneurysm is a dominant element in neurosurgical activity, because of multiple preoperative and management problems. The cerebral

circulation must be evaluated in totality with special attention focused on aneurysms characteristics. The accuracy management is necessary for limitation of important complication (ischemic stroke and rebleeding).

Material & Methods

The authors present a study about 428 consecutive operated patients with intracranial aneurysms, operated in our clinic from 1999 to 2005 (25 children and 403 adults) in first Neurosurgical Department. As exclusive criteria, there are cases of endovascular aneurysm embolization. Most cases (195 cases-45,5%) were between 41 and 50 years old. The predominant sex is male 291 cases (68%) (2,1 : 1). The symptoms were dominated by headache (98%), stiffneck (94%) and focal neurologic deficit (91%). Most patients were Hunt & Hess 2 (243 cases, 56,7%) and Hunt & Hess 3 (102 cases, 23,8%) at admittance. The associated pathology was: systemic arterial hypertension (321 cases, 75%) and obesity/hypercholesterolemia (146 cases, 34,1%).

The main investigations were CT scan, DS angiography. Actually, the tools for remain data are: 3 D Angiography and 3D CT Angiography.

The common localization of intracranial aneurysms was the anterior communicating artery 151 cases (35,3 %); the other locations were: medium cerebral artery 127 cases (29,7%), posterior communicating artery 77 cases (17,9%), internal carotid artery 57 cases, (13,3%), basilar top 8 cases (1,8%) and vertebral artery 8 cases (1,8%). All cases were operated.

From all complications, two are very critical for life and morbidity: aneurysm rebleeding and cerebral ischemia.

The therapeutical operative measures for intraoperative aneurysm rupture prevention are: mild hyperventilation (PaCO₂ 30-35 mmHg); elevation of the head; deliberate hypotension; temporary clip. The most important intraoperative aneurysms surgery is the perfect microsurgical approach which realized the perfect aneurysm dissection with all perforates collaterals and magistral arteries; the clip application on the aneurysm neck is the only surgical procedure to cure the vascular malformation. Also as intraoperative neuroprotective measures we mention: local papaverina administration, abundant saline water washing, after basal cisterns opening.

Results

During postoperative period we noticed the following complications: vasospasm, obstructive hydrocephalus, seizures, cerebral edema, and general complications. The

following neuroprotective measures for postoperative complications preventions are hyperventilation, nimotop therapy, 3H therapy (hypertensive therapy, hypervolemic, hemodilution). Nimotop therapy could be used in preoperative period also, for cerebral ischemia prevention. (3-7 ml/h depends on arterial systemic pressure), but 3H therapy could be applied with maximum efficiency only in postoperative period (after aneurysm clipping). The Glasgow Outcome Scale (GOS) in our data (at 6 months postoperator) shows: good recovery 286 cases (66.8%), moderate disability 101 cases (23.6%), severe disability 21 cases (4.9%), persistent vegetative state 5 cases (1.1%), death 15 cases (3.5%).

Conclusions:

The important measures to avoid rebleeding and cerebral ischemic stroke in intracranial aneurysms are perfect evaluation and early approach, perfect aneurysm dissection and neuroprotective measures (pre and intraoperative). The timing of aneurysm surgery is one of the key of avoidance lifethreathing complication.

Keywords: intracranial aneurysms, rebleeding, vasospasm, Hunt & Hess Scale, Glasgow Outcome Scale, microsurgery, Nimotop

**COMPLICATIONS IN RUPTURED ANEURYSM SURGERY.
CONSIDERATIONS UPON A PERSONAL SERIES OF 400
CONSECUTIVE CASES.**

*Ion Poata, Ziyad Faiyad, Mihai Rotar, Marcel Ivanov, Alexandru Chiriac
Clinical Hospital "St. Trinity", Neurosurgical Department,
Iasi, Romania*

Keywords: aneurysm clip, microsurgery, intracranial aneurysm, complications

A wide range of complications can arise intra and postoperative in a ruptured aneurysm case. During the last 9 years our protocol improved several times by using a modern neurosurgical microscope, a wide range of temporary and permanent clips, the preoperative 3D image surgical planning. We analyze complications rate according with technique modifications in 400 consecutive ruptured aneurysms microsurgically clipped.

Complications were :

1. general surgical: infections- meningitis 4%, csf leaks/ wound problems 2%, dissection /retraction brain contusions or venous lesions 3%;
2. specific for arterial dissection: vasospasm, thrombosis, main trunks or perforator artery rupture;
3. aneurysm's dissection related: aneurysm rupture 7%, surroundings structures injuries;
4. clipping related: clip mal position with incomplete occlusion or flow impairment in parent vessels: 0,75%, aneurysm rupture: 6%, or surrounding structures damage;
5. clip related: slipped clip 1%, cutting clip 0,25% (intraoperative, early or late postoperative).

Some of these complications are difficult to evaluate and we discuss this aspect. Some complications (majority of intraoperative ruptures during advanced dissection, intraoperative slippage, wound problems, were solved uneventful).

Fatal complications were: 2 meningitis, perforators occlusion in 1 case of big vertebral tip aneurysm and 2 cases of ACoA aneurysms, clip related in 2 cases of giant carotid ophthalmic aneurysms (one wall of the neck was cut during pulsations between the opposite calcified wall and the bleed of the clip in the 4th day after surgery, and a secondary slipped clip occluded the carotid artery in another case). Early bleeding with fatal outcome occurred in 2 cases.

Postoperative complications are related with aneurysm's difficulties (large neck aneurysm, calcified or mix soft and hard neck, difficult projection, strong arachnoidal adhesions with surrounding vessels, rupture site location close to the neck, vessels origin from the aneurysm, extended neck origin into the cavernous sinus), surgical skills (learning curve and surgeon's personal performance limitation, difficult to evaluate), team and equipments.

We discussed several factors useful to avoid complications: preoperative planning, enough microsurgical dissection before clipping starting, clip strength checking before clipping, surrounding checking and few minute observations before closure.

Documented worsening of several cases surgically postponed and without repeated bleeding are common in literature and in our series as well. Vasospasm, brain infarction, brain edema, hydrocephalus, metabolic, vegetative and systemic complications are common problems with SAH cases.

The real postoperative complication rate evaluation has some difficulties. In some cases it is rather difficult to make a clear demarcation between postoperative complications

and SAH complications. More than that same complication can be produced by several operative factors or by nonsurgical factors.

NOVALIS® RADIOSURGERY FOR AVM'S

*J.D'Haens, R. Ates, K.Van Rompaey and D. VanDenBerge
Academisch Ziekenhuis, Vrije Universiteit Brussel*

We report the results of the radiosurgical treatment of cerebral AVM's in 31 patients with a follow-up of more than two years. Novalis® linear accelerator is equipped with an adjustable micro-multileaf collimator using a single isocenter. The definition of the target was based on MRI, stereotactic CT scan and biplanar angiography in stereotactic conditions. A single dose of 20 Gy was prescribed on the isodose 80% corresponding to the margin of the lesion, exceptionally a lower dose was prescribed in huge lesions.

The mean irradiated target volume was 2.38 cc. 42% of the AVMs were located in an eloquent or deep area. We define a patient cured if no angiographic signs of vascular malformation are left. Three groups of patients were identified: group 1 with complete obliteration; group 2 without obliteration after 3 years and little chance for further occlusion; and group 3 with non-occlusion after 2 years but having not yet three years follow-up. In this last group some patients will probably show complete obliteration on third-year follow-up angiography.

Group 1 contains 24 patients (occlusion rate of 77.5 %). We classify 3 patients in group 2 (9,7 %) and 4 patients in group 3 (12,9 %).

As morbidity we report 2 cases of single epileptic insult shortly after radiosurgery, a mild exacerbation of a neurological deficit at the moment of the occlusion in a third patient and a rebleeding in an incomplete obliterated AVM in a fourth patient.

These results of Novalis® based radiosurgery in AVM's are satisfactory in terms of occlusion rate and morbidity.

EPIDEMIOLOGICAL STUDY AND TREATMENT OPTIONS IN PATIENTS WITH THORACOLUMBAR SPINE FRACTURES

CE Popescu, N Ianovici, H. Aldea, I. Poata, B. Costachescu

*Clinical Hospital "St. Trinity", Neurosurgical Department,
Iasi, Romania*

Keywords=epidemiology, thoracolumbar fracture

This is a retrospective study on 516 patients with thoracolumbar spine injuries who were admitted in the Neurosurgical Department of our hospital between Jan. 2000 and Dec. 2004. Most of the patients sustained an L1 (38,18%) and T12 (25,39%) injuries. Neurological deficit was diagnosed as incomplete in 81 patients (15,7%) and complete in 114 patients (22,1%).

316 patients (67,05%) sustained an A-type injury, and 361 (69,96%) were treated non-operatively. 155 patients were surgically treated (open reduction, with/without decompression and pedicular screw fixation) using conventional posterior approach.

Post-op. complications:

- 8 cases with venous thrombosis (6 superficial, 2 deep);
- 7 cases with screw malpositioning, 3 screw breakage.

Results:

- 78% of the surgically treated patients with incomplete deficits improved at least 1 Frankel grade at 12 months;

- 5 cases of temporary neurological deteriorations (3 transitory radicular, 2 incomplete conus medularis sdr.).

Functional results:

- VAS preop. 6,8 (2,4 - 8,8), postop. 3 (0 - 6,5);
- Oswestry score: patients with incomplete deficits - 38,5 at 2 months, 30 at 6 months and 19,7 at 12 months.

Conclusion: we believe that most of the patients with thoracolumbar injuries with neurological deficits and/or unstable lesions can be safely surgically managed using a posterior approach.

**THORACOLOMBAR SPINAL TRAUMA
ANALYSIS OF CASES ADMITTED IN THE 2-ND NEUROSURGERY
UNIT, BAGDASAR-ARSENI HOSPITAL BUCHAREST
01.2003-12.2005**

*EXERGIAN FL., MD, PHD; CRACIUNAS S., MD; PODEA M., MD.
Bagdasar-Arseni Hospital Bucharest Romania*

Keywords = spinal trauma, thoracolumbar trauma

A number of 605 spinal trauma cases which involved the thoraco-lombar area were analysed, from a total of 1778 spinal trauma cases admitted in the 2-nd Neurosurgery Unit "Bagdasar-Arseni" Hospital Bucharest between 01.01.2003-31.12.2005.

This analysis involves the most important aspects of statistical distribution in this type of trauma and it's surgical treatment and results.

**THORACOLUMBAR BURST FRACTURES WITHOUT
NEUROLOGICAL DEFICITS: CONSERVATIVE OR SURGICAL
TREATMENT?**

*CE Popescu, V Dimov, R Sorete, I Mihailov, C Tarasi, C Mictariu
Clinical Hospital "St. Trinity", Neurosurgical Department,
Iasi, Romania*

Keywords=thoracolumbar, fracture, burst

During a 5-year period (Jan. 2000 - Dec. 2004) there were 28 patients with thoracolumbar spine burst fractures without neurological deficits admitted in our Department.

16 patients (group 1) were conservatively treated (close reduction and immobilization in a thoracolumbar orthosis or cast) for at least 3 months.

12 patients (group 2) were surgically treated (open reduction and pedicular screw fixation).

Results:

- Group 1
- kyphosis angle: 12° initially, 9,4° after reduction, 14,5° at 12 months.
 - functional - VAS 5,5 initially, 3 at 12 months
 - Oswestry score 16,6 at 12 months
 - complications: superficial venous thrombosis (1 case).
- Group 2
- kyphosis angle: 13,2° initially, 5,6° postop., 13,8° at 12 months
 - functional - VAS 6,2 initially, 1,2 at 12 months
 - Oswestry score: 10,4 at 12 months
 - complications: 3 screw breakage, 1 superficial infection, 1 superficial venous thrombosis.

