The 2nd Congress in the Danube-Carpathian Region Controversies in neurosurgery

29th May –1st of June, 2012, Cluj-Napoca, Romania

The second edition of the Congress in the Danube-Carpathian Region - Controversies in neurosurgery has been held between 29th of May and 1st of June, 2012 in Cluj-Napoca, Romania.

The topics of the 2nd Congress Neurosurgical controversies in the Danube-Carpathian Region were:

- Tumors around the sella: Transcranial or transsphenoidal approach?
- Cranio-vertebral junction lesions: with or without fusion?
- Arterio-venous malformations: surgery, radiosurgery or embolization?
- Spontaneous intracerebral hemorrhage: conservative vs. surgery
- What's new in brain and spinal cord protection and recovery?
- Advances in electrophysiology

Prof. Dr. Ioan Ştefan Florian was the Congress President and Prof. Dr. Dafin Fior Muresanu was the co-president of the Congress. The congress was proceeded by the German-Romanian Course.

SELECTED ABSTRACTS

INTRACRANIAL APPROACH FOR SELLAR REGION TUMORS

Ştefan Florian[1,2], B.Pintea[1,2], Z. Andrasoni[2]
[1]University of Medicine and Pharmacy "Iuliu Hatieganu", Cluj-Napoca, Romania
[2]Cluj County Emergency Hospital, Department of Neurosurgery, Cluj-Napoca, Romania

Introduction: The principles in the surgical management of sellar and suprasellar tumors are to relieve mass effect, normalize pituitary hypersecretion, preserve or restore normal pituitary function, prevent tumor recurrence and to provide tissue for pathological and scientific study. Selection of the approach is based on the size, configuration and location of the tumor.

Aim: This review consists in a case series of patients with suprasellar tumors operated by transcranial approach in 1st Neurosurgical Department of County Emergency Hospital Cluj-Napoca between 01.01.2000 - 31.12.2010.

This study targets to add some arguments in favor of classical intracranial approach which could be the treatment of choice for many of these tumors.

Patients and methods: We present a retrospective study of a single centre single surgeon on 228 consecutive cases with large suprasellar tumors admitted and operated in our department between 01.01.2000 and 31.12.2010.

Results: All cases selected for this study had extrasellar extension, demonstrated on the preoperative neuroimagistic studies.

Like other reports on suprasellar tumors, the most common type of tumor in our study was pituitary adenoma, 118 of cases (52%), followed by tuberculum sellae and planum sphenoidale meningioma, 68 of cases (30%) and craniopharyngioma, 28 of cases (12%). Other tumors encountered in this region was low grade glioma, 7 of cases, immature teratoma 2 cases, 3 cases of germ -cell tumor and 2 cases of metastasis.

The peak incidence was in the 5th decade. Sex ratio was 1, 28.

The most common ophthalmic presentation was blurred vision, in 90% of cases. Headache, the second most common presentation was presented in 68% of cases.

The mean duration of symptoms was 12, 7 months.

All our cases underwent surgery by transcranial approach, unilateral fronto-temporal in 152 of cases (67%), unilateral subfrontal in 47 of cases (21%), bifrontopterional in 12 cases (5, 5%), and bifrontal in 9 cases (4%), interemispheric transcallosal in 5 cases (1,5%) and frontoorbitozigomatic in 3 cases (1%).

Surgical related complications were transient visual alteration in 3 cases, local infection in 4 cases, intracerebral hematoma in 3 cases, arterial vasospasm in 2 cases, transient diabetes insipidus in the large majority of pituitary adenomas and craniopharingiomas. Only 4 cases of pituitary adenomas and 2 of craniopharingiomas recurred after subtotal resection, requiring re-intervention.

Gross total resection of the tumor was achieved in 83% of cases. Mortality rate was 1,5%.

Concussions: The classical fronto-temporal approach is enough for complete removal of large tumors in this region. There is no need for larger opening for multidirectional approach because that means multiple ways for brain injury. The key points are proper positioning, proper opening, brain relaxation and surgical experience.

ENDOSCOPIC APPROACHES TO THE SELLAR REGION: ENDONASAL, SUPRAORBITAL OR INTERHEMISPHERIC

Joachim Oertel

Neurochirurgische Klinik, Universität des Saarlandes, Homburg / Saar, Germany

The indication for endoscopic assisted surgery in skull base lesions is under controversial discussion. Experienced skull base surgeons often consider the endoscope to be unnecessary while a younger generation of surgeons counts on the value of the endoscope. Often it is forgotten that the endoscope is an instrument for visualization with distinct advantages and disadvantages. Thus, the advantages of the endoscopic technique can only be appreciated in combination with an ideal approach and an adequate surgical technique.

Here, various approaches to the sellar regions such as endonasal transsphenoidal, supraorbital endoscopic, interhemipheric microsurgical with endoscopic assistance and pterional microsurgical with endoscopic assistance are presented. The distinct advantage with particular respect to application of the endoscopic of each approach is described.

After presentation of the various approaches, a detailed account on selected cases of each approach is given. Exemplary lesion such as meningiomas, pituitary adenomas, Rathke's cleft cysts and craniopharyngiomas are presented. The peculiar advantages and disadvantages of the various approaches in each lesion are explained.

In all, after careful selection of the approach, the endoscopic technique is a valuable tool in selected cases of skull base procedure within or next to the sellar region. In a small subgroup of these procedures, the endoscopic is indispensable.

SURGICAL MANAGEMENT OF SELLAR AND PARASELLAR MENIGIOMAS

Adrian Balasa, Rares Chinezu, Ors Hajducsi

Neurosurgery Department, Targu Mures Clinical Emergency Hospital, Targu Mures, Romania

Sellar and paraselarmeningiomas represent 4 – 10 % of all intracranial meningiomas. Due to their close proximity to the arteries of the anterior circulation, anterior visual pathways, hypothalamus and pituitary stalk the have always been regarded as challenging cases. Traditionally these cases have been operated via intracranial approaches (subfrontal, frontopterional, supraorbital) but advances hardware and technique have included this pathology in the indications of transsphenoidal endoscopic operations.

Material and method: Patients operated in the past 5 years at the Neurosurgery Department of the TarguMures Clinical Emergency Hospital.

Results: A number of 30 cases have been operated for sellar and parasellarmeningiomas: 13meningiomas of the 1/3 inner sphenoid wing and anterior clinoid, 12 tuberculumsellaemeningiomas, 5 planum-sphenoidalemeningiomas. All cases have been operated by cranial approach (subfrontal, frontopterional) The mean age of the group is 51+/- 17 years, sex ratio F/M is 23/7. Primary symptoms were visual disturbances (loss of sight or visual impairment, diplopia), followed by convulsive seizures and personality changes.

22 cases presented increase in visual acuity, in 5 cases preservation of sight has been achieved while in 3 casepatients postoperatively presented decreased visual acuity.

We had 1 scalp infection that required surgical removal of the bone and later cranioplasty. In one case there was a severe thrombosis of the intracavernous carotid that resulted in the death of the patient.

Conclusion: Microscopic intracranial approaches are a safe technique and widely used technique. Endoscopic approaches have been proven to be effective in selected cases, but further studies are required.

TUMORS AROUND THE SELLA EASY AND DIFFICULT MICROSURGICAL CASES

Ion Poeata[1,2], B Iliescu[1], S. Gaivas[1], Z. Faiyad[1], D. Rotariu[1]

[1]3rd Department of Neurosurgery "Prof. Dr.N.Oblu" Clinical Emergency Hospital, Iasi, Romania
[2]"Gr.T. Popa" University of Medicine and Pharmacy Iasi, Romania

Objectives: Pituitary adenoma represents the most frequent tumour encountered in the sellar region. Following our initial

experience with endoscope assisted transphenoidal approach we compared the indications, technical aspects, and surgical results with the well-developed transcranial approach.