Conclusion: these patients can be safely managed using a conservative or a surgical treatment.

THE EUROPEAN TRAINING PROGRAMME FOR NEUROSURGEONS

H.-J. Reulen

Germany

In order to harmonize training of the medical specialties in the member countries of the EU, the UEMS(Union europeenne des medicines specialists) has developed together with their specialist sections the European Training Charter. This training charter was updated to modern requirements in 2004/5, also for Neurosurgery. (1). The Operative Figures for Trainees, required at the end of training, have been accepted by the delegates of the UEMS section and are part of the Training Charter(2). This Training Charter is now the template and should be implemented by the various national neurosurgical societies within the coming years to comply with european requirements.

Some of the main components of this programme will be reported with particular emphasis on the operative training of residents. Practical examples will be demonstrated how to organize operative training in daily practice and how to assess the operative progress during the various rotations/training periods. Some of the most frequent problems involved in the operative training will be reported(3).

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MICRODISCECTOMY IN LUMBAR DISC HERNIATION (LDH)

PROF. CIUREA A.V., MD, Voinescu D., MD, Iliescu A., MD, Teodora Coman, MD, Radulescu R., MD, Rizea R., MD

I-st NEUROSURGICAL CLINIC,

"BAGDASAR-ARSENI" HOSPITAL, BUCHAREST, ROMANIA

Background:

Lumbar disc herniation (LDH) represents an important medical and social problem in the entire world. The usual questions in LDH are: What are the complete and best neuroimaging? Which is the best neurosurgery operation timing and approach? There are any guide-lines in LDH? What should we choose: Macro or microdiscectomy for LDH? What is the value of endoscopic microdiscectomy in LDH?

Material & Method:

The authors studied 662 consecutives operated – "de novo" - cases of LDH from 1998 to 2005 inclusive (a period of 8 years). There are 362 male cases and 300 female cases. Excluding criteria, in this study, consist in previous surgery for LDH (93 cases).

Clinical features are dominated by low back pain and leg pain (556 cases, 84%) and neurological deficit (437 cases, 65.9%). The most important evaluation is MRI and obviously, EMG will be necessary in all the cases. The disc level L5-S1 was the most affected 371 cases (56,1%), followed by L4-L5, 273 cases (41,3%).

Routine equipment for operatory procedure are spinal neurosurgical tray, high-speed drill, operator microscope, bipolar cautery, Rhoton dissectors, cottonoid patties, mobile X-Ray equipment, Caspar retractor and Tissucol device.

According to our data the result were (3 months postoperative, PROLO SCALE): excellent 196 cases (29.6%), very good 300 cases (45.3 %), good 93 cases (14.1%), fair 61 cases (9.2 %), and moderate disabled 12 cases (1.8 %).

Recurrent operations noted were 62 cases (9,4%). The complication represent 12,6%, 54 cases: dural compromise 40 cases (6.1%), new neurological deficit 7 cases (1.1%), superficial wound infection 7 cases (1.1%), discitis 16 cases (2.4%), perineural fibrosis 13 cases (1.9%). Patients presented no postoperative instability after surgery.

Conclusions:

Advantages of microdiscectomy are: greater visibility and precision of discectomy, safe surgery, minimal invasive technique, reduced blood loss, no external aspiratory drainage, hospitalization length decrease, reduced costs hospitalization, postoperative recovery shorter and social reinsertions: rapid and easier. Finally, the authors advocated about microdiscectomy in LDH, despite of important rate of recurrences.

Key words: Lumbar disc herniation (LDH), microdiscectomy, MRI, operatory microscope

MICROSURGICAL APPROACH TO FAR-LATERAL-LUMBAR DISC HERNIATION WITH FACET JOINT PRESERVATION

J. D'Haens, K. Van Rompaey, R. Ates, C. Chaskis

Academisch Ziekenhuis, Vrije Universiteit Brussel

The authors describe a microsurgical approach to far-lateral-lumbar-disc herniation without facetectomy in order to avoid vertebral instability or post-operative back pain. The anatomical study of the foramen and its contents shows that the nerve root exits the foramen in close relationship to the pedicle of the superior vertebra which is above the level of the disc space.

In our experience radicular compression due to far-lateral-lumbar-disc herniation is mostly due to extruded disc herniation with upper fragment migration.

The surgical technique we propose to reach far-lateral-lumbar-disc herniation consists of making a hole in the upper lateral quadrant of the posterior articular process giving access to the infrapedicular space and the lateral side of the disc.

The use of a high speed drill and microscope magnification is advocated.

Only the lateral portion of the superior facet of the inferior vertebra has to be removed with minimal damage to the posterior facet joint.

Curettage of the disc space is possible through this way but visual exploration of the vertebral canal is impossible.

The results are particularly good in terms of radicular decompression as well as minimal post operative back pain.

**A POSSIBLE NEW THERAPEUTIC STRATEGY TO INFLUENCE
PATHOPHYSIOLOGY OF SPINAL CORD INJURY AND REPAIR
MECHANISMS BY A SELECT COMBINATION OF
NEUROTROPHINS**

Hari Shanker Sharma

*Laboratory of Cerebrovascular Research, Department of Surgical Sciences,
Anaesthesiology & Intensive Care medicine, University Hospital, Uppsala University,
SE-75185 Uppsala, Sweden*

Neurotrophins promote survival and rescue nerve cells from death and promote neurite extension, neuronal survival and differentiation in several pathological conditions e.g., trauma, ischemia or hypoxia [1]. In spinal cord injury (SCI), the neurotrophins are capable to enhance axonal regeneration and reduce paraplegia or paralysis in some animal models. Other models of ischemic brain injuries, BDNF and IGF-1 induce neuroprotection. Recently, GDNF has been shown to be neuroprotective in ischemic injury in animals when administered even several hours after the insult [2]. On the other hand, application of NGF, NT-3/NT-4 was not effective in CNS injury models [2,3]. The reasons behind such diverse effects of neurotrophins in influencing cell injury and cell survival in traumatic injury models are not clearly known.

Thus, it appears that a combination of neurotrophins may either enhance or neutralize their neuroprotective efficacy in CNS injury. This investigation summarizes the recent trends in neuroprotective efficacy of neurotrophins in clinical and experimental cases of CNS injury. Furthermore, the influence of combination therapy of neurotrophins in a rat model of SCI and its functional significance largely based on our own investigation is discussed.

New data generated in our laboratory show that a suitable combination of neurotrophic factors may enhance the neuroprotective efficacy of neurotrophins on cell and tissue injury and improve sensory motor functions in a rat model [1-3]. Our investigations suggest that a suitable combination of neurotrophins will attenuate both neural and non-neural (glial cells and endothelial cells) damage in SCI leading to enhanced neuroprotection [1.4]. The possible cellular and molecular mechanisms of synergistic effects of some neurotrophins in combination are still speculative and require further investigation.

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**NEUROPROTECTION AND NEUROPLASTICITY. A HOLISTIC
APPROACH AND FUTURE PERSPECTIVES**

Dafin F. Muresanu, Professor MD

*The Neurology Hospital, University of Medicine and Pharmacy, Cluj-Napoca,
Romania*

Despite decades of active research for effective treatments of acute ischemic stroke, the only approved medication for use in the US and Europe is recombinant tissue plasminogen activator (rtPA). To date, since benefit has been proven for rtPA administration only within 3 hours of stroke onset, only a minority of stroke patients are considered for treatment, and the institutional barriers to delivering treatment are considerable. Only 2-3% of acute stroke patients actually receive rTPA.

In recent years, a number of drugs with neuroprotective activity have progressed from preclinical investigation to phase II and III clinical trials in patients with acute stroke. This article will explore reasons for the failed of some clinical developments of neuroprotectants and describe how the lessons learned from previous clinical trials have been integrated into the ongoing clinical development of the next generation of drugs.

NEUROPROTECTIVE MECHANISMS OF CEREBROLYSIN: EXPERIMENTAL MODELS

Bogdan O. Popescu

*Department of Neurology, University Hospital, University of Medicine and Pharmacy
'Carol Davila' Bucharest, Romania National Institute for Research and Development
of Biomedical Sciences 'Victor Babes' Bucharest, Romania*

In the last decade there is an accumulation of data indicating that neurotrophic factors play an important neuroprotective activity.

Nowadays is clear that different combinations of neurotrophic factors controls different physiological and pathophysiological processes.

This paper presents new original experimental models evaluating effects and demonstrating mechanisms of Cerebrolysin, so far, the only sustainable clinical therapy with active fragments of neurotrophic factors.

NEUROPROTECTION IN TRAUMATIC BRAIN INJURY

A.Cristescu, MD, Ph. D .

*Dept.of Neurosurgery, Bucharest Emergency Hospital
Romanian Academy for Medical Sciences, Research Nucleus for Neurosurgical
Emergencies*

The main problem of neurosurgeons and anesthesiologists facing severe traumatic brain injury is represented by prevention of installment of cerebral traumatic secondary lesion, which has a decisive influence on outcome of such patients. This lesion appears as consequence of action of various extra – and intracranial factors, among them - systemic low blood pressure and hypoxemia which in absence of a correct pre-hospital and at E.R. management, and sometimes, even in its presence, leads to a worsening of outcome in 30 – 40 % of cases. The post-traumatic neuronal degeneration is a consequence of primary and secondary lesions. The primary traumatic cerebral lesion is starting the " cascade" of neurochemical and phisiopathological events which are included in the so called secondary post-traumatic lesion - main factor for an unfavourable outcome. The correction of vital functions, as well as the early pharmacological management could stop the evolution of this process.

The primary traumatic cerebral lesion consists of : - cerebral lesions, - diffuse, including D.A.I.,too (Marshall's anatomo-CTscan classification,1991) and focalized (Gennarelli,1982); - meningeal lesions: - subarachnoidal hemorrhage (SAH), subdural- and epidural hematoma; - vascular intracranial lesions.

Meanwhile, the secondary traumatic cerebral lesion appears as late consequence of the effect of initial mechanical forces on nervous tissue and its surrounding structures. These are amplified by : 1.- extracranial concomitant systemic lesions: - circulatory failure, obstruction and/or compromising of respiratory ways, fracture of long bones with secondary hematomas leading to systemic arterial hypotension, hyperthermia, etc; 2.- nevraxial causes : - traumatic SAH leading to vasospasm;- mechanical obstruction of CSF circulation; - cervical spinal trauma ,leading to vascular collapse. The secondary cerebral traumatic lesion implies a multiple and concomitant action of various biochemical factors building up the neurochemical cascade, which develops hours, days, and even weeks after trauma. Characterization of this pathologic neurochemical cascade following TBI provides an opportunity for the development of therapeutic paradigms designed to the pathophysiologic activity of these" autodestructive" factors thereby preventing or attenuating cerebrovascular, metabolic, and histologic damage.

Neurotransmitters: -Monoamines. Catecholamines, norepinephrine (NE), epinephrine (E) and dopamine (DA) may participate in the pathogenesis of TBI. They have been correlated with injury severity, the degree of posttraumatic elevation of blood pressure, and heart rate.

Elevations in brain tissue or cerebrospinal fluid(CSF) concentrations of acetylcholine (ACh) have been reported after TBI in experimental animals and in man . Cortical serotonin (5-HT) metabolism was increased throughout the lesioned hemisphere following unilateral hemispheric freezing injury in the rat ,As antagonists for their actions were reported - amphetamine, active on noradrenergic and dopaminergic systems, scopolamine – inhibiting neurotransmission, thus reversing long-term deficits The 5-HT₂ antagonist, (S)-emopamil, has been reported to reduce regional cerebral edema, improve post-traumatic motor deficits, attenuate the post-traumatic fall in regional cerebral blood flow (rCBF).

Endogenous opioid peptides. The opioid peptides such as β -endorphin, dynorphin or enkephalin have been implicated in the pathophysiological cascade associated with TBI . Increases in regional concentrations of dynorphin following FP brain injury have been correlated with post-traumatic histological damage and reductions in rCBF The non-selective opiate receptor antagonist, naloxone, was observed to reverse the

hypotension, improve blood gases and EEG parameters and significantly increase brain perfusion pressure after experimental FP brain injury in cats and rats. Furthermore, recent studies have suggested that the release of excitatory amino acids (EAA) may contribute to dynorphin-induced neuronal damage, suggesting a potential link between release of endogenous opioids, excitotoxins, and posttraumatic secondary injury.

Excitatory amino acids (EAA).- their pathologic release seems to be involved in pathogenesis of TBI. Some pharmacologic agents which block the release as ketamine e.a. compounds such as phencyclidine (PCP), dextromethorphan, dizocilpine have been efficacious in alleviating trauma-induced behavioral, neurochemical and pathologic deficit.

IONS:

Calcium. Pathologic increases in intracellular calcium have been proposed as the final common pathway leading to cell death following ischemia or traumatic injury to the CNS, possibly due to activation of proteases, lipases and nucleases leading to degradation of neuronal cytoskeletal proteins, generation of free radicals, and DNA damage. Post-injury administration of nimodipine had no effect on cognitive and neurologic outcome, while the bifunctional 5-HT₂ antagonist and calcium channel blocker, (S)-emopamil, reduced post-traumatic regional cerebral edema, and improved post/traumatic motor and cognitive deficits improved rCBF following FP brain injury

Magnesium The decrease in magnesium may represent decreases in either intracellular mitochondrial or cytosolic concentrations of Mg and was directly correlated with the severity of the injury. Treatment with magnesium chloride improved motor function, and attenuated regional edema

Potassium. A rapid and massive release of potassium into the extracellular space occurs immediately following experimental brain injury, and has been associated with spreading depression and epileptic activity. Compounds such as ethacrynic acid and indacrinone (MK-196) that block chloride transport have been observed to reduce the mortality.

NEUROCHEMICAL FACTORS:

Free radicals and arachidonic acid metabolites. a number of studies have demonstrated the potential therapeutic utility of free radical scavengers in trauma, as follows: - alpha-tocopherol, lasaroids (amino-21steroids), and antioxidants as ibuprofene, indomethacin, deprenyl, allopurinol. Systemic administration of an iron chelator, desferroxamine, improved neurologic recover, too. Cortico-steroids are now practically of no more use in the management of traumatic lesions of brain, as well as of spinal cord (...)

Cytokines. In addition to blood-borne immunocompetent cells, neurons and glial cells within the CNS can also synthesize and secrete inflammatory cytokines, such as tumor necrosis factor (TNF) and the interleukins (IL), that may participate in the immunologic response to TBI

Growth factors. Endogenous neurotrophic factors such as nerve growth factor (NGF), basic fibroblast growth factor (bFGF), brain-derived neurotrophic factor (BDNF), and others [NT-3, support neuronal survival,] induce sprouting of neurites (plasticity), and facilitate the guidance of neurons to their proper target sites. They may facilitate repair following brain injury Other recently discovered factors which experimentally contribute to improvement are the pharmacologic inhibition of intracerebral inflammatory reactions through systemic administration of recombinant complement – inhibitor Crry-Ig offers neuroprotection (Schmidt and col.2005); as well, the implantation of genetic modified stem cells (Rittmann,2005) .Unfortunately, we have to wait until the introduction into practice of all these successful experimental works will take place in the routine management of TBI.

The practical aspects of neuroprotection in TBI are related to the following principles: 1- all brain injuries – severe (GCS \leq 8) ,or moderate (GCS= 13 -9) needs obligatory management in an neurosurgical department equiped with skilled,dedicated neurosurgeons and anesthesiologists ;2.- Stabilisation and maintaining of vital functions is the main objective assuring the neuroprotection and has to take place before the specific neurosurgical management .Neuroprotection begins with the first therapeutic measures in the pre-hospital phase and is depending on them; The main idea is to prevent installment of secondary posttraumatic cerebral lesion, responsible for highest mortality.The primary assessment will be systematic, using therapeutic algoritms (ATLS) and scores (GCS).There will be evidenced circulatory troubles and other alteration able to release the secondary traumatic brain lesion. It follows the assessment of gravity of TBI,as well as evidence of associated somatic lesions. Improvement of circulatory functions : - systemic arterial hypotension and hypoxemia are decisive factors determining a bad outcome, together with anemia, hyper – or hypocapnia, hypertermia , hypo- / hyperglycemia,e.a. Cerebral ischaemic lesions secondary to decrease of CBF in the acute phase of TBI – 80% of lethal cases - needs as strategic target maintaining of CPP > 70mmHg., average B.P.>90mm.Hg., , and systolic B.P.>120mm.Hg.Practical means: 1.- Volume therapy – isotonic and coloidal solutions (Hct. > 30%); hypotonic solutions – glucose 5% e.a. , counter-indicated;- plasmatic osmolarity = 295 – 315

mosmol/l.2. Catecholamins; 3.- Good hemostasis , approach of extracranial bleeding sources.

Prevention of respiratory failure: - hypoxemia and hypercapnia leads to cerebral vasodilatation with increase of IC P. Targets: - normoxemia, - $saO_2 > 95\%$, $paO_2 > 100\text{mmHg}$.;- normocapnia – $paCO_2 = 35 - 38 \text{ mmHg}$, $petCO_2 = 32\text{mmHg}$. Oro-tracheal intubation is obligatory at $GCS \leq 8$, and in cases with vital functions failure. Hyperventilation as routine is counter-indicated, excepting acute intracranial mass effect. (aggravates cerebral ischaemia).

- Analgosedation and general anesthesia – fights against increase of ICP secondary to pain and stress; it is obligatory in comatous patients, too.

- Management targeted on post-traumatic cerebral lesions: - 1. monitoring - clinical – GCS, abnormal pupils, motor responses; CTscan; ICP ; Auditive Evoked Potentials.2.- Emergency surgical evacuation of intracranial traumatic masses – SDH,EDH, cerebral lacerations and hematomas

- Combat high ICP ($> 20\text{mmHg}$.): - general measures- re-establishment of circulatory and respiratory functions;- analgosedation;- head elevated at 30° (if B.P. normal !);- Mannitol 20% - 0,25 – 1,5g /kgc. i.v. – only as bolus !; - CSF drainage; - limited hyperventilation ($paCO_2 < 35\text{mmHg}$) – not prophylactic, not at normal ICP ! – Barbiturate coma : - only after exhaustion of all conventional management manoeuvres,under invasive monitoring; - decompressive craniectomy. –Moderate hypothermia ($36,5^\circ - 34,0^\circ \text{ C}$) doesn't belong to standard management; - Specific neuroprotective substances are still a promise for the future. Corticosteroids are abandoned; it is advisable the use of pathogenic medication as anti inflammatory nonsteroids, antioxidants, analgic medication; - to avoid the „placebo” medication

In the ICU of our neurosurgical department, between jan.1,2006 - june,30th,2006 there were admitted 65 patients with severe TBI, mean age 38,5 years.The distribution on etiology was : - road accidents – 41; - falls – 11; - assaults – 5, and unprecized - 8. GCS at admittance was: -GCS 8: – 8 cases; GCS 7-6: - 23; GCS 5 – 2;GCS 4-3: - 32.Ther were primary operated 13 patients –SDH – 5,EDH – 4,cerebral lacerations – 4;In 55 cases there was applied the IC routine protocol in use in our department. ICP was monitorized in 15 cases. In 8 cases with refractory ICP $> 30\text{mmHg}$, there was applied barbiturate coma in 6, and decompressive craniectomy in 3 cases, all deceased. G.O.S. at release, was , as follows: G.R. – 14 patients;M.R. – 5; S.D. – 5; Vegetative st. – 3; Deceased – 38 (5 of them were in cerebral death,among them 3 used as donors).

TRAUMATIC BRAIN INJURY (PRIMARY AND SECONDARY LESIONS) TARGETS FOR ENDOGENOUS AND EXOGENOUS NEUROPROTECTION

*PROF. A.V.CIUREA *MD, G. ONOSE*MD, D. MURESAN**MD, ANGHELESCU A.*MD,
NUTEANU L.* MD, RIZEA R.* MD, BREHAR F.*MD*

**CLINICAL EMERGENCY HOSPITAL "BAGDASAR-ARSENI", Bucharest*

*** NEUROLOGICAL CLINIC "ION MINEA", Cluj-Napoca*

Background:

TBI represent an important medical and social problem because the mortality and morbidity remains very high in spite of many measures for prevention and curative therapies.

Introduction:

We mention as primary lesions in TBI: cortical contusions, lacerations, diffuse axonal injury (DAI), brainstem contusion and secondary lesions: intracranial hematomas, edema, hypoxemia, and ischemia. In the literature appear more than five hundreds neuroprotective substances, which influence the outcome in TBI, in correlation with the severity of the primary and secondary lesions.

The annual incidence of TBI in USA is 1, 5 milions cases (literature data).

Material:

This work aims, at first, to systematize the main "brain limits", responsive for the, yet unsatisfactory - as well as strongly dependent to a spontaneous / self-recovery, amount - outcomes of neurorehabilitation, after head injuries (excepting concussion) and also to emphasize the brain targets for endogenous and / or exogenous neuroprotection. The paper through a synthesis of some newest data in the field and stresses upon the following main items (and still at present, difficult clinical issues, too): morphofunctional, intrinsic limits of the brain's self-repair and plasticity, "skills"; brain limits due to the lesional processes and outcomes of the patho-physiological events' "cascade", "primary and secondary brain" (tissue/ intimate) injuries and respectively, brain damages / disorders (swelling, intracranial hypertension, seizures, arterial hypotension, hypoxia, diaschisis, hyperexcitability, pain). All of these enhance, in various ways and degrees, the brain's natural limits for spontaneous healing and plasticity; brain limits of:

sensitive/sensorial, motor, receptive/expressional (comprising very new !: "Noise") and/or cognitive, kind, that impair neurorehabilitation (including coping with rehabilitative/assistive: professionals, programs and/or technologies).

In a second part, - as a necessary step to radically different address, in the near future, the subject this paper summarizes, on one hand, some new insights of already known and accepted concepts, such as: neuroplasticity, functioning of redundant areas, compensation, neuroprotection and neurogenesis and on the other, the nowadays most known kinds of "appropriate" therapies, including the neuroprotective ones (all with limited results).

Conclusions:

All the primary and secondary lesions appear in the brain of the TBI represent life-threatening medical problem which increase the morbidity and mortality. All neuroprotective measures and neurorehabilitation introduced as soon as possible improve the outcome in TBI.

Key words: TBI, primary and secondary lesions, diffuse axonal injury (DAI), brain limits, redundant areas, neuroplasticity, neuroprotection.

MODULAR PROSTHESISING SYSTEM FOR THE SOCIO-ECONOMICAL RECOVERY OF THE PERSONS WITH PHYSICAL DEFICIENCIES OF THE ARMS

*Ing. Vladimir CARDEI (ICTCM), Ing. Daniel VASILESCU, Presedinte GSPH, Francisc SIMON, Presedinte Federatie ONPHR
ICTCM, ONPHR*

All over the world there are a lot of persons with accidental physical deficiencies of the upper members, due to congenital malformations, caused by workplace accidents. The socio-economical recovery of such persons is made either by extending the rests of the upper members, or by endowments with prosthesis, beginning with the simplest ones, esthetical prosthesis or mono-operational, up to complex prosthesis solutions, which include integrated auto-driving systems, commanded through bio-flux by the disabled person.