Material and method: We have analyzed retrospectively the cases of pituitary adenoma treated surgically between Jan 2006 and Dec 2010. We looked at the presenting symptoms, hormonal status, local extension, surgical approach, tumor histology, type of resection, tumor volume, cavernous sinus invasion, surgical corridors, recurrence rate, intraoperative and postoperative complications.

Results: 72 patients were included in the study, with an equal sex distribution. The pathology was dominated by pituitary macro adenomas in 47 cases. Hormonal status evaluation showed 51.3% as being non-secreting pituitary adenomas. 65.2% of the cases underwent surgery. The surgical indication was based on the hormonal status and the involvement of the optic apparatus, which in our series was 51%. The invasion of the cavernous sinus has been classified according to the Knosp criteria [7]. According to this grading system 44% of the cases were in grade 3 and 4. The most used surgical approach was the pterional approach in 83% and transsphenoidal approach in the remaining 17%. The most frequent postoperative complication encountered in our series was represented by meningitis, in 13% of the cases. The endocrine complications were represented by transitory diabetes insipidus in 23.4% and SIADH in 4.2% (2 cases). The follow up at 3 months showed no cases of early recurrence, from the group of patient with STR 6 were sent to radiotherapy. At the 1 year follow we documented 3 deaths, 3 cases of hydrocephalus (treated with ventriculoperitoneal shunt), 19 cases showed no imagistic or clinical signs of tumour reccurence, while 22 presented with imagistic evidence of stable residual tumour with no clinical symptoms.

Conclusions: The main surgical indication in pituitary adenomas is represented by the secreting hormonal status of the patient (excepting prolactin secreting tumours) and the impairment of the vision. The most frequent surgical approach was represented by the transcranial (pterional) approach due to the large dimensions and invasiveness of the tumours presented in our series but also the surgical team preference (in the absence of intracranial endoscopy at those times).

Keywords: pituitary adenoma, pituitary apoplexy, prolactinoma, sellar region

CONTROVERSIES IN ADULT BRACHIAL PLEXUS SURGERY CURRENT CONCEPT IN TRACTION INJURIES

Lukas Rasulic

School of Medicine, University of Belgrade, Serbia Clinic of Neurosurgery, Clinical Center, Belgrade, Serbia

Background: Adult brachial plexus surgery still remains a long and hard task. Traction injuries of the brachial plexus present a major problem in surgical management of peripheral nerve injuries. The reasons for this are difficult identification and differentiation of the level and extent of the injury, and a limited possibility for surgical reconstruction, especially in cases of avulsions of one or more spinal nerve roots.

Aim: This study analyzes the results of surgical treatment of traction injuries of the brachial plexus in 98 patients, 78 of whom were with avulsion of one or more spinal

roots, and the other 20 with peripheral traction injuries.

Methods: Retrospective analysis.

Discussion: Depending on the degree of nerve damage, the methods of surgical treatment are neurolysis, nerve grafting and nerve transfer. Nerve transfer is also problematic because none of microsurgical techniques or methods regarding the choice of donor nerve have proven appropriate thus far. Furthermore, there are several dilemmas that still remain in the field of the brachial plexus traction injures surgery which remains controversial up to date:

1. Which is the best way to evaluate the viability of the proximal stump of the injured brachial plexus? Physical examination, electrophysiology, image studies or histology?
2. Grafts or distal transfers in the repair of postganglionic supraclavicular lesions?
3. Flail arm: until when the surgical repair should be done?
4. Treatment options in severe adult brachial plexus traction injuries: choice of nerve transfer.

We have tried to resolve this dilemmas on the basis of our experience in 187 surgical procedures performed in accordance with functional priorities, including 146 nerve transfers.

Keywords: brachial plexus, nerve grafting, nerve transfer, neurolysis, traction injury.

ANTERIOR DENS AND TRANSARTICULAR SCREWS FUSION FOR COMBINED ATLANTOAXIAL FRACTURES

Roxana Matica

Neurochirurgie Städtisches Klinikum Braunschweig Brunswick, Lower Saxony, Germany

The treatment for combined dens fractures type Anderson II and Jefferson fractures is controversial and there are no established guidelines. Because reports of combination C1-C2 fractures are relatively infrequent until now sufficient studies to support treatment standards do not exist. A retrospective study of 3 cases with posttraumatic combined atlantoaxial factures stabilized with triple anterior screws was undertaken. All patients were over 70 years old. The accidents occurred by falling. The operations duration was between 1h30min and 2h50min. The ventral dens and transarticular fusion had good follow-up results in all 3 cases, none of the patients needed reoperation. The neurological outcome was favorable with no deficits.

Objectives: The treatment for combined dens fractures type Anderson II and Jefferson fractures presents management challenges. Because reports of combination C1-C2 fractures are relatively infrequent standards or guidelines haven't been established. For relatively stable fractures immobilization is the first option. For instable C1 and C2 fractures with luxation fusion is recommended. Cases of triple ventral fusion with dens and transarticular screws are uncommon. A retrospective study of 3 cases presenting these combined fractures stabilized in this manner in Klinikum Braunschweig was undertaken.

Aim: This study presents 3 cases of patients who were admitted with combined dens fractures type Anderson II and Jefferson fractures. All patients were female, had no neurological deficit and were over 70 years old. Anterior triple screw fusion was the chosen technique for stabilizing the fractures. These cases are proposed examples of the therapy option. The operations good results aim to point the

need for a structured statistical study in order to obtain an indication consensus.

Report: A female patient 85 years old was admitted with Anderson type II odontoid fracture, Jefferson fracture and additionally C4/5 pseudolisthesis and C5/6 subluxation. The patient had fallen at home and had no sensory or motoric deficits. The indication for ventral fusion given the multiple diagnoses was established. A triple anterior screw fusion was used for the upper cervical level: dens screw and 2 transarticular screws. The lower cervical level was fixed with two cages and titan plate. There was no significant blood loss. The operations duration was 2h50min. By the time of discharge no neurological deficit was noted. The patient wore for 6 weeks a Miami-J-Collar. The three months follow-up computer-tomography showed no implant dislocation or change, neurologically the patient showed no deficit.

A female patient 83 years old was admitted with Anderson type II odontoid fracture, Jefferson fracture after falling. The accident happened 2 weeks before and since then the patient complained about neck pain. The indication for ventral fusion was established. A triple anterior screw fusion was used: dens screw and 2 transarticular screws. The operations duration was 1h30min. By the time of discharge no sensory or motoric deficit was noted. The patient wore for 6 weeks a Miami-J-Collar. The three months follow-up computer-tomography showed no implant dislocation or change.

A female patient 83 years old was admitted with Anderson type II odontoid fracture, Jefferson fracture after falling. She had no neurological deficit but complained about acute neck pain. The indication for ventral fusion was established. A triple anterior screw fusion was used for the upper cervical level: dens screw and 2 transarticular screws. The operations duration was 2h10min. By the time of discharge no sensory or motoric deficit was noted. The patient wore for 6 weeks a Miami-J-Collar. The follow-up after one year computer-tomography showed no implant dislocation or instability, neurologically there were no deficits notable.

Method: The patients were all over 70 years old by the time of admission. All patients have fallen from a height lower than 2 meters. The primary diagnostic method was computer-tomography of the cervical spine. The first screw was in all operations was the stabilizing the dens fracture followed by the transarticular screws. The screws used were Olerud 4x40mm for odontoid fixation and the transarticular screws varied between 4x17 and 4x20mm No significant blood loss was seen and no transfusion needed. In one case the head of the patient was fixed in Mayfield-extension.