The complex prosthesis solution has a high price and requires a special training to insure a certain degree of different prosthesis components movements coordination, based on the nervous command impulses, generated by the prothesised person.

The original solution elaborated by SC ICTCM SA creates working posts, specific for different operations, functionally and ergonomically organized.

Working stations presents the possibility of fast mechanic, energetic and informational connections of the grabbing or working devices, specific to the operations from a certain workstation to an adaptive prosthesis, fixed on the disabled arm.

The supplying of the execution elements of the prosthesis with energetic agent (compressed air and/or electrical energy) is made by the disabled person by moving some foot levers.

The driving or action devices are deposited in storage spaces, coupling or decoupling from the prosthesis being made by taking or depositing them in their corresponding storage space.

In the international framework our purpose is to find research partners for development, application and achievements of the following objectives:

- Joint research and development of modular prosthesis system for activities specific workstations, designed for the socio-economical integration of the person with accidental arms disabilities, for professional, domestic and entertainment activities
- The research and development of standardized modular components, made of light materials, with high mechanical performances, based on modern specific technologies

Applying this prosthesis system, it's expected to get the following:

- Reducing the costs for the socio-economical recovery for the person with physical disabilities of the upper members, due to the constructive simplicity, to the modularization and to the reduced training time
- The possibility to rapidly adjust according to the activity field of the person with accidental physical disabilities of the upper members and to the particularity of its disabilities, due to the modular construction
- The handling possibilities substantial increased by an ergonomic planning of the workstation
- The opening of a research and application field with humanitarian purposes

The original solution of the workstation, protected by the patent nr. 109.170 , won the silver medal to the International Inovations Salon Geneva 1996, and is based on original solution of grabbing or working devices, automatically interchangeable, solutions elaborated by ICTCM and protected by patents nr. 105.603 and nr. 105.604, awarded with

the silver medal at the 27-th Geneva Salon, 1999, with the Excellence Diploma for Research, to the Fair SIR 2000, Romania, and the bronze medal at the 50-th Salon for Innovation, Research and New Technologies, Bruxelles, EUREKA 2001.

**STANDING AND GAIT RECOVERY IN HEMIPLEGIC PATIENTS:
OUTCOME COMPARATIVE ANALYSIS BETWEEN POSTURAL
REFLEXES / REACTIONS STIMULATION VS. CLASICAL
PROPRIOCEPTIVE PROCONTRACTILE FACILITATION METHOD**

CONF.DR. ONOSE G. , PROF. CIUREA AV** , DR. ANGHELESCU A* . DR. CHIPARUS C.E.* , DR. CRACIUNAS S***. , PROF. CFM MARDARE D.C.* , PROF. CFM MIHAESCU* A.S., LECT. UNIV. CRACIUNAS D*****

** Rehabilitation Unit, Bagdasar-Arseni Hospital , Bucharest, Romania*

*** I –st Neurosurgical Unit, Bagdasar-Arseni Hospital, Bucharest, Romania*

**** II-nd Neurosurgical Unit, Bagdasar-Arseni Hospital , Bucharest, Romania*

***** "Spiru Haret "University, Bucharest, Romania*

Keywords: Kabat method , Gamma circuit, generator central spinal cord motor pattern , synapsine-1 , BDNF

The present study is a review of latest neurophysiological, conceptual data and practical bases of techniques, exercises and methods of neuromuscular procontractile facilitation.

Our service, as a reference unit in neurological rehabilitation has (according to the data presented at the last AMN Congress Copenhagen 2006), one of the wider casuistic in domain, result of a specialized assistance activity over 3 decades.

In this context, the study compares, using appropriate statistical tools, postural reflexes / reactions stimulation (tilt table, standing, alternative monopodal uphold) vs. the classical proprioceptive procontractile facilitation method.

The frame of research include 2 lots of patients (the reference and the study group) each containing 15 patients with traumatic or vascular brain injuries.

The preliminary results encourages the utilization of the postural mechanisms in the neurorehabilitation practice (less side-effects and time saving technichs) vs. the classical methods of kinetotherapy (procontractile facilitation)

**THE ORTHOSTATISM AND WALKING ASSISTANCE/ RECOVERY
TO THE OLD PERSONS WITH SEVERE DISABILITIES AND
PATIENTS SETTING OUT FOR CARDIO-BREATHING AND/OR
NEURO-LOCOMOTOR SEVERE INSUFFICIENCIES WITH THE
HELP OF ROBOTISED ORTHETICAL SYSTEMS**

Dipl.eng. Vladimir CARDEI (ICTCM), Conf. dr. Gelu ONOSE (SCUBA), Prof. dr. Alexandru Vlad CIUREA (SCUBA), Dr. Jean CIUREA (SCUBA), Dr. Liliana ONOSE (METROREX), Dr..Olga SURDU (SBRT), PhD.eng. Tudorel Stefan CRACIUNOIU (ICTCM), Eng. Valeriu AVRAMESCU (ICTCM), Eng. Roxana GREJDANESCU (ICTCM), Eng. Loredana Theodora PAUN (ICTCM), Eng. Maria Gratiela POPESCU (FPCP), PhD Eng. Constantin DOGARIU (UPB), PhD eng. Vergil RACICOVSCHI (ICPE), PhD eng. Tudor URSU (ICPE), PhD eng. Mircea MODREANU (ICPE), PhD eng. Emilia VISILEANU (INCDTP), PhD eng. Eftalea CARPUS (INCDTP), Eng. Angela DOROGAN (INCDTP), PhD eng. Alexandru MOLDOVANU (INCDMF), Eng. Gheorghe HUIAN (INCDMF)

ICTCM, SCUBA, INCDTP, INCDMF, METROREX, ICPE, SBRT, FPCP, UPB

The paper presents the most important applications of the bionic robotics regarding to the orthostatism and walking assistance/ recovery to the plasiad or/and old persons, with severe locomotor and/or cardio-breathing disabilities, ones of the most playing diseases, as the dependence those induce it's hard to take over, in the individual plane, as well as to the level of the social costs. Giving back the independence, in the private plane, in the economico-social, family and professional planes, as well as holding as many plasiads as possible between the tax payers, represents one of the most difficult and important challenges for the interdisciplinary top scientific research. Aiming this, within the framework of an interdisciplinary scientific corporation (consortium) a serie of scientific research projects have been started and their objective is to make an orthetic robotised suit, CORAFROM, capable to assist functionally the orthostatism and walking to the plasiad patients or/and old persons with disabilities. In this report are mentioned the projects gained in the national competitions framework, regarding to the achievement of the orthetic robotised suit components: optimized solutions for electrical actuators for the driving of the included components, a complex equipment to test the main components used in the structure of assistance devices for the severe locomotor and/or cardio-breathing disabilities recovery and to determine the cinematic parameters of the main locomotor functions for a orthetic robotised structure, equipment which can also be ajusted to kineto-therapy. It's also presented the unfolding excellence project into the

consortium framework, aiming mainly the achievement of an experimental orthetic mechatronic device model (considered as an assembly), as a basic element of the integrating CORAFROM concept, device consisting of a number of components used to research the main techno-medical problems, which condition the achievement of this important multidisciplinary objective: (a) - carrying modular structure of an orthetic mechatronic device made of composite materials; (b) - balancing the true specific weights and recovery of the energy spent due to the anti-gravitational moves of the orthetic mechatronic device segments; (c) - driving and supplying optimized solutions for the orthetic mechatronic device; (d) - optimized solutions for the interaction between the internal side of the orthetic mechatronic device and the contact teguments areas of the assisted person; (e) - solution to improve the venous-lymphatic return circulation, while persons with neuro-locomotory disabilities are walking; (f) - equipment insuring sensors, autonomy and command of the orthetic mechatronic device, during the informational interaction with the assisted person and (g) - command equipment of the orthetic mechatronic device for the development of specific programmes for the main locomotory functions. Some of those components can be used as independent product for the treatment of the circulatory disease to the locomotory system. The outstanding evolution of the researches in the field of electro-active polymers, especially of the carbon nanotubes, will lead to application also in the domain of the robotised orthesis, allowing the evolution of the orthetic mechatronic device to a robotised orthetic suit, which can be wore under the cloths. In the future, researches will be represented by the optimisations of the proposed solutions and by the improving of the interaction human being – machine, based on the collecting/ transducing / amplifying /transmission-wireless at the level of the orthetic suit, of the somato-sensitive and cortico-spinal motory bio-potentials.

PROGRESS IN LESIONAL EPILEPSY SURGERY

Buchfelder M, Romstöck J, Weigel D

Dept. of Neurosurgery, University of Erlangen-Nuremberg, Germany

Current operative therapy of pharmacoresistant focal epilepsies is based on thorough preoperative diagnostic evaluation. To estimate the area of epileptogenic brain tissue precise morphological and functional examination is necessary. Given that the anatomical localization of the suspected epilepsy focus and the topographic representation

of various functional qualities are defined, the neurosurgical resection of epileptogenic brain tissue becomes possible.

Relatively recently presurgical diagnostic methods and new intraoperative techniques were developed allowing to diagnose and treat patients who were unsuitable candidates for epilepsy surgery several years before. Preoperatively collected structural and functional data are provided by advanced magnetic resonance imaging (MRI) and spectroscopy, functional MRI, MRI volumetry and tractography, nuclear medical imaging, magnetic source imaging (MSI) and magnetoencephalography (MEG). Pathological findings are matched with normal cerebral function in eloquent brain regions, e.g. the speech areas and the motor pathways. During surgery this information is integrated into the operative work flow allowing the resection of putative epileptogenic foci in the close vicinity of functionally significant eloquent brain areas.

Intraoperative imaging with a high-field MRI scanner offers the opportunity to evaluate the volume of resected tissue during surgery, the combination with a neuronavigation system allows to precisely approach epileptogenic foci and to spare functionally eloquent structures. Our experience with 86 patients operated on temporal or extratemporal focal epilepsy with intraoperative MR imaging and functional neuronavigation is promising, the combined use with intraoperative electrocorticography (ECoG) helps to add certainty to the definition of the suspected epileptogenic area.

The combination of intraoperative high-field-MRI, electrocorticography and integration of functional data into a neuronavigation system is a novel approach to optimize the tailoring of epilepsy surgery close to eloquent cortical areas. Especially patients harboring lesional pathologies or suffering from critical neuropsychological backgrounds are good candidates to profit from this technological progress.

CONSEQUENCES OF SHUNT INSERTION ON HEARING MECHANICS AND INTRACRANIAL PRESSURE IN HYDROCEPHALIC PATIENTS.

J. CHAZAL A. CHOMICKI, P. AVAN

*Neurosurgery department, sensory biophysics department , Auvergne University –
Clermont-Ferrand*

After the surgical placement of a ventriculo-péritonéal shunt in hydrocephalic patients, the degree of clinical improvement is variable and intracranial pressure dynamics is poorly understood.

A recently developed non invasive technique makes it possible to follow pressure variations : it is based on otoacoustic emissions, sounds naturally emitted by the cochlea and routinely detected in audiology. When intracranial pressure changes, otoemissions undergo a phase shift while crossing the oval window. The goal of this work is to show how this shift is affected by the shunt placement.

Otoacoustic emissions were recorded repeatedly in 22 patients who suffered from chronic hydrocephalus. Their phase shifts were measured in sitting and recumbent positions, before and after surgical placement of a ventriculo-peritoneal shunt (with Sophysa SU 8 valve).

Postural shift in normal subjects is a phase lead, and this outcome was found in 17 of 22 patients preoperatively. After shunt placement, the postural effect became a phase lag in 18 patients of 20. In a given posture, sitting or recumbent, phase shifts changed from pre to postoperative measurements in a systematic manner.

Otoacoustic emissions respond in a characteristic way to posture changes in normal adults, and the fact of received a shunt for chronic hydrocephalus reverses the effect, presumably in relation to the existence of a "vacuum" in the inner ear.

NEW PERSPECTIVES IN CSF FISTULA DIAGNOSIS

Horia Ples M.D.; Constantin Costea M.D.; Stanca Ples M.D.; Dan Costea M.D.; Adela Rohnean M.D.; Gratian Miclaus M.D.

*Department of Neurosurgery, County Hospital Timisoara;
Neuromed Timisoara Romania*

Keywords = CSF fistula diagnosis, IRM examination

IRM examination for CSF fistulas in our clinic use a CISS T2 sequence (Siemens - Constructive Interference in Steady State). It is a Echo Gradient 3D image, T2 weighted sequence. After making 2 acquisitions of steady state type with 2 different levels of excitation, a combination of this two acquisitions is made, taking out artifact of skull base. For that reason this type of sequence is now used for inner ear and cranial nerves.

Advantages: -the sections are very thin (0,15 mm);

-being a gradient echo sequence, it allows a good quality image of bone structures and disconnections also;

- in T2 weighted CSF is extremely white, shiny, in contrast with adjacent structures, having gray scale colours;
- possibility of reconstruction in 3D planes using MPR technique;
- it is non- invasive, non-irradiant;
- no need for medium contrast by suboccipital or lumbar puncture;
- special positioning is not necessary (prone, special position used for Hypophysis) because image acquisition is multiplanar, the patient is lying in normal dorsal decubitus.

Disadvantages: -the contraindications of IRM examinations (pacemakers, metallic implants).

This first stage of our study is made up of seven cases, three posttraumatic CSF fistulas and four spontaneous CSF fistulas. Surgery was performed in four cases: in three spontaneous CSF fistulas and 1 posttraumatic CSF fistula. Good results after surgery: good neurological outcome without complications.

SUPRAORBITAL KEYHOLE APPROACH VIA EYEBROW INCISION FOR SKULL BASE LESIONS

*Sergiu Stoica, M.D., Michel W. Bojanowski, M.D., FRCSC
Service de neurochirurgie, Hôpital Notre-Dame,
Centre Hospitalier de l'université de Montréal*

Keywords: key hole, vascular, skull base, aneurysm

OBJECTIVE :

The supraorbital approach through a supraciliary incision, could replace the classic pterional approach for skull base tumoral and vascular lesions. The technique it is not yet standardized. The limits are not well defined. We would like to present our surgical experience.

METHODS :

Our group includes nine patients operated through a supraciliary incision during a four months interval. Of the nine patients 4 were treated for sphenoidal meningioma, 3 for anterior circulation aneurysms, one for craniopharyngioma and one for intracerebral hematoma. After an eyebrow skin incision is made, a limited supraorbital craniotomy (15/25 mm) is performed.

RESULTS :

The supraorbital keyhole approach allowed an excellent exposure and complete angiographical exclusion of anterior circulation aneurysms. For the skull base meningioma we performed total removal (Simpson II), optic nerve decompression and visual improvement. We performed a two-stage procedure by the same approach for one patient. All the patients in our group had a very good outcome, and reduced post surgical discomfort compared with the classic pterional approach.

CONCLUSION :

The supraorbital keyhole approach allowed an excellent exposure of anterior circulation aneurysms and anterior and middle fossa skull base tumors. The craniotomy could be extended by an orbital rim/roof removal and opening of the SOF. This approach reduced the post surgical discomfort compared with the classic pterional approach. Technical considerations will be discussed.

MICROSURGICAL REMOVAL OF POSTERIOR PETROSAL AND PETROCLIVAL MENINGIOMAS: A REPORT OF 6 CASES.

Ass. Prof. Ph.D. Iacob G.

Neurosurgery Clinic, Universitary Hospital

Objective: the surgical removal of posterior petrosal and petroclival meningiomas is required because of their deep location in the posterior fossa, especially if tumors are large or giant sized, involving multiple areas of the clivus, relation of the tumors with the brain stem, cranial nerves, vertebrobasilar artery and branches.

To study the use and advantages of combining the suboccipital-retrosigmoid approach with the petrosal approach especially in petroclival meningiomas.

Patients and methods: 6 woman: 4 cases of posterior petrosal and 2 cases of petroclival meningiomas were operated in the last 3 years and retrospectively analyzed, including: the history, clinical data, imaging studies, surgical & histological records, follow-up records. The basis on which the approach was assessed, as were its benefits and risks. Results: The main age was 56 years (range 34-72 years).

Bony changes at the petrous apex was seen in two cases with petroclival meningioma, when tumors involved the middle and upper clivus, the petroclival junction, the Meckel's cave, the cavernous sinus with brainstem compression.

Gross total resection was achieved in 4 of 6 patients, using a conventional retrosigmoid approach and in one case a petrosal approach. Tumor residual 1/1 cm was related in one case to cavernous sinus posterior involvement and bony invasion at the petrous apex. After surgery two patients had a transitory palsy of the third (extrinsec) and the seventh nerve, installed immediately after operation, but one patient died after a hemorrhagic infarct in the midbrain.

Conclusion: Posterior petrosal and petroclival meningiomas present a unique challenge to neurosurgeons and a variety of techniques have been advocated. The conventional retromastoid-retrosigmoid approach can be suitable for a select group of petroclival meningioma providing a direct and early exposure of the lateral and inferior tumor extensions in relationship to the clivus, also the attachment of the tumor to the dura overlying the posterior face of the petrous apex. The petrosal approach is a major advancement in the safe and total removal of clival and petroclival tumor, requiring only minimal retraction of the cerebellum, shortening the operative distance to the clivus by 3 cm, offering to the surgeon a direct line of sight to the lesion, also the anterior and lateral aspects of the brain stem, intercepting early in the operation the vascular tumor supply.

I underline that detailed radiologic studies are essential to define tumor location and extensions, vessels encasement, venous anatomy delineation.

For a better prognosis, in selected patients, it's important to precise, with intraoperative monitoring, a judicious application of cytoreductive surgery at the first operation, facilitated by the presence of an intact arachnoidal membrane separating the meningioma from the brain stem, the consistency of the tumor or whether tumor encasement of the basilar and pontine perforators exist.

EVALUATION OF THE ANTI-PROLIFERATIVE EFFECT OF HELIANTHINE ON GLIOBLASTOMA CELLS IN VITRO

*Oana Alexandru **, *Ligia Tataranu***, *V. Ciubotaru***, *Anica Dricu**

** Department of Oncology-Pathology , Cancer Center Karolinska , Karolinska / Institute / Hospital , R8:00 , Stockholm S-17176 , Sweden*

*** The 3rd Neurosurgery Clinic , Emergency Clinical Hospital "Bagdasar – Arseni", Bucharest , Romania*

Glioblastomas are the most common subtype of primary brain tumors in adults and are among the most devastating neoplasms. These tumors are highly invasive, very aggressive, and often infiltrate critical neurological areas within the brain. Surgery is

performed to remove as much of the cancerous growth as possible. In spite of advances in surgical techniques, survival of the patients ranges from 9 to 12 month after initial diagnosis. Chemotherapy alone or combined with radiation are also considerable tools in glioblastoma therapy, in treating the remaining tumor or in preventing metastases, but often unsuccessful because of an intrinsic or acquired drug/radiation resistance of the tumour cells. Another main problem with these therapeutic regimens is lack of cancer-cell selectivity which limits efficiency and complicates treatment causing several adverse effects. Therefore, novel therapeutic compounds for treatment of glioblastoma patients are urgently needed. The present study was designed to investigate the effect of the novel anticancer drug candidate, helianthine, on the glioblastoma cell lines proliferation and to elucidate its mechanism of action in vitro. For this reason, 2 glioblastoma cell lines (18KJ40 and 38JL59) established at the University of Uppsala Sweden were used. The anti-proliferative effect of the drug was evaluated using MTT proliferation assay. Western-Blot analysis of the samples was performed in order to determine the effect of the drug on the signal transduction proteins. Our study showed that helianthine induced cytotoxicity in glioblastoma cells activate several stress proteins, indicating that this molecule may be a potential candidate in developing novel treatment of glioblastoma.

THEMODAR ROLE IN VASCULAR CHANGING IN RECURRENT GLIOMA

Florian Stefan I., MD, PhD; Cernea Dana MD**, Petrescu Magda MD***; Suci Bogdan MD*.*

** 1st Neurosurgical Department - University of Medicine and Pharmacology "Iuliu Hatieganu" – Cluj-Napoca*

*** Oncology Institute "I.Chiricuta" – Cluj-Napoca*

**** Anatomopatological department - University of Medicine and Pharmacology "Iuliu Hatieganu" – Cluj-Napoca*

High-grade gliomas, the most common primary brain tumors in adults, are usually fatal. The current standard of care for glioblastoma is surgical resection to the extent feasible, followed by adjuvant chemo radiotherapy. Temozolomide, a novel alkylating agent, has shown activity against recurrent glioma and in combination with radiotherapy significantly prolongs survival. Temozolomide appears to be an ideal, first-line, single-agent, with a safe profile and demonstrated HQL benefits in patients with high-grade gliomas. Molecular studies have demonstrated that the benefit is mainly observed in

patients whose tumors have a methylated methylguanine methyltransferase gene promoter. However continuous TMZ administration is associated with profound lymphocytopenia, thrombocytopenia, general weakness and an increased risk for opportunistic infections. Reoperation significantly prolongs survival and HQL but morbidity and infection rate is higher than for the first operation. There is also a macroscopic change of tumoral vessels observed during the reintervention. Is there any connection between TMZ and these vascular changes? The authors present a study based on 55 cases of recurrent glioma admitted and operated for recurrent glioma between 01.01.2002-31.12.2005 at the First Neurosurgical Clinic of University Cluj-Napoca Hospital. We compare the microscopic and macroscopic changes on histopathological aspect of primary and recurrent glioma, operative complication and outcomes for patients treated with temozolomide comparative with non treated patients.

CHRONIC PAIN FOLLOWING LUMBAR SPINAL SURGERY IN 1000 PATIENTS

Ass. Prof. Ph.D. Iacob G.

Neurosurgery Clinic, University Hospital

Objective: to investigate the relationship between pre-op lumbar pathology (disc hernia, stenosis), psychological assessment and post-op chronic pain, objective neuro-radiologic findings.

Method: A series of 850 patients with a single operation and 150 patients with multiple operations were examined clinically and radiologically 6 months following surgical intervention considering especially pain, subjective disability, walking capacity, motivation to return to work. Age average was 38,5 years (22-64).

Results: In the group of 850 patients periradicular fibrosis was diagnosed pre-op in 3,52% and post-op in 12,75%. In the 150 patients with multiple operations, the incidence of periradicular fibrosis had risen to 42,35%.

In the group of 850 patients with single operations 77,52% considered themselves improved, 18,74% unchanged, 3,74% considered themselves worse than pre-op, complained of chronic postop lumbar pain occasionally 25,79%, while 69,35% complained lumbar and unilateral leg pain and 4,86% of lumbar and bilateral leg pain.

In the group of 150 patients with multiple operations only 43,25% considered themselves improved, 25,51% unchanged, 31,24% considered themselves worse than pre-op, complained of chronic postop lumbar pain occasionally 16,59%, while 74,86% complained

lumbar and unilateral leg pain and 8,55% of lumbar and bilateral leg pain. 6 month after operation only 49% had returned to work.