Result: All patients had no neurological deficit by then time of discharge and were stable over the follow up period. The follow up time was of 2 months, 4 months and 1 year respectively. The operations durations were 1h30min, 2h10min and 2h50min. One patient had additionally a C4/5 and C5/6 instability which was stabilized with plate and cages. There was minimal blood loss with no transfusion needed. All patients wore for one and a half months a Miami-J-Collar. No patient needed reoperation and no patient developed sensitive or motoric deficits.

Conclusion: The triple screw anterior fusion for combined Anderson II type odontoid fractures and Jefferson fractures

had good postoperative outcome. The technique requires good operative skills. The outcome follow-up showed a good reposition with no notable implant loosening and no neurological deficit. A structured future study of this method in comparison with other therapeutic possibilities is needed in order to set standards.

SPINAL EPIDURAL METASTASIS WITH UNKNOWN ORIGIN

László Fügedi, János Skapinyecz, Csaba Oláh, Béla Demeter

Department of Neurosurgery Borsod County University Teaching Hospital, Miskolc, Hungary

Introduction: Spinal epidural metastases can be diagnosed in 1-5% of the systemic cancer patients. Most of the cases come into recognition between the age of 40 and 65 years. These tumours can be found principally in the thoracic region. The origin of the spinal epidural metastasis is usually lung, breast, prostate cancer, non-Hodgkin lymphoma or multiple myloma. It rarely occurs, that we can't show any primary neoplasm.

Case report: We present a 54 years old male patient's case who was admitted to our department with the clinical signs of severe paraparesis caused by a pure epidural spinal tumour at the level of Th.III.-V. vertebras. On MR imaging myelon compression was seen. Histological exam verified solid anaplastic cancer. The patient underwent posoperative telecobalt irradiation and adjuvant medical treatment with bisphosphonate.

Results: In spite of the severe neurological deficit on admission the patient's condition and his quality of life improved and he could reach a longer survival time than we expected. The circumstantial examination wasn't suceed, we couldn't find any origo of the spinal epidural metastasis. The histological revision supposed a large-cell neuro-endocrin lung originated primary tumour but the selective evaluation couldn't exhibit that.

Conclusions: Considering the literature in such cases it is suggested to perform an urgent surgical decompression with radical tumour resection and postoperative irradiation and chemotherapy. It rarely occurs a favourable outcome with a better quality of life and longer survival time than expected.

CHIARI MALFORMATIONS

Adrian Bălaşa, Dorin Nicolae Gherasim

Neurosurgery Departement, Clinical Emergency Hospital, Targu-Mures, Romania

Introduction: As described and classified over a century ago, herniation of the cerebellar tonsils more than 5 mm into the cervical spinal canal with obliteration of the cerebellomedullary cistern and obstruction of foramen magnum is the primary feature of Chiari I malformation.

Pathophysiology: The Chiari malformation constitutes an heterogeneous and multifactorial entity, in which congenital forms of Isolated presentation or with a genetic background and forms of acquired etiology exist. No unitary clasification exists to this date. Clinic and symptoms: One estimate based on extrapolations from a previous study suggested a prevalence of tonsillarectopiainthe general population of approximately 3.5%. The proportion of these individuals who go on to develop symptoms is unknown. Nevertheless, the disorder can be associated with significant symptomatology, risk of secondary injury due to trauma and the risk of progression

and damage of the spinal cord due to associated syringomyelia.

Clinical material and method: In the last 5 years we have treated 17 patients with Chiari I malformation. 12 women, 5 men. The mean age was 43. (between 21 and 60 years). The symptoms were grouped in 6 syndroms: 1. Brain stem and bulbar palsy syndrome, 2. Cerebellar syndrome, 3. Central cord syndrome, including pain (frequently " burning"), 4. Paroxysmal intracranial hypertension, 5. Pyramidal syndrome, 6. Scoliosis.

Surgical treatment: The goal of surgery is to relieve cord compression and to reestablish adequate csf flow. There have been no prospective studies in which one treatment form is directly compared with another.

Results: Postoperative, the condition of the patient was reassessed at the last follow-up visit according to: symptom resolution; sign and symptom improvement; no change; sign and symptom worsening.

Conclusions: In light of the many theories of pathophysiology, broad clinical presentations, and multitude of surgical interventions with variable outcomes, it is no wonder that a single surgical approach does not exist. We recommend tailoring the surgical approach to treat the dominant clinical problem. Early diagnosis and treatment is critical in obtaining the best outcome for the patient. The presence of syringomyelia is a sign of advanced structural abnormality, as it is associated with the presence of sensory and motor deficits, as well as with the presence of spinal deformity. The preoperative presence of deficit is a predictor of poorer neurological outcome, making a strong case for early surgical intervention.

CONTROVERSY OF DECOMPRESSIVE CRANIECTOMY (SCANDAL IN MODERN SCIENCE)

András Csókay

Neurosurgery, BAZ County Hosp. Miskolc, Hungary

Objectives: One of the weak points of the modern science may be the analysing of the efficacy of the medical treatment only by the rule of the Evidence Base Medicine in the state around the death. It is an important topic as the scientific world often does not consider enough the rule of bioethics which says, "In life threatening illness the scientific rationale for the treatment must be sufficiently strong that a positive result would be widely accepted. "The history of DC is a very good example".

Aim: To graduate up the DC from optional to recommendation cathegory in guidelines. Report: We report additional consideration to improve the efficacy of DC.

Method: The status around the death is such a hundred or thousand? unknown equations that we must not fix only one or two constant in analysing the results as we probably make mistakes in our consequence.

Result: The evidence proved by DECRA (issued in 2011), which mixed the analysis of the status of far away from death and the status around the death in its conclusion. Mixing the life threatening and curative characteristic it was obvious that the conclusion of the DECRA was questionable. The application of DC at the adults from ICP 20 mmHg during 15-30 minutes is illogic because the surgical complication decreases the efficacy against the conservative therapy which is also effective in this ICP status.

Conclusion: If we perform the DC routinely above 25 mmHg, probably we are going to operate many times in vain!!!, but

we can avoid the mindless death of the patients especially in child caused by a reversible curative pathological process called brain oedema. We have to know that in emergency care around the death we have to make efforts 10 times unnecessarily while it is worth doing the DC. The 10 DC causes less damage for the patients than the only one fatal death. The situation is quite similar to the situation of emergency conicotomy or reanimation. We should continue the debate not about the performance of DC, but how to increase the efficacy of the DC.

SPONTANEOUS INTRACEREBRAL HEMORRHAGE – SURGICAL OR CONSERVATIVE TREATMENT?

Ion Poeata, Cosmin Apetrei, Bogdan Iliescu, Bogdan Chirita

Clinic of Neurosurgery, "Gr.T. Popa" University of Medicine and Pharmacy Iasi, Romania

According to current data spontaneous intracerebral hemorrhage is the cause of 10-40% of stroke cases. Surgical treatment of these hemorrhages is still a matter of debate despite the numerous randomized clinical trials looking at this problem. The first such study published in 1961 (McKissock W, Richardson A, Taylor J: Primary Intracerebral haematoma: a controlled trial of surgical and conservative treatment in 180 unselected cases) failed to show any advantage of surgery or conservative treatment. A metanalisys put together by Prasad in 2000 looked at the 12 trials published to date and showed a slightly favorable outcome in the surgery group (0.85 odds ratio).

We present the experience of our center retrospectively analyzing 42 cases treated during one year period (2011-2012).

Evaluated criteria was: location of the hematoma (lobar, cerebelar, putaminal, or deep), ethiopatogenesis (HBP, anticoagulant therapy, amyloidosis, age, CGS, neurological deficit, general status impairment, the intervals stroke - presentation, presentation – surgery, outcome, complications.

Novoseven and thrombolysis were unavilable.

We compare the results in two groups treated either surgically or conservatively according to current protocols. Inclusion criteria in our study was same as STICH I trial.

ENDOSCOPE-ASSISTED HAEMATOMA EVACUATION IN PATIENTS WITH SPONTANEOUS SUPRA- AND INFRATENTORIAL INTRA-PARENCHYMAL HAEMORRHAGES: INITIAL RESULTS OF A PROSPECTIVE MONOCENTRIC TRIAL

Yavor Enchev[1], Tony Avramov[1], Bogomil Iliev[1], Tony Kondev[1], Danail Lichev[2]

[1]Department of Neurosurgery; [2]Department of Anesthesiology and Intensive care University Hospital "Sv. Marina", Medical University - Varna, Bulgaria

Objective: The endoscope-assisted haematoma evacuation in patients with spontaneous supra- and infratentorial intra-parenchymal hemorrhages, nowadays is considered investigational.

Aim: The purpose of the presented prospective trial is to determine the effectiveness of minimally invasive evacuation of intracerebral haemorrhage (ICH) utilizing the endoscopic method. The authors analyzed the study design in terms of patient selection, surgical technique, clinical and radiological follow-

up, as well as their initial results.

Material and Methods: The trial analyze prospectively the clinical and radiographic data obtained in patients treated with endoscope-assisted evacuation of spontaneous supra- and infratentorial intra-parenchymal haematomas. The study inclusion and exclusion criteria are defined and strictly implemented. The technical side of this report explains details of the procedure, the applied instruments and methods for hemostasis. Hematoma evacuation degree is evaluated by comparing the pre- and postoperative CT scans. Glasgow Outcome Scale scores is recorded at the 6-month postoperative follow-up. Rebleeding, morbidity, and mortality are analyzed. The relevant literature is thoroughly reviewed and summarized.

Results: The trial start point is the 1st of April, 2012 as the fixed term of the study is 2 years with at least 100 patients. Our primary results include 11 patients. All surgeries were performed within 36 hours of hemorrhage. The procedure related morbidity and mortality were 0%.

Conclusions: The authors acknowledge the limitations of these preliminary results in a insignificant small number of patients. However, the initially data suggest that early endoscope-assisted ICH evacuation is safe and effective.

SPINAL SUBDURAL EMPYEMA IN CHILDHOOD

László Fügedi, Béla Demeter

Department of Neurosurgery Borsod County University Teaching Hospital, Miskolc, Hungary

Introduction: Among the spinal inflammatory diseases there are many types including spondylodiscitis, osteomyelitis, spinal epidural abscess, spinal subdural empyema and intramedullary abscess. It rarely occurs parasitic infections, otherwise nowadays we can see more and more cases with specific tuberculotic process (Pott's disease). In childhood first of all the haematogen spreading of bacterial meningitis or other inflammation can conduce to spinal epidural, subdural or intramedullary abscess.

Case report: We present a one year old girl, who was underwent surgery just after birth because of meningomyelocele and spina bifida aperta. She was often treated for urinary infections due to the renal disorder. In consequence of the haematogen spreading of the urocystitis an Escherichia coli meningitis developed. In spite of the antibiotic treatment a very severe paraparesis occured in few days with other clinical signs of myelon compression. On MR imaging there was seen a spinal subdural empyema from the level of Th.X. vertebra until the S.I. segment. We performed an urgent surgical decompression (right sided L.I.and L.IV. arcoflavotomy and radical evacuation of the abscess) and lumbal drainage for using intrathecal antibiotic treatment during 10 days.

Results: Due to the immediate surgery, the intensive care and the expert rehabilitation therapy (massage, hydro- and phisiotherapy) the paraplegic girl could be able to walk with orthesis.

Conclusions: The early diagnosis of spinal subdural empyema completed with a prompt surgical decompression, specified systemic and intrathecal antibiotic therapy, the adequate intensive care as well as the rehabilition treatment can lead better outcome and quality of life in spite of the bad prognosis.

THE ROLE OF CULTURE AND SPIRITUAL LIFE IN NEUROSURGICAL INNOVATIONS

András Csókay

Neurosurgery, BAZ County Hosp. Miskolc, Hungary

Objectives: Prayer, science, culture are three vastly different areas that in our personal experience complement one another. The quality of life of the patients and neurosurgeons is very tight junction

Aim: The presentation is intended as evidence thereof.

Method: More specifically over the course of the presentation we can learn how the spiritual life and culture aided neurosurgical work by discoveries operative innovations.

Result: Direct examples show the reality of the above mentioned statements. Conclusion: And where does faith come into the picture? Religion and culture join forces in shaping a richly emotive inner life. It has been shown that such "internal wealth" is essential for remembering, and that it forms the basis of creativity. When solving a problem, the memories we recall most redly are those to which we can assign emotional import. To be able to do the latter, we need to have rich and emotive spiritual life. Though important, learning itself is not enough to ensure creativity. We can freely choose to develop and improve our inner world. This is how we experienced culture and science united in the faith.

NEUROMODULATION

V. Masopust, K. Saur

Department of Neurosurgery Military University Hospital Prague, Czech Republic

Introduction: Neuromodulation is reversibile surgery process which blocks information of pain going to brain or blocks interneurons in brain cortex. There were realized 31 neuromodulation performances in our department in 2011. The most of these operations were perfomed for failed back surgery syndrom – 21.

Material and method: 31 patients were operated: 18 women a 13 men.

Methods of neuromodulation:

- dorsal colum stimulation (SCS)
- peripheral nerve stimulation (PNS)
- occipital nerve stimulation (ONS)
- motor cortex stimulation (MCS)

Reason for implantation:

- 21 SCS for failed back surgery syndrom
- 1 SCS for post amputation pain
- 1 SCS for periferal nerve denervation of lower leg
- 1 SCS in cervical region for perifer nerve lesion
- 1 SCS in cervical region for complex regional pain syndrom
- 1 PNS for intercostal neuralgia
- 4 ONS of headache
- 1 MCS for facial pain

Results:

1 stimulation was not efective. In 30 patients was effectivity of delta VAS from 3 to 9.

1 neuromodulation system was removed for infection and returned after 2 months. In 2 cases was performed reinsertion of elektrod after electrod movement.

Conclusion: Neuromodulation is very effective removable method for treatment of pain. Only one problem exists and that is cost effectivity in our country.

FBSS IN THREE PERSPECTIVES

Saur Karel, Vanek Petr

Department of Neurosurgery Military University Hospital Prague Czech Republic

Failed back surgery syndrome (FBSS) is usuall mark for unsatisfactory result of any lumbar spine surgery in degenerative spine disease. Management possibilities are as wide and numerous as possible etiologies of FBSS and we can hardly proceed the patient according to any guideline or evidence based approach.

From surgical perspective it is natural to search morphological basis of persistent pain and to suppose another surgery. In case of clearly proved morphological substrate is indication of another surgery obvious. But in case of lacking pain generator could be another surgery only next step to chronicity and one could consider another sort of intervention, or take a look of different perstective.

From perspective of physiotherapist it is more about function than morphology, and numerous exercises could help to restore appropriate movement stereotype and function. The impact of malfunction is demonstrated on analysis of outcome of patient after lumbar spondylolistesis stabilization.

From perspective of psychotherapy there is about 400 psychotherapeutic systems to approach the patient in different ways, in way of rationalism, or emotions and others. Psychotherapy could be limited to relaxation and stress reduction or could address patient's relationship to pain, or touch the deepest injuries. The main difference to surgery is the necessity of patient's own activity and strong intention to change. In the case of patient's passivity there is hardly any possibility to any change, or temper the pain.

CONTROVERSIS IN THE THERAPEUTICAL APPROACH OF PINEAL AREA LESIONS. AN EXPERIENCE OF 103 CASES

A.V. Ciurea, A. Tascu, M Lisievici, F. Brehar, H. Moisa

Carol Davila University School of Medicine. The National Center for Excellency in Neurosurgery; Bagdasar-Arseni Teaching Hospital, Bucharest, Romania.