Conclusion: Proper patient selection and techniques to avoid periradicular fibrosis are necessary in order to prevent chronic post-operative pain. Emotional disorders, low motivation to return to work and maladaptative illness behavior were predictor of worse outcome at 6 month follow up.

COMPLEX LUMBAR VERTEBRAL MALFORMATION AT AN ADULT. CASE REPORT.

**Daniel Balasa MD PhD, *Ovidiu Carp MD, ** Carmen Ciufu MD*

** Department Neurosurgery, Clinical Emergency County Hospital Constanta*

*** Department Neuroradiology, Euromedic Private Unit, Constanta*

Key Words: lumbar vertebral malformation

Case presentation. Male, 54 years old, admitted in Department Neurosurgery, Clinical Emergency County Hospital Constanta for low back pain from 6 months, progressively increased, gait difficulties from 2 months progressively increased.

Clinic exam: vertebral L3 dermal sinus, angioma of the skin immediately above dermal sinus, light paraparesis.

Xray films of the lumbar and thoracal spine: Spina bifida occulta at multiple levels L5, S1, S2, S3, S4.

Lumbosacral saculography: Normal

MRI and CT Scan of Thoracal and Lumbar spine: L3 intramedullary lipoma, L2 Diastematomyelia fibrous form and diplomyelia, L2 superficial dermal sinus, L2 superficial angioma, tethered cord with conus medularis at L4, spina bifida occulta at five levels L5,S1,S2,S3,S4

Surgical treatment: considering that the symptatology is done by intramedullary lipoma and secondarily by the tethered cord I avoid to operate the diastematomyelia and diplomyelia.

The surgical strategy consisted by 2 operations:

- Microsurgical resection of the dermal sinus and angioma..

- Microsurgical subtotal resection of the lipoma and resection of the adherencies of the conus medularis. Operation was done 10 days after the first operation, on a "clean" surgical wound. The borders between the spinal cord and the lipoma was not entirely clear. For that reason, I performed subtotal resection of lipoma.

Postoperative evolution was good: paraparesis disappeared, back pain diminished almost complete.

Postoperativ follow up was 3 months with good evolution.

Conclusions: this very rare malformation of the lumbar spine became symptomatic very late because of the intramedullary lipoma and secondarily because of the tether cord and the surgical treatment was mandatory to neurologic improvement..

CRANIAN, ENDOCRANIAN EXTRADURAL AND CERVICAL PARAVERTEBRAL HYDATIDOSIS

Angela Olarescu, A.I. Constantinescu, C. Tudor

Neurosurgical Clinic 1, University Emergency Hospital, Bucharest

Keywords = cranian hydatidosis, endocranian hydatidosis

The authors present a case of a 41-years-old patient, with a total follow-up period of 22 years, initially diagnosed with cranian localization and subsequently with endocranian extradural and even cervical paravertebral hydatidosis.

The patient was diagnosed and operated on in 1984 for cranial hydatidosis, with occipital and petrous temporal bone localizations. In 1989 he was reoperated on for endocranian extradural development. The same localization of the hydatid disease was found at the reinterventions for recurrences in 1994 and 1998.

The medical antihelminthic treatment (although incomplete) with albendazole did not improved the outcome.

The patient was reoperated on in 2000 for a giant right posterior cervical mass, developed in continuity of the occipital cranian localization. It was found a giant hydatid cyst (18-10-8 cm.) and many other small cysts located in the occipital bone. The cervical hydatid cyst was located in the paravertebral area, only dissecating the muscular planes. After the removal of this cyst and of all small cysts located in the cranian occipital and extradural region, the postoperative course was favourable until december 2005 when the patient developed a recurrence with cranian and extradural occipital localizations, this time

presenting moreover subdural intracerebellar cysts. The patient was again operated on, with good postoperative course.

The aim of this case presentation is to highlight the rarity of a such case, with particular and extremely rare hydatid disease localizations – endocranial extradural (under 2% of cases) and cranial.

CRANIOSPINAL JUNCTIONAL TUMOUR

P. Patrascu, M. D., Prof. Al. I. Constantinescu, M.D., A. Iliescu M.D.

University Emergency Hospital Bucharest, 1 Department of Neurosurgery

Keywords: Craniospinal junctional tumour

Relatively rare tumours, with a benign prevalence, (meningiomas and neurinomas together represent approximately 90% of them) they have an uncharacterized symptomatology in the first phase, subsequently, during the evolution course, the clinical signs are represented by paralyses of the final pairs of cranial nerves, especially of the hypoglossal in the case of craniospinal tumours or cervicooccipital pains, paresthesias in the limbs and hemiparesis in the case of spinocranial tumours.

The diagnosis is seconded by the imagistic investigations, especially magnetic resonance and CT. The surgical tackling is very difficult because of the localization of the tumour.

The patient D.D., 38 years old, was hospitalized, indicating that she had been suffering from cervical rachialgias and left hemicrania prominent slowly progressive for 2 years, as well as paresthesias and a diminishing of the left limbs' strength for 3 months before hospitalization.

The magnetic resonance indicates a tumour 27/ 23/ 28mm, well delimited, with contrast enhancement projected at the level of the occipital hole, on the internal side lateral left of the meninx and moving the cervical spinal cord C1, C2 and the medulla oblongata in the inferior third, the left vertebral artery moulding the superolateral side of the respective tumour.

The surgical intervention implied a posterior tackling with the total ablation of the tumour, which anatomopathologically was proven to be meningioma. The postoperative evolution has been favourable with the total improvement of the neurological shortages.

CYSTIC OPTIC NERVE SHEATH MENINGIOMA

Tatiana I. Rosca MD PhD, Benone D. Carstocea MD PhD**, Teodora Gh. Vladescu MD PhD*, Cecilia St. Tihoan MD PhD*, Gherghescu Gh. GH. MD PhD**

** Clinical Emergency Sf. Pantelimon Hospital, Bucharest, Romania*

*** Emergency Military Hospital, Bucharest, Romania*

Key words: proptosis, meningioma, cyst

A 58-year-old woman with a 35-year history of left proptosis underwent neuroimaging that revealed a large cystic lesion. Surgery revealed an optic nerve sheath meningioma associated with cyst formation. The cyst was actually part of the tumor rather than a secondary phenomenon. Intracranial meningiomas with cyst formation have been described but never as being located in the orbit.

DIFFICULTIES IN POSTERIOR SUBOCCIPITAL APPROACH WITH C1-C2 LAMINECTOMY FOR ANTERIOR FORAMEN MAGNUM MENINGIOMAS: REPORT OF TWO CASES WITH TOTAL RECOVERY

Dr. Tascu A., Prof. Dr. AV. Ciurea, Dr. Talianu D., Dr. Radulescu R., Dr. Tigan L.

Departement of Neurosurgery, Emergency Hospital "Bagdasar-Arseni"

OBJECTIVE: Ventral foramen magnum meningiomas are rare lesions that account for more than 3% of all meningiomas. The surgical treatment of patients with foramen magnum meningioma remains challenging. We reviewed the clinical findings and the surgical results of two cases of patients with foramen magnum meningioma of ventral type who underwent preoperative magnetic resonance imaging (MRI), angio-MRI, CT-scan, and tumor removal by the suboccipital approach.

METHODS: From November 2005 to March 2006 two patients (a 55 years old male and a 60 years old female) with foramen magnum meningiomas arising from the anterior rim of the foramen magnum underwent operations in the Department of Neurosurgery at "Bagdasar –Arseni" Emergency Hospital. All patients were operated in a prone position by use of a conventional suboccipital approach with a midline incision, extension of the craniectomy laterally toward the side of the tumor and C1-C2 laminectomy.

RESULTS: The intradural vertebral artery was partially encased on both sides in the two patients with the brainstem displaced posterior. Total tumor resection with "step

by step” dissection was achieved for all the patients and after surgery was no significant postoperative complication with total recovery. The length of follow-up was 6 months , and there has been no recurrence of the tumor on postoperative MRI.

CONCLUSIONS:Foramen magnum meningiomas can be completely and safely removed in most cases, using an “classic” posterior suboccipital approach and microsurgical techniques .

Key words: foramen magnum meningioma, posterior suboccipital approach, step-by-step dissection.

GIANT SPINAL NEUROFIBROMA, WITH INTRATHORACIC AND SUBCUTANEOUS EXTENSIONS. CASE PRESENTATION

C. Tudor, D. Teleanu*, A.I. Constantinescu*, C. Barbulescu**
Neurosurgical Clinic 1*, Thoracic Surgery Clinic**,
University Emergency Hospital, Bucharest*

Keywords = spinal neurofibroma

The authors present an uncommon case of a giant neurofibroma, with three components: spinal extradural at the T4 – T5 levels, intrathoracic and subcutaneous.

The patient was a 74 – years – old man, presented with a 5 months history of slowly advancing paraparesis (Frankel score B) and distorted sensation at the level T6. A soft-tissue mass (12-8-3 cm.) was identified in right-sided posterior thoracic region.

The MRI and CT scan studies demonstrated a tumor that occupies the spinal canal at the T4-T5 levels, compressing the spinal cord, the extraspinal components extending in the thoracic cavity and in the subcutaneous region. Both intrathoracic and subcutaneous extensions has a cystic component.

The surgery was performed in a multidisciplinary team, in a single stage posterior exposure, with minimum surgical stress. The T4 - T5 laminectomy provide contiguous intraspinal, foraminal and extraforaminal access, allowing the total resection of the intraspinal extradural component (easily separated from the dura mater). After the gross total removal of the contiguous subcutaneous component, the intrathoracic mass was resected by posterior thoracotomy. The pathology confirmed the diagnosis of neurofibroma.

The postoperative course was uneventful and the patient regained his ability to walk two weeks after surgery.

INTERFERENTIAL MEDIUM FREQUENCY ELECTROSTIMULATION (WITH BTL COMBINE APARATUS) IN TREATMENT OF NEUROGENIC BLADDER

*Onose G, Chendreanu-Daia C, Mihailescu C, Lapadat M, Chiparus C, Anghelescu A, Popescu L
Clinical Emergency Hospital "Bagdasar Arseni", Rehabilitation Clinic, Sos Berceni 10-
12, Bucharest, Romania*

Keywords: Interferential medium frequency electrostimulation, neurogenic bladder

The experience of neurogenic bladder's treatment with interferential medium frequency electrostimulation is quite rare. So, we compared, by appropriate statistical methods, two groups of patients study and control; The protocols of the interferential medium frequency electrostimulation treatment at the study's group was: 1 application daily, 10 times, then 1 application each days, another 10 times (with appropriate electrostimulation parameters according to the producer's formulae). No treatment with all sorts of neurogenic bladder medications was permitted.

The results are hopeful regarding electrostimulation's parameters: despite the relatively small number of evaluated patients and, on the other hand, the complexity of neurogenic bladder pathology, we can assert the interferential medium frequency electrostimulation treatment have a real improvement potential a major contribution to a significant voluntary bladder control it's still years away. However, it is necessary to continue and extend such a study as an adjuvant precious therapeutic mean.

INTRANEURAL METASTASIS IN A PERIPHERAL NERVE

*Prof. Al. I. Constantinescu, M.D., P. Patrascu, M. D., Irina Julea M.D.
University Emergency Hospital Bucharest, 1 Department of Neurosurgery*

Keywords=Intraneural metastasis peripheral nerve

The cases of intraneural metastasis are rarely described in the few specialized papers as singular possibilities, that is why there is little known about this chapter.

The patient P.A., 51 years old, has been operated upon 6 years ago, from a mammary neoplasm with postoperative cobaltotherapy and afterwards a therapeutical bilateral ovariectomy.

She was hospitalized for left cervicobrachialgia which appeared one month before and had a progressive nature. Clinically, she presented a motor shortage in the C7 radicular territory where she also had a cutaneous hypoesthesia.