Background: The pineal area (PA) is defined between the splenium of the corpus calosum and tella choroidea (dorsal), quadrigeminal plate and mesencephalum tectum (ventral), posterior part of the 3rd ventricule, (rostral) and cerebelar vermis (caudal). Tumors of this region are more common in children (3-8% of Primary Brain Tumours) than in adults (1%). Germ cell tumors (GTC) are predominant in this area.

Materials & methods: The authors reviewed presentations, diagnostic problems, management and outcome in 103 cases of pineal area tumors admitted over a period of 17 years (1 Jan. 1995 – 31 Dec. 2011).

The series comprises 59 male and 44 female patients, ranging in age from 0 to 59 years (media 26 y.o.).

The clinical features were represented by intracranial hypertension (87 cases – 84.7 %), Parinaud syndrome (72 cases – 70.2 %), convergence palsy (22 cases – 21.4 %), ataxia (35 cases – 34%), seizures (19 cases – 18,5 %), endocrine disturbances (16 cases – 15.4 %), consciousness disturbances (13 cases, 12,4%). Diagnostic evaluation

consisted of a medical history, physical & detailed neurological examination, neurodiagnostic studies (CT and MRI scan) and studies of serum and CSF tumor markers. Hydrocephalus was associated in 86 cases (83.5 %). Generally, GCT, ependymomas and pineal cell tumors metastasize easily through the CSF ("drop metastases"). In that situation the all CNS will be evaluated by MRI scan preoperative and postoperative.

There were 100 cases microsurgically approached, via the occipital transtentorial approach (85 cases (82.4 %)) or supracerebellar infratentorial approach (15 cases (14.4%)). Three cases (3.4 %) in our data received only stereotactic procedures. Histological diagnosis has revealed germ cell tumors in 48 cases (46,4%), pineal cell tumors in 19 cases (18,5 %), glial cell tumors in 33 cases (32 %) and miscellaneous tumors in 3 cases (3,1 %).

Total removal of the tumor was achieved in 30 cases (27.8 %), near total removal in 25 cases (24.7 %), partial removal in 37 cases (36.0 %); open biopsy was undertaken in 8 cases (8,2 %) and stereotactic biopsy in 3 cases (3,0%). There were four deaths in the first months (4.1 %).

The postoperative complications included: ocular movement disorders (34 cases – 33 %), impaired consciousness (23 cases – 22.6 %), seizures (22 cases – 21.6 %), ataxia (18 cases – 17.5 %), pupillary abnormalities (18 cases – 17.8 %) and others. The majority of these complications were transient.

Forty-six patients (49 %) received craniospinal irradiation or focused radiotherapy (G.K.S.). Radiation therapy was done always after the pathological diagnosis. Craniospinal irradiation was administered only to those patients with the disease involving more than one intracranial site, demonstrated meningeal seeding or positive CSF cytology. Chemotherapy (cisplatin & bleomycin & actinomycin D) was received in 46 cases.

The Glasgow Outcome Scale (GOS) at 6 months shows: good recovery 58 cases (56.7%), moderate disability 26 cases (24.7%), severe disability 13 cases (12,4%), persistent vegetative state 2 cases (2%), and death 4 cases (4.1%).

Conclusion: On the basis of this review, the authors consider that the outcome depends both by the histological type of tumor and the modality of treatment applied. There is no surgical approach superior to others, but the stereotactic approach is one of the good and minimal invasive option for obtain enough material for pathological diagnosis. The deep cerebral veins are not a major obstacle for operation (open or stereotactic) in these regions.

Keywords: pineal area tumors, MRI, microsurgery, stereotactic biopsy, germ cell tumors and gamma knife surgery

Abreviation:
PA = pineal area tumors
PBT = pediatric brain tumors
GCT = germ cell tumors
G.K.S. = gamma knife surgery
G.O.S. = Glasgow outcome scale
CSF = cerebral spinal fluid
CNS= Central Nervous System

MICROSURGICAL APPROACHES IN CRANIO-VERTEBRAL JUNCTION AREA, A PERSONAL SERIES OF 29 CASES

Andrei Ştefan Iencean, Faiyad Ziyad, Marcel Ivanovr, Sergiu Gaivas, Alexandru Chiriac, Bogdan Iliescu, Ion Poeata

3rd Department of Neurosurgery "Prof. Dr.N.Oblu" Clinical Emergency Hospital, Iasi, Romania

Objectives: The instability secondary to the cranio-vertebral junction lesions is important and states the question on the indication for stabilization. The question also arises about the incidence of postoperative instability and the need for treatment of this iatrogenic condition. We present our surgical experience in the treatment of 29 patients with nontraumatic lesions of the cranio-vertebral junction that were warded from 2007 to 2011 in our department.

Methods: In five years we treated twenty-nine patients with nontraumatic cranio-vertebral junction lesions: thirteen Arnold–Chiari malformations, five foramen magnum meningiomas, three vertebral tumors C1/C2 – posterior arch, two glomus jugulare tumors, two occipital condyle tumors, a C2 neurinoma, one case of odontoid panus, one case of cranio-cervical ependimoma and one cranio-spinal arterio-venous fistula. All patients were explored preoperatively by MRI or CT exams and Seldinger angiography was performed in two patients.

Results: The suboccipital (midline and paramedian) approach was performed in eighteen cases, sixteen of them required additional resection of the posterior arch of C1/ C2. In six patients the surgical approach implied only the resection of posterior arch of C1/C2; the far-lateral approach (accompanied with the resection of one third of the occipital condyle) was used in five patients. All patients benefited by a microsurgical approach; gross total removal was achieved in 9 out of 14 cases of tumors. There were no major clinical complications (except one case of hydrocephalus treated with ventriculoperitoneal shunting) and none of the patients developed instability of the region requiring stabilization.

Conclusions: The choosing of the surgical approach and the amount of bone resection must be customized to each patient, according to the size and localization of the lesion. The microsurgical approach allows the limitation of bone resection in case of cranio-vertebral junction lesions, thus avoiding the instability. Apart from the cranio-vertebral junction lesions, potential unstable, the surgical approaches at this level may lead to the instability of the region. In our series none of the patients developed instability that should require consecutive stabilization.

Keywords: cranio-vertebral junction, instability, microsurgical approach.

EOSINOPHILIC GRANULOMA OF THE ORBIT: VIRTUAL ENDOSCOPY AND 3D-CT SCAN OF THE BONE DISTRUCTIONS

Szabo Ioan[1], Bianca Szabo[2], Kakucs Cristian[1]

[1]Cluj County Emergency Hospital, Neurosurgical Department, Cluj Napoca, Romania.
[2]"Iuliu Hatieganu" University, Cluj County Emergency Hospital, Ophthalmological Clinic, Cluj

Introduction: Eosinophilic granuloma is a rare intraorbital tumor, we had only one case in our personal series of 825 orbital masses treated in the last 25 years. The advantages of modern neuroimagistical

techniques, such as 3D CT scan and virtual endoscopy are presented in this particular case.

Case report: The case of L.M., 26y old, male is presented. One month onset with right exophthalmos, superior palpebral swelling, orbital pain, diplopia. Antibiotic and antiinflamatory treatment for a supposed orbital celullitis had no result. Admitted in our departament, MRI of the orbits revealed an intraorbital mass located in the superolateral part of the orbit, well delineated, nonincapsulated and distruction of the adjacent bony orbital wall. High definition CT scan of the skull was performed for better visualization of the bone deffect. 3D CT scan with Osirix software revealed a cone-shape complete distruction in the greater wing of the sphenoid, from the periorbita to the dura mater in the right temporal pole. Virtual endonavigation in the bone canal revealed 1,3 cm large deffect at the orbital and smaller, 0,9 cm deffect at the cranial end. The eroded walls of the bone were approximately smooth, with a sequestrum in the inferior part of the deffect. The tumor was completely removed, the walls of the bone communication drilled to healthy bone structure. Pathologic finding - eosinophilic granuloma, C 69.6

M 9752/1. Postoperative total recovery. 3D CT scan of the orbit 30 days after surgery, smooth walls of the bone deffect.

Patient and method: We present the clinical case of a patient treated for right intraorbital eosinophilic granuloma. High definition CT scan with 3D secondary postprocessing of the images was made before and after operation. Virtual endoscopy can clearly present the walls and margins of the bone defect.

Discussion: Eosinophyilic granuloma is unusual in adult. Our case presented a tunnel-shape bone distruction in the greater wing of the sphenoid, with direct communication between the orbit and temporal fossa. This bone lesion can be well localized with 3D CT. Secondary postprocessing and 3D reconstruction of the images is recommended to be performed by every surgeon in certain cases.

Conclusions: Eosinophilic granuloma of the orbit often produce adjacent bone erosions of the orbit. In our case, the erosion produced complete communication between the orbit and temporal fossa. 3D CT and virtual navigation permit a very good spatial localization and the inspection of the eroded bone, before and after surgery.

Keywords: eosinophilic granuloma, Langerhans cell histiocytosis, orbital tumor, 3D CT scan, virtual endoscopy.

A NEW APPROACH FOR RATIONAL PHARMACOTHERAPY BASED ON QUANTITATIVE EEG SOURCE DENSITY MAPPING

Wilfried Dimpfel

Justus-Liebig University Giessen, Wetzlar, Germany

Recording of voltage based electroencephalograms allows limited interpretation with respect to disease. It is strongly dependent on the experience of the physician. Deviations from normality are difficult to recognize within the time dimension. Mathematical quantitationof the signal using frequency analysis by Fast Fourier Transformation (FFT) provides the possibility to average data over time and to relate local frequency changesto

neurotransmitter activity. For example, delta waves (up to 4.5 Hz) are under the control of acetylcholine, alpha2 waves (9.75 to 12.5 Hz) represent activity of the dopaminergic system. Comparing data from an individual patient to a norm data base containing 250 files from healthy volunteers of different age allows discovering deviations from normality. Recordings from 17 electrode positions and evaluation of 6 frequency ranges lead to 102 parameters. An aberration index is calculated which indicates the statistical probability with which the local frequency change deviates from normality. Since many drugs have been characterized with respect to induction of frequency changes pre-clinically and clinically it is possible to find a drug which is able to modify the particular frequency recognized as deviated. This kind of matching provides a new approach in rational pharmacotherapy and allows control of therapeutic success. Examples of patients suffering from epilepsy, migraine and Parkinson's disease will be given. Quantitative EEG source density mapping should be of great help in practice.

CONTROVERSIES IN NEUROLOGY: IS THE EEG BURST-SUPPRESSION PATTERN AN EPILEPTIC BEHAVIOR?

Florin Amzica

Université de Montreal, Montreal, Canada

One of the typical electroencephalographic (EEG) patterns accompanying a comatose state is burst-suppression (BS). It was generally assumed that it would mark an almost complete deafferentation of the brain from its sensory inputs. Recently it was shown that, at least in some iatrogenic comas, BS in fact results from a hyperexcitable state during which the bursting activity is triggered by low intensity stimuli that are unable to elicit overt responses under normal conditions (Kroeger and Amzica, 2007). On the other hand, the suppression episodes (isoelectric EEG) result from the exhaustion of cortical synaptic communication due to the transient depletion of extracellular calcium during the previous burst. It was further demonstrated that, contrary to the expected, BS is also associated with the suppression of cortical inhibition (Ferron et al., 2009), thus promoting the idea that hyperexcitability is rather the result of abolished inhibition than increased excitation.

An interesting issue concerns the similarity between symptoms associated either with bursts during BS or with spike–wave seizures. Moreover, both conditions occur on a background of impaired inhibition. Furthermore, in clinical practice there is often unclear delimitation between comatose BS behavior and epileptic manifestations (e.g., in Hirsch et al., 2004). In addition, the antiepileptic medication obtains poor response (Dan & Boyd, 2006). This calls for one of the two possibilities: Either BS is included in the already complex syndrome of epilepsies (with complicating issues regarding mechanisms and curative strategies) or it is regarded as distinct processes with distinct mechanisms. The latter alternative is supported by the fact that volatile anesthetics (isoflurane in particular) are used both to counteract status epilepticus and to induce BS, further suggesting that bursts of BS do not reflect an epileptic pathology.

TRANSCRANIAL MAGNETIC STIMULATION - AN INSIDE STORY ON BRAIN FUNCTION

Tudor Dimitrie Lupescu

Transcranial magnetic stimulation is a useful neurophysiological technique that investigates the central nervous system, mainly the central motor pathways. It is used as a diagnostic tool, but also in research, therapeutics and neurorehabilitation. The method appeared 25 years ago, and has developed intensively throughout the world, so that nowadays a lot of scientific knowledge has been gathered. This presentation will try to describe the method, its physical and biological principles, and to show its major indications in clinical situations, as well as other more complex approaches regarding the central nervous system function in normal and pathological conditions.

TRAUMATIC BRAIN INJURY (TBI) – MYTHS AND FACTS

Christian Matula

Neurosurgical Department, Medical University of Vienna, Austria

The incidence and economic burden of traumatic brain injury (TBI) in all of its appearance is from undisputed high value all over the world. Although a lot of work has been done in that field and still is ongoing, until nowadays a lot of "myths" are going around and most of the times (unfortunately) we're still waiting for some "facts". From a Neurosurgeons perspective, it seems more than worthwhile to have an overview about the latest advances to offer more clearness respectively getting more facts into that jungle of recent perspectives and developments. One myth is that we can avoid trauma. Fact is that there is no way to handle that. Trauma is the leading cause of death ages 1-45, approximately 80,000 people per year are suffering on disability due to TBI and more that 3,100,000 are living with disabilities. Precisely classify trauma is another myth. Fact is, that time is ripe for a new, much more precise classification system based on the central questions: Is "mild" really mild and differentiate "severe" due the possible outcome according to morphological findings in CCT and MRI. Fact is that the admission GCS lost its predictive value for outcome so that nowadays there is a clear need for a new classification system. Another myth is that the existing guidelines can solve the problems. Fact is that the survey of compliance with the guidelines is rather bad. More than 65% shows no compliance, and although the relation gets better, it still remains rather low. A lot of myths are existing around decompressive craniotomy. Fact is, that until now exept for problemtic studies in the 90's there has never been a randomized trial studying decompressive craniotomy vs. other therapies. Among others (e.g. Cortison, prophilactic antiseizure therapy, etc.) the presentation will demonstrate that hard facts behind some other myths are missing. Neurotrophicity, neuroprotection, neuroplasticity and neurogenesis are basic biological processes of paramount importance, overlapping and acting under genetic control to generate the endogenous defense activity (EDA) which continually counteracts pathophysiological processes. Illustrative clinical cases can prove a quiet remarkable outcome using Cerebrolysin as a neuropretective drug and should

probably motivate to novel our treatment concepts in case of TBI. Moderate and severe traumatic brain injury (TBI) are characterize by a high rates of case fatality (15-20% in moderate TBI and 40% in severe TBI) and disability in survivors (30-40% in moderate and 50-60% in severe TBI). Biomarkers like GFAP and S100B, but also others like Erythropoetin, different statins or Cyclosporin A could be proven as powerful adjuncts to the clinical assessment of brain damage and powerful predictors of outcome after TBI.

There are a lot of myths on several topics in TBI (e.g. neuroprotection, biomarkers, stem cells, etc.) but not that many facts. What we need within the near future are reliable basic and clinical trials to get answers to questions mentioned above which probably will clear some of the above mentioned points.