The cervical vertebromedullary CT has pointed out a nodular formation of 10/10 mm at the level of the left C7 conjugation hole, and the magnetic resonance has shown a left C7 root thickened with homogenous contrast connections and the widening of the conjugation hole.

The surgical intervention implied the ablation of the tumour of left C7 cervical spinal root placed intra- and extra- foraminal, which anatomopathologically was proven to be metastasis. The patient's postoperative evolution has been favourable with the improvement of the neurological symptomatology.

INTRAORBITARY TUMORS OUR EXPERIENCE ON 58 CASES

*R. Radulescu, MD, F. Brehar, MD, Prof A.V. Ciurea, MD, A. Tascu, MD, A. Iliescu, MD
Hospital "Bagdasar-Arseni", Bucharest, Romania
1-st Neurosurgical Clinic,.*

Background:

Intraorbital tumors represent a complex pathology because of the histopathological diversity of these lesions. Intraorbital tumors can be grouped in anterior orbital tumors and posterior orbital tumors. According to literature data the posterior orbital tumors include the following histopathological entities: optic nerve glioma, which represent 22% of all orbital tumors, meningiomas, 17%, osteoma, 11% and neurofibroma, 8, 5 %. The main symptoms are: proptosis, chemosis, diplopia, local pain and decrease of visual acuity.

Material and methods:

The authors studied 58 consecutive cases. The mean age was 42 years. There was no sex preponderance. The diagnosis protocol included: clinical observation followed by CT scan, MRI ± Angiography.

Of all cases, 50 cases were operated using the following surgical approach: fronto-temporo-orbital approach and fronto-temporo-orbito-zygomatic approach.

Results

The authors performed a gross-total resection in 50 cases (86%) and near total resection in 8 cases (14%). According to our data meningiomas represent the most preponderance intraorbital tumors: 18 cases (31%), followed by hemangiomas 8 cases (13,8%) , optic nerve glioma 6 cases (10,3%), cavernomas 4 cases (6,8%), hemangioendoteliosarcomas 3 cases (5,1%) and miscellaneous (adenocarcinomas, dermoid cysts, malign limfoma, melanomas, neurofibromas). Gamma-knife therapy was used to treat the remnant tumor in 2 cases of rabdomiosarcomas.

The postoperative follow-up protocol included: clinical and ophtalmological evaluation evaluation, CT scan and MRI.

Conclusions:

The intraorbital tumors represent a diverse and complex pathology. In order to obtain proper results we need to apply a multidisciplinary therapy: neurosurgical and ophtalmological measures. The main objective is the preserve of visual acuity. The best management is represented by multimodal treatment: surgical procedure followed by complementary treatment (ophthalmological± oncological treatment)

Key words: intraorbital tumors, CT scan, MRI, visual preservation

LASER MLS METHOD IN HUMERAL ARTHROSIS: AN OUTCOME COMPARATIVE ANALYSIS VERSUS CLASICAL PHISIOOTHERAPY

*Onose G, Chendreanu-Daia C, Mihailescu C, Lapadat M, Chiparus C, Anghelescu A, Popescu L
Clinical Emergency Hospital "Bagdasar Arseni", Rehabilitation Clinic, Sos Berceni 10-12, Bucharest, Romania*

Keywords: Humeral arthrosis, LASER MLS

LASER MLS is a cutting edge, extremely new, LASER application, officially recognised and validated (both scientifically and clinically) in 2003 in USA; the successful emission system contains a multidiode applier, powers five laser sources, witch make it

possible to perform a multitarget area, simulateneously stimulating the optimum portion of affected tissue.

It is for the first time when this aparatus is being used and tested in Romania, by our clinic; we approached in this work the comparative analisis of its outcomes in humeral artrosis (application ot a formula standardised by the produser: ASA) versus clasical phisiotherapy consisting in ultrasonotherapy and interferencial medium frecquency electrostimulation. We compared by apropiate statistical methods two groups of patients study and control. The results are hopefull: the visual analogical scale indicates semnificant improuvements.

LASER MLS METHOD IN LOW BACK PAIN: AN OUTCOME COMPARATIVE ANALYSIS VERSUS CLASICAL PHISIOOTHERAPY

*Onose G, Chendreanu-Daia C, Mihalescu C, Lapadat M, Chiparus C, Anghelescu A, Popescu L
Clinical Emergency Hospital "Bagdasar Arseni", Rehabilitation Clinic, Sos Berceni 10-
12, Bucharest, Romania*

Keywords: low back pain, LASER MLS

LASER MLS is a cutting edge, extremely new, LASER application, officially recognised and validated (both scientifically and clinically) in 2003 in USA ; the successful emission system contains a multidiode applier, powers five laser sources, witch make it possible to perform a multitarget area, simulateneously stimulating the optimum portion of affected tissue.

It is for the first time when this aparatus is being used and tested in Romania, by our clinic; we approached in this work the comparative analisis of its outcomes in low back pain (application of a formula standardised by the produser: ASA) versus clasical phisiotherapy consisting in ultrasonotherapy and interferencial medium frecquency. We compared by apropiate statistical methods two groups of patients: study and control.The benefits are yet unclear, esspecially when low back pain emerges from an acute radicular inflammatory process.

NEUROSURGICAL DIFFICULTIES IN PNET: OUR EXPERIENCE IN 129 CASES

*C. Pascal**, MD, *Prof A.V. Ciurea**, MD, *A. Tascu**, MD, *A. Iliescu**, MD, *M. Lisievici***, MD
Hospital "Bagdasar-Arseni", Bucharest, Romania
** 1-st Neurosurgical Clinic, ** Histopathological Dpt.,*

Background:

Primitive neuroectodermal tumors represent one of the most malignant groups of brain tumors. This group includes the following histopathological entities: medulloblastoma, retinoblastoma, ependimoblastoma, neuroblastoma, esthesioneuroblastoma, polar spongioblastoma and pineoblastoma. All these tumors have some specific features. Therefore, from histopathological point of view they are embryonal tumors with undifferentiated cells, or with divergent differentiation along the neuronal, astrocytic, ependymal, muscular or melanocytic lines. These tumors are also invasive tumors (grade IV), with frequent recurrence and CSF dissemination.

Material and methods:

The authors studied 129 consecutive operated cases from 2001 to 2006 (a period of five years). There no sex preponderance. Of all these cases, 94 were under 16 years (paediatric population) and 35 were older then 16 years.

The diagnostic protocol included the neurological examination followed by CT scan and MRI investigation. The ophthalmologic examination and brainstem evoked potential completed the diagnosis. The management consist in neurosurgical procedures (tumor exeresis as much as possible± cerebrospinal fluid drainage), adjuvant therapies (radiotherapy and chemotherapy) and stereotaxic radiosurgery (Gamma-knife).

Results:

In 50 cases authors performed a gross-total removal (38,7 %), near total removal 49 (37,9%), partial removal 30 cases (23,2%) and no biopsy.

The postoperative evolution was asses at one year after surgical procedure using GOS scale. Of all cases 71 (55%) were GR, 30 (23, 2%) were MD, 11 (8, 5%) were with SD, 5 (3,8%) were in PVS and 12 (9,3%) died.

Conclusions:

PNET represent an important problem of paediatric pathology. Modern neuroimaging tools (MRI) allow an early and precise preoperative diagnostic. The golden aim is the maximal tumour resection followed by adjuvant therapy. These tumors are characterised by a severe prognosis.

Quality of life and family reinsertion represent our final goals.

Key words: PNET, MRI, total resection, Quality of life.

OLIGODENDROGLIOMAS

*Florian St. I., PhD MD; Andraşoni Zorinela MD, Dura L. MD, Iordache Linda MD, Matei C. MD
Cluj-Napoca County Hospital, 1st Neurosurgical Department
University of Medicine and Pharmacology "Iuliu Hatieganu" – Cluj-Napoca*

Recent evidence show that these tumors have been underdiagnosed. The authors present a study based on 22 cases of oligodendrolioma admitted between 01.01.2002-31.12.2005 at the Neurosurgical Clinic of University Cluj-Napoca Hospital. The male:female ratio of case series is 2:1. Our peak incidence is in the 5th decade. The main clinical presentation features was seizures having a long history, in 13 of cases (59%). According to the location: frontal lobes 9 cases (40%), temporal lobes 6 (27%), frontal-temporal lobes 5 cases (23%), intraventricular 2 cases (9%).

All our patients were operated and in most of the cases (19 cases, 86%) we performed total removal. We recorded 14 cases (63%) of pure oligodendrogliomas and 8 cases (36%) of mixed gliomas or oligoastrocytomas. In 16 cases (73%) we found a low grade oligodendroglioma and in the rest of the cases (8 cases, 27%) a high grade oligodendroglioma. In the majority of cases, the outcome was good and very good and no immediate or long term complications were encountered. The recurrence was found in 2 cases (9%) and reintervention was performed. The follow up included: neurological examination, enhanced CT or MRI and oncological examination monthly, for the first 6 months, and than each 6 months.

PROPTOSIS DUE TO ECTOPIC SECONDARY PARANASAL SINUSES MENINGIOMAS

Tatiana I. Rosca MD, Maragkos Nikolaos MD**, Dan Aurel Nica MD*, Teodora Gh. Vlădescu MD* ,
Gherghescu Gh. MD**

** Clinical Emergency Sf. Pantelimon Hospital, Bucharest, Romania*

*** General Hospital "Agios Panteleimonas", Pireas, Greece*

Key words: proptosis, meningioma, paranasal sinuses

The presence of a meningioma outside the central nervous system is considered to be ectopic. These ectopic meningiomas are differentiated by their connection to the central nervous system (primary) or without a central nervous system connection (secondary).

Meningiomas originating in the paranasal sinuses are very rare.

We have described one patient with meningioma arising from the paranasal sinuses (bilateral frontal and ethmoidal sinus origin in a 54-year-old man) and the management of this disease.

SPECIFIC FAMILY PSYCHOLOGICAL PROTECTION IN SCI

*Virginia ROTĂRESCU**, Ștefan MILEA*, Alexandru V. CIUREA**

** UMF "Carol Davila", Bucharest, Romania*

*** Clinical Hospital "Bagdasar-Arseni"*

Objective: The study aims theoretically the special needs of families with a spinal cord/traumatic brain injured parent through the identification of the post-traumatic changes in the family system. The practical objective describes the pilot degree of functioning of the precocious prevention on psycho-pathology as a long term effect for the children in these families.

Context of the research: Clinical Hospital "Bagdasar-Arseni", Bucharest, Romania.

Material and method: Between 10.01.2002 and 06.30.2006, 116 families were identified and included in the study. The experimental-sample includes 58 families with a TBI/SCI traumatized parent from the hospitalized patients through Neurosurgery Emergency Room and 58 Bucharest healthy families for the control-sample. Each family

has been assessed (excepting the injured parent from the experimental-sample) by a questionnaire battery to mark the mental health condition of the parents (BDI), the quality of life (SF-8), their coping strategies (F-COPES), the functional degree of the family system (FAD) and the effects on children (CBCL/YSR). The pathology of the injured parent has been considered the independent variable objectified through the type of the injury (brain or spinal-cord) and the functional autonomy degree (Karnofski-Index) extracted from the medical protocol.

Results: Against the normal families, the injured patient families express the suffering of a troubled system. In the families of the spinal cord injured patient the life quality is lower, the needs for social support are higher and the general functioning is decreased. The children in these families have a psychiatric risk through a grown tendency towards internalization/externalization and total problems. The effects of the stressing event can decrease through psychological counseling, the coping strategies become more efficient and the family's functionality and health get better.

Conclusions: This information helps to form intervention strategies, meaning that, from the mental health perspective, the target in psycho-pathology prevention on children can be formed from these influencing factors.

Key words: spinal-cord injury, family functioning, children, long term health, precocious prevention.

SPHENOIDAL BROWN TUMOR

Constantin Costea M.D., Stanca Ples M.D., Horia Ples M.D., Dan Costea M.D., Ioana Zosin M.D., Maria Cornianu M.D.

Department of Neurological Surgery, Department of Endocrinology, Department of Histo-pathology, Medical University of Timisoara, Romania

Keywords= sphenoidal brown tumor, hyperparathyroidism, parathyroid adenoma

Brown tumor is a bone tumor, localized usually in long bones and is associated with primary hyperparathyroidism (HPT). Skull base localization is very rare. Histopathological characteristics of this tumor are: localized accumulation of osteoclasts, fibrous tissue and blood, high hemosiderin contents and characteristic brown colour.

Primary HPT is a result of hypersecretion of parathormone (PTH) from parathyroid tumors (adenoma), localized normally or ectopic .

We present a case of 47 year old woman , hospitalized in our department from 28.04.2004 to 28.05.2004.She presented :headache , dizziness, visual disturbances , (bitemporal hemianopsia).

Cerebral MRI showed a midline sphenoid tumor, of 4x3,5x4,2 cm , with ethmoid, clivus, cavernous sinus , suprasellar extension and ophtho-chiasmatical involvement.

Neurosurgical procedure consisted in subtotal removal of the skull base tumor with optic chiasm decompression by sub frontal approach. Large extension of the tumor limited the neurosurgical removal. Histo-pathological result was a bone tumor with large accumulation of osteoclasts , fibrous tissue and blood and hemosiderin .This type of tumors are osteoclastomas or brown tumors in case of HPT.

After the surgery the patient recovered well for 2 days; on the 3-rd day she developed confusion , anorexia , vomiting, nausea . We continued exploring by performing blood tests . She had hypercalcemia , hyperphosphatemia and 10 times the normal PTH level . We performed a plane X ray of left hand and found a V metacarpal bone tumor. We also performed an abdominal and pelvic CT scan in which the radiologist discovered a bone tumor in the sacrum. An urography revealed a nephrocalcinosis in right kidney. In the Endocrinology department a thyroid echography was performed. The left inferior and the right superior parathyroid were increased in their dimensions. The general surgeons discovered two parathyroid tumors(adenoma), and they performed a parathyroidectomy .

The patient recovered well after surgery, with normalization of calcemia, phosphatemia and PTH level and a good neurological status .

**SPINAL TRAUMA AT TORACO – LUMBAR JUNCTION.
NEUROSURGICAL EXPERIENCE OF BUCHAREST EMERGENCY
HOSPITAL (2001 – 2005)**

*D.R. Bentia MD, A. Cristescu MD, Ph.D., A. Topor MD
Dep.. of Neurosurgery, Bucharest Emergency Hospital*

Spinal trauma represents a serious and difficult part of our daily activity,dedicated to all neurosurgical emergencies . In the period 2001 – 2005,there were admitted 528 cases,among them 220 patients presenting spinal lesions at T11 – L2 level.

There were 170 males and 50 females-ratio 3,4/ 1, and the majority of victims – 176 – 80,0% occupied the active decades of life, - mean age 44,6 years. Recording to profession, the majority belonged to hard labour sectors- industria- 132 (60%) ,or agriculture -66 (30%). The etiology of spinal trauma was in our series, as follows: - falls from height -136 patients (61,8%); -falls at the same level – 22 (10,0%);- traffic accidents – 26 (12,0%); -assaults - 24 (10,9%); - work – 8 (3,6%),and domestic accidents – 4 (1,8%).

The time between the moment of trauma and presentation to hospital was: - under 24 hours: 191 patients (86,8%); 1 – 3 days: 8 (3,6%); 3-7 days: 4 (1,8%),and over 7 days: 17 (7,7%)The patients were send: - from the place of accident with ambulance: 83 (37,7%) ,or with nonmedical transport : 28 (12,7%); - local hospitals: - 44 (20.0%); - county hospitals: - 52 (23.6%),and university clinics: - 13 (5.9%).

The neurological disturbances at admittance were, recording to Frankel's scale, as follows: A.- 64 patients (29,1%); B.- 53 (24,1%); C. – 46 (20,1%); D.- 40 (18,2%), and E. – 17 (17,7%). Local signs were represented by : local pain in all cases; local swelling and ecchymosis – 77 cases (35,0%); nonpenetrant wounds -6 (2,7%), and penetrant wounds with CSF leaking – 2 (0,9%). Associated lesions found in 87 patients (39,5%) consisted mainly in head injuries – 44 (20,0%),followed by thoracic trauma – 24 (10,9%),and abdominal – 7 (3,2%); traumatic shock was mentioned in 2 cases. Radiologic investigation consisted in standard X-rays in all cases, spinal CTscan – 33 cases (15.0%) ,and spinal MRI – 165 cases (75%). Recording to the site of lesions , their distribution was, as follows: T11- 18 (8,2%); T11-T12 – 10 (4,5%); T12: 62 -(28,18%); T12-L1: 22 - (10,00%); L1: 90 - (40,90%); L1-L2: 4 -(0,18%), and L2: 24 patients - (10,9%). The type of confirmed vertebral lesions was: compressive fracture of vertebral bodies - 194 cases (88,2%); fracture- luxation – 14 (6,3%) , and luxation – 12 (5,4%)

Medical treatment consisted in maintaining of vital functions, corticotherapy recording to NASCIS III algorithm - 203 cases

Surgery was applied in 154 patients (70,0%) presenting compressive vertebral fractures or posttraumatic discal protrusions ,or vertebral instability. Surgical contraindications - 14 cases were based on presence of somatic complications as severe pulmonar lesions ,hemodynamic instability or generalized sepsis. The moment of intervention was mainly in the first 1-4 days, recording to the general and neurologic status of each patient. The surgical approach was in all cases decompression and posterior stabilisation with plates and transpedicular screws. In 66 patients - 30 %, there was no surgical indication, the treatment consisted in thoraco-lumbar orthosis

immobilisation, sedatives, prevention of complications, early transfer to a rehabilitation center. Surgical complications were cited in 16 cases – 7,3%, mainly local hematomas. Medical complications - 88 cases (40 %) consisted in urinary infections – 68 cases , bronchopneumony – 30, bed sores – 16, septic shock in 9 cases – all deceased, e.a. From all the operated patients, 61 – 27,7% were transferred to rehabilitation centers.

The outcome ratio favourable/unfavourable is presented, recording to Frankel's scale. It is to mention the dominance of unfavourable results in patients belonging to stage A. operated or non-operated, and the real improvement in patients belonging to B-D stage - 99/106 cases, that means situation of patients in a more favourable Frankel degree as before surgery. There were 11 deceases (5,0%) , the majority of them multitraumatized, with general complications above mentioned,

It is to emphasize that our department presents some particular features in the management of spinal trauma, as, the higher number of associated extraspinal lesions, opportunity of an urgent MRI investigation, as well as lack of personal and lesser material opportunities as well as lesser interest in the ICU in applying the modern algoritms of management of spinal trauma. The future will surely offer our patients better management conditions.

THE COMPLEX REHABILITATION AFTER TRAUMATIC BRAIN INJURY, IN THE SUBACUTE PHASE

Prof. A.VCiurea ., Onose G.**, Anghelescu A.**, Mihailescu Cezara**, Chiparus Carmen**, Mardare CD**, Sanda Anca Mihaescu**, Monica Haras***

** First Neurosurgical Clinic, ** Physical & Rehabilitative Medicine Clinic*

Clinical Emergency Hospital "Bagdasar Arseni", Sos Berceni 10-12, Bucharest, Romania

The complex rehabilitation after traumatic brain injury, in the subacute phase (especially phase II, toward phase III); experience in the Emergency Clinic Hospital "Bagdasar-Arseni", Bucharest, Romania.

Traumatic brain injury (TBI) represents an important problem of public health in Romania as worldwide, by the extension of the therapeutic measures imposed in the acute phase, as well as the severe dizabiling sequels and greatly burdening the health society is budget.

This paper is a retrospective statistic analysis of 333 patients after TBI, transferred in subacute phase, in the Physical and Rehabilitative Medicine Clinic, during 2001-2005;

some patients were re-admitted, in chronic phase. Etiology of the TBI was: car accidents 194 (58%), accidental fall from height 63 cases (19%), aggression 44 cases (13%), various others cause 32 patients (10%).

The evolution according the clinic-functional diagnostic and age groups repartition (0-20 years; 21-40 years; 41-60 years and over 60 years) were analyzed. Presence of the pressure sores and urinary infections, at admission and discharge, was assessed.

It was also analyzed the auto-evaluation of the quality of life and the percent of familial and socio-professionalreintegration.The patient's evolution after the neurotrophic and neuroprotective medication as well as the kinethotherapy procedures is approached. Our results were corresponding to the actual level of therapeutic interventions and rehabilitation; the majority of the patients at discharge presented improvements, comparably to the statistical profile evaluations in literature.

TRAUMATIC AND SPONTANEOUS POSTERIOR FOSSA HEMATOMAS – COMPARATIVE STUDY REGARDING PROGNOSTIC FACTORS AND PROPOSAL FOR PROGNOSTIC SCORES

Mihaela Teodoru, M.D., H.Moraru, M.D., Ph.D., A.Cristescu, M.D., Ph.D., Dr.G.Dascalu M.D.

Department of Neurosurgery – Emergency Hospital Bucharest

Whether these lesions are traumatic or nontraumatic in origin, the morbidity and mortality rate of posterior fossa hematomas remain relatively high and for that, even they occur much less frequently than supratentorial hematomas they should be reevaluated regarding prognostic factors and select those factors which can be improved. Recognition and optimal treatment timing are the key factors for the management of these cases. We present our experience in the management of these hematomas, which involved an aggressive diagnostic approach with the extensive use of head computerized tomography scanning because the clinical manifestations were frequently nonspecific. We studied 58 cases of spontaneous posterior fossa hematomas and 29 cases of traumatic posterior fossa hematomas operated between years 2000 and 2005. Cases were stratified by clinical course, Glasgow Coma Scale score, their radiological status (certain radiological features), other intracranial or extracranial lesions and Glasgow Outcome Scale score. Compared with

outcomes reported in the literature, good outcome was found in both series (traumatic and nontraumatic).

Trauma-induced posterior fossa hemorrhagic lesions represent 4,1% of all intracranial traumatic lesions in our department. Epidural hematoma is the most common lesion seen (48%), followed by intracerebellar hematoma (38 %) and subdural hematoma associated or not with cerebellar laceration (14%). The age distribution of these patients was between 5 and 68 years. The types of trauma that cause these posterior fossa lesions include falls from height (52 %), falls from same level (20%), traffic accident (11%), assault (10%). Treatment of these lesions is operative – craniectomy centered on the lesion and evacuation of the clot. Mortality rate was 34 % and depends to a large degree on the patient's neurological status at the time of operation and associated intra- and extracranial lesions.

Spontaneous posterior fossa hematomas represent 17% of spontaneous intracerebral hematomas operated. The highest frequency is in the sixth through eight decades of life. Most of them are related to hypertension (78%), anticoagulants are another common predisposing factor. Rupture in the fourth ventricle and secondary hydrocephalus has been studied as prognostic factors. Treatment includes control of blood pressure, coagulation status and surgery – posterior fossa craniectomy and evacuation of the clot. Mortality is very high if the patient is in deep coma at operation time.

Our study shows that even those hematomas have the same location the prognostic factors are slightly different and the management results are different and the score we propose for each of the groups (traumatic and nontraumatic) have different criteria.