MULTIMODAL DRUGS AND THE NEW DESIGN FOR CLINICAL TRIALS IN BRAIN PROTECTION AND RECOVERY AFTER TBI – CAPTAIN TRIAL

Dafin F. Mureşanu

Chairman Department of Clinical Neurosciences
University of Medicine and Pharmacy
"Iuliu Hatieganu" Cluj -Napoca, Romania

TBI is a field with many unmet needs in medicine and public health. It is a major cause of death and disability and also leads to huge direct and indirect costs to society. Currently the incidence of TBI is increasing.

TBI populations are heterogeneous in terms of mechanism of disease, baseline prognostic risk factors, clinical severity and evolution. This heterogeneity generates complex challenges.

New pharmacological approach together with more basic and clinical research is needed for better targeting TBI therapy to the individuals.

The frequent progression of contusive brain injury indicates that this may constitute a subpopulation of TBI more likely to benefit from acute neuroprotection (in the classic sense) by limiting processes involved in secondary brain damage.

Other mechanisms, and consequently different approaches may be more relevant in patients with diffuse axonal injury, and neuroprotection in a more broad sense also includes strategies and therapies aimed at promoting regeneration or replacement of lost neuronal and glial cells, neuronal circuits, and stimulation of neuroplasticity (neu-rorecovery).

The primary goal of pharmacological support in TBI is to reduce secondary damage (neuroprotection) and to enhance repair (neurorecovery).

The current presentation will highlight the limits of monomodal drugs, the advantages of multimodal drugs and the need for new designs for brain protection and recovery clinical trials in traumatic brain injury.

As an example of new vision in the field of clinical research in brain protection and recovery after traumatic brain injury, the new design of related clinical trials will be presented – CAPTAIN Trail Protocol: A large multicentric randomized controlled trial.

INTRACRANIAL CAVERNOUS ANGIOMAS AN EXPERIENCE ON 109 CASES

A.V. Ciurea[1], A. Tascu[1], A. Iliescu[1], D. Mohan[2], F. Stoica[1], F. Brehar[1], R. Rizea[1], H. Moisa[1]

[1]Carol Davila University School of Medicine; The National Center for Excellency in Neurosurgery; Bagdasar-Arseni Teaching Hospital, Bucharest, Romania
[2]Oradea County Emergency Teaching Hospital; University of Oradea, Faculty of Medicine

Introduction: Intracranial cavernomas (IC) count of 0.02 - 0.53% of all intracranial lesions and 8-15% of all AVMs. The association with AVM is found in 10-30% cases. The lesions become symptomatic when the size of the lesion is bigger than 1 cm. These vascular malformations have started to be easily diagnosed with the introduction of routine MRI scans.

Material and method: The cohort of 109 consecutive operated cases of intracranial cavernomas were admitted in the 1st Department of Neurosurgery of the Bagdasar-Arseni Hospital & Oradea County Emergency Hospital in the period of time between January 1998 - January 2012 (14 years). All cases received a complex neuroimagistic diagnosis based on CT, MRI &

DSA Angiography. The cases were operated and followed up in the Bagdasar-Arseni

Hospital in Bucharest for a period ranging from 6 months to 9 years.

The sex distribution was 55 males and 54 females aged between 11-56 years old with a peak of incidence in 31 year olds.

The cavernomas localization was as follows: supratentorial in 75 cases (68,8%), infratentorial in 24 cases (22,0%), deep, basal ganglia & multiple 10 cases (9.1%). The lesions were located: Frontal lobe 34 cases (31.2%), Parietal lobe 15 cases (13.7%), Temporal lobe 23 cases (21.1%), Occipital lobe 3 cases (2.7%). Multiple 3 cases (2.7%), deep and basal ganglia 7 cases (6.4%) brainstem 19 cases (17.4%), and cerebellum 5 cases (4.5%). In what concerns multiple cavernomas, we proceeded with surgery only for those either manifesting mass effect or presenting with hemorrhagic attack.

The clinical symptoms were characterized by seizures 70 cases (64.2%), neurological deficits 16 cases (14.6%) hemorrhage 23 cases (21.1%).

A special chapter of the study was dedicated to non-operated cases. They were: 7 cases multiple lesions, 9 asymptomatic and 5 lesions deep situated. In 2 cases of deep situated lesions, the therapy with gamma-knife surgery was applied.

Results: In this series of 109 operated patients, the Global Outcome Scale (GOS) at 6 months was: good recovery 82 cases (75.2%), moderate disability 18 cases (16.5%), severe disability 9 cases (8.2%), vegetative state 0 cases (0%) and death 0 cases (0%).

The severe disability appears especially in brainstem cavernomas, but, in time, the cases improved exponentially.

The follow-up period was between 6 months and 9 years, with a mean range of 7,6 years. Out of the 70 cases exhibiting seizures, all cases were operated: in 52 cases (74,2%) we performed a lesionectomy with perifocal gliosis excision and in 18 cases (25,7%) only lesionectomy.

Conclusions: Intracranial cavernous angiomas (cavernomas) are rare lesions

characterized by epilepsy in the majority of cases or intracerebral hemorrhagic onset. When the main symptoms are seizures, the best prognosis results after the excision of the lesion and the perilesional gliosis. The Neuronavigator-guided approach achieved in all cases the removal of the lesions with a good accuracy in the "Target", avoiding the post-operative deficits and improving the clinical Outcome. Furthermore, it avoids the discomfort of the stereotactic frame. In multiple lesions, the hemorrhagic or mass effect lesion must be managed. The option of gamma-knife surgery (GKS) in cavernomas is disputed. In asymptomatic cavernomas, the best management is clinical follow-up and MRI observation.

Keywords: intracranial cavernoma, epilepsy, MRI, microsurgery, GOS, neuronavigation, gamma knife surgery (GKS).

HEMORRHAGIC COMPLICATIONS AFTER NON-SURGICAL TREATMENT OF CEREBRAL AVM

Ion Poeata[1], A. Chiriac[1], N. Dobrin[2], Z. Faiyad[2]

[1]Clinic of Neurosurgery, "Gr.T. Popa" University of Medicine and Pharmacy Iasi, Romania
[2]Clinic Emergency Hospital "Prof. Dr. N. Oblu" Iasi, Romania

Non-surgical treatment of cerebral AVMs has been greatly enhanced. The three modalities of non-surgical treatment currently available include conservative management focused on imagistic and neurological monitoring, endovascular management by introduction of embolic agents for partially or totally AVM occlusion and radiosurgery by stereotactic radiotherapy. The intracranial hemorrhage is known as the most important complication after non-surgical AVM treatment. In this paper we review the result of non-surgical management of brain AVMs and present some representative cases treated at our institution. We retrospectively review 72 patients with cerebral AVMs admitted to Clinc Emergency Hospital "Prof. Dr. N. Oblu" Iasi between January 2005 and April 2012 and who benefited of a single non-surgical treatment. The hemorrhagic complication correlated with treatment management, time interval, age, sex, presenting symptoms, and angiographic factors as AVM size, deep venous drainage, and involvement of eloquent cortex were analyzed. According to results of the study the hemorrhagic complication of non-surgically treated AVMs appears to be dependent of some predictor's risk factors.

DIFFICULTIES AND TECHNICAL PROBLEMS IN ENDOVASCULAR TREATMENT OF CEREBRAL VASCULAR LESIONS, OUR EXPERINCE IN NEUROENDOVASCULAR SURGERY

Ion Poeata[1], Patrick Courtheoux[2], Nicolaie Dobrin[1], Alexandru Chiriac[1], Natalia Ermalai[1]

[1]3rd Department of Neurosurgery "Prof. Dr.N.Oblu" Clinical Emergency Hospital, Iasi, Romania
[2]CHU-Caen France

First steps in endovascular neurosurgery in Romania, Iasi, were started in a mixed team formed by neurosurgeons and cardiologists under the coordination of Professor Patrick COURTHEOUX, CHU Caen France, in the Cardiology Center from Iasi where at that time were

two angiographical suites, after this in 2006 the endovascular cerebral pole was moved in the neurosurgical hospital with the inauguration of a modern angiographical interventional suite.

Introduction: The endovascular therapy of the craniocerebral and spinal diseases represents a very important aspect in solving efficiently a various type of pathology: cerebral aneurysm, arteriovenous malformations, arterial stenosis, tumoral etc. Although this procedure requests an advanced infrastructure and many devices (as stents, coils, micro catheters, embolisation materials etc) it started to be used efficiently as well in Romania.

Aim: Our aim is to describe some interesting aspects and difficulties in treating patients with various vascular cerebral lesions.

Case report: Aneurisms coiling, AVM embolisations, dural fistulas, carotid-cavernous fistulas are few type of lesions wich we want to show and some technical interventional difficulties were solved.

Material and methods: From 2006 to date in our clinics have been approached about 800 endovascular diagnostic and therapeutic procedures, were also organized annual courses with practical applications in collaboration with the medical center CHU-Caen France, on these occasions were different lesion types solved.

Results: Endovascular neurosurgery in our country is only in the beginning however, we want to emphasize resolving outstanding bilateral bicavernos carotido-cavrnous fistula, giant basilar artery aneurysms with emerging coletal branches, simptomatic internal carotid stenosis, intraarterial thromlolysis, also dural fistulas that were difficult to diagnose such clinical entities have become current, dynamic vascular studies have allowed to do a very correct surgical planning.

Conslusions: Endovascular therapy is a full dynamic discipline, new devices try to solve problems of pathology that until now were unapproachable, the key is to heve a good team capable to treat both exo and endovascular strategies.

CAVERNOMAS: OUR EXPERIENCE

Ioan Ştefan Florian, Cristian Pîrjol, Horatiu Ioani, Petre Kiss, Sebastian-Victor Trifoi

Neurosurgical Department, Cluj- Napoca County Hospital, Cluj- Napoca, Romania

Cavernomas are challenging lesions with a range of treatments that include combinations of microsurgery, radiosurgery, and endovascular approaches.

In this paper we want to describe our surgical experience and strategy in this field and the current management of these lesions, which lead to successful surgical removal, in the absence of endovascular preoperative embolisation or neuronavigation facilities. The retrospective analysis of 60 cavernomas admitted and surgically treated in our department between June 1996 and December 2011. The diagnosis was established based on clinical findings, CT, MRI and angiography and confirmed with pathological findings. The major clinical findings were as follows: hemorrhage, seizures, progressive neurological deficit, headache. We recorded a male preponderance of about 6:4 / male: female. The peak incidence has been found in the 5th decade.

16 cases were located in the brain stem and all were surgically approached with

complete removal. Postoperative complications were predominantly seizures (12%), and then hydrocephalus, and re-bleeding. The outcome was good (GOS 5 and 4) in 75% of the cases. The mortality rate for the entire series was 1.6% (meaning a case whit multiple cavernomas).

Objectives: For each patient the management resides in with moment we act conservative and when to operate. In surgery, cavernomas are more difficult to reach them than to resect. In the absence of endovascular embolisation or radiosurgery, surgery remains the single option to cure these lesions. Most of these cases were admitted with a very severe neurological status, so the therapeutic decision was not how to operate but when to operate it.

Aims: Cavernomas are challenging lesions with a range of treatments that include combinations of microsurgery, radiosurgery, and endovascular approaches.

Is to describe our surgical experience and strategy in this field and the current management of these lesions, which lead to successful surgical removal, in the absence of endovascular preoperative embolisation or neuronavigation facilities.

Material and methods: The retrospective analysis of 60 cavernomas admitted and surgically treated in our department between June 1996 and December 2011. The diagnosis was established based on clinical findings, CT, MRI and angiography and confirmed with pathological findings.

Results: The major clinical findings were as follows: hemorrhage, seizures, progressive neurological deficit, headache. We recorded a male preponderance of about 6:4 / male: female. The peak incidence has been found in the 5th decade.

16 cases were located in the brain stem and all were surgically approached with

complete removal. Postoperative complications were predominantly seizures (12%), and then hydrocephalus, and re-bleeding. The outcome was good (GOS 5 and 4) in 75% of the cases. The mortality rate for the entire series was 1.6% (meaning a case whit multiple cavernomas).

Conslusions: For each patient the management resides in with moment we act conservative and when to operate. In surgery, cavernomas are more difficult to reach them than to resect. In the absence of endovascular embolisation or radiosurgery, surgery remains the single option to cure these lesions. Most of these cases were admitted with a very severe neurological status, so the therapeutic decision was not how to operate but when to operate it.

ARTERIOVENOUS MALFORMATIONS: OUR EXPERIENCE

Ioan Ştefan Florian, Cristian Pîrjol, Horatiu Ioani, Petre Kiss, Sebastian-Victor Trifoi

Neurosurgical Department, Cluj- Napoca County Hospital, Cluj- Napoca, Romania

Intracranial arteriovenous malformations are challenging lesions with combined treatment: microsurgery, radiosurgery, and endovascular approaches. We want our surgical experience and strategy in this field and the current management of these lesions, which lead to successful surgical removal, in the absence of endovascular preoperative embolisation or neuronavigation facilities.

The retrospective analysis of 184 intracranial arteriovenous malformations admitted and surgically treated in our department between June 1996 and

December 2010. From all intracranial vascular malformations this represents 67% (124) and cavernomas 33% (60 cases). The diagnosis was established based on clinical findings, CT, MRI and angiography and confirmed with pathological findings.

The major clinical findings were as follows: hemorrhage, seizures, progressive neurological deficit, and headache and according to Spetzler-Martin grading system most cases of AVMs were grade II and III (64%). We recorded a minor male preponderance for AVMs (55%). The peak incidence has been found in the 5th decade. Postoperative complications were transient neurological deficits (10%), hydrocephalus (11%), and re-bleeding (10%). The outcome was GOS 5 and 4 in 86% of the case. In 19% of the cases, the AVMs had associated aneurisms, treated in the same operatory session.

Most of these cases were admitted with a very severe neurological status, so the therapeutic decision was not how to operate but when to operate it. The best treatment of an intracranial vascular malformation is surgical resection and subtotal resection is not a good option in surgery.

Objectives: Intracranial arteriovenous malformations are challenging lesions with combined treatment: microsurgery, radiosurgery, and endovascular approaches.

Aims: To describe our surgical experience and strategy in this field and the current management of these lesions, which lead to successful surgical removal, in the absence of endovascular preoperative embolisation or neuronavigation facilities.

Material and methods: The retrospective analysis of 184 intracranial arteriovenous malformations admitted and surgically treated in our department between June 1996 and December 2010. From all intracranial vascular malformations this represents 67% (124) and cavernomas 33% (60 cases). The diagnosis was established based on clinical findings, CT, MRI and angiography and confirmed with pathological findings.

Results: The major clinical findings were as follows: hemorrhage, seizures, progressive neurological deficit, and headache and according to Spetzler-Martin grading system most cases of AVMs were grade II and III (64%). We recorded a minor male preponderance for AVMs (55%). The peak incidence has been found in the 5th decade.

Postoperative complications were transient neurological deficits (10%), hydrocephalus (11%), and re-bleeding (10%). The outcome was GOS 5 and 4 in 86% of the case. In 19% of the cases, the AVMs had associated aneurisms, treated in the same operatory session.

Conslusions: Most of these cases were admitted with a very severe neurological status, so the therapeutic decision was not how to operate but when to operate it. The best treatment of an intracranial vascular malformation is surgical resection and subtotal resection is not a good option in surgery.