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Department of Neurosurgery, AD Centre, Pavol Jozef Šafárik University, Faculty of Medicine and University Hospital of Louis Pasteur in Košice, Slovakia
Department of Neurosurgery, Borsod County Teaching Hospital, Miskolc, Hungary

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Final Programme and Book of Abstracts

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17th September 2010

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Registration by an e-mail
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Registratio fee
Free Access

Deadline for abstract submission
6th September 2010 – max. 250 words

Deadline for manuscript submission
17th September 2010 – max. 5 pages, including figures, graphs, tables and references.

Book of Abstracts – every participant receives at a registration desk

Proceedings of the Conference – every participant will receive by the post.

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Friday, 17th September 2010

9,00 Opening ceremony

9,30 – 10,00 Coffee Break

10,00 Scientific Session I.
(Time allocated for presentation – 8 min.)

Chairmen
Csókay András, Igor J. Šulla

1. The Importance of Very Early Decompressive Craniectomy as a Prevention of Sudden Increase of ICP in Children with Severe Traumatic Brain Swelling
Csókay, A., Miskolc, Hungary

2. Osteoporotic Vertebral Fractures
Gajdoš M., Kaťuch V., Pataky F., Džugan M., Košice, Slovakia.

3. The Effects of Infrared Laser Therapy and Weightbath Traction Hydrotherapy as a Component of Complex Physical Treatment in Disorders of Lumbar Spine: A Controlled Pilot Study with Follow–Up.
Oláh, Cs., Páll, V., Jancsó, Z., Bender, T., Oláh, M., Miskolc, Debrecen, Budapešť, Hajdúszoboszló, Hungary

4. Risk Factors for Stroke
Gdovinová Z., Feketeová E., Košice, Slovakia.

5. Non-Occlusive By-Pass Technique in the Course of Cerebral Revascularization
Csókay, A., Miskolc, Hungary.

6. Cavernous Sinus and Parasellar Region from Clinical Point of View
Lovásová, K., Boleková, A., Šulla, I.J., Kluchová, D.
Košice, Slovakia.

7. Introducing the Nanotechnology Institute
Pungor, A., Miskolc, Hungary.

8. Long–Term Results of Meningioma Treatment Using Leksell Gamma Knife
Kollová, A., Liščák, R., Šemnická, J., Šimonová, G., Vladyka, V., Urgošík, D.
Košice, Slovakia, and Prague, Czech Republic

9. Management of Recanalised Aneurysms
Lázár, I., Szólics, A., Oláh, Cs., Miskolc, Hungary

10. Some Immunophenotypic Characteristics of Brain GBMs
Balik, V., Šarišský, M., Gál, P., Šulla, I. jr. Košice, Slovakia.

Discussion

11,30-12,00 Coffee Break

12,00 Scientific Session II.

Chairpersons
Zuzana Gdovinová, Oláh Csaba

11. Lessons Drawn from Regular Fresh Cadaver Exercises in Sigmoid Sinus Mobilization
Csókay A., Miskolc, Hungary.

12. Chaharacteristics of Daytime Sleepiness in Obstructive Sleep Apnea, Narcolepsy and Secondary Hypersomnias.
Feketeová E., Tormášiová M., Gdovinová Z., Košice, Slovakia.

13. Dumbbell Tumors of the Spine: Our Experience
Dobai, J. I., Miskolc, Hungary.

14. Development of Cholinergic Neurons in the Rat Spinal Cord is Completed at Third Postnatal Week
Boleková, A., Košice, Slovakia.

15. Patient Based Carotid Stenting in More than 70 Year Old Patient
Oláh, Cs., Lázár, I., Miskolc, Hungary.

16. A Short Review of the Evolution of Cervical Interbody Spacers
Pataky F., Gajdoš M., Kaťuch V., Lacko F., Košice, Slovakia.

17. Spontaneous Cerebellar Haemorrhages: Diagnosis and Therapy
Fügedi, L., Miskolc, Hungary

18. Problems with Stability of Adult Rat Bone Marrow Derived Stem/Progenitor Cells
Šulla, I. jr., Balik, V., Šarišský, M., Gál, P., Košice, Slovakia.

19. Surgical Treatment of Spinal Extradural Meningeal Cyst: A Case Report and Short Review
Papp, A., Székely, Á., Nagy, D., Csókay, A., Miskolc, Hungary.

20. Our Experience with Vagus Nerve Stimulation (VNS) Therapy in Treatment of Refractory Epilepsy
Kollova, A., Tormášiová, M., Bratský, L., Feketeová, E., Košice, Slovakia.

Discussion

13,30-14,30 Dinner

14,30 Scientific Session III.

Chairmen
Dobai József, Miroslav Gajdoš

21. Adjacent Segment Disease of Cervical Spine: Theoretical Overview and Illustrative Case Study.
Lacko, F., Pataky, F., Dimunová, L., Košice, Slovakia

22. Unilateral Spinal Cord Injury and its Effect on Changes in NO-cGMP Signalization
Capková, Ľ., Dávidová, A., Kucharíková, A., Pavel, J., Lukáčová, N., Košice, Slovakia.

23. Suppression of Reflex Activity and Astrocytes Reaction after Baclofen Treatment of Transected Animals
Kucharíková A., Dávidová, A., Capková Ľ., Lukáčová N., Košice, Slovakia.

24. Surgical Treatment of a Complex Lumbo-Sacro-Pelvic Fracture. Case report.
Demeter, B., Fügedi, L., Oláh, Cs., Székely, A., Dobai, J.
Miskolc, Hungary.

25. Excitation Emission Matrices (EEM) and Constant-Wavelength Synchronous Matrices (CW-SM) of Human Cerebrospinal Fluid
Harakaľová, M., Mokrý, M., Kušnír, J., Dubayová, K., Šulla, I. jr., Košice, Slovakia.

26. Spinal Cord Glioblastoma
Šulla, I. J., Kendeová, J., Džugan, M., Gál, P., Dimunová, L., Košice, Slovakia.

27. Proliferation Activity in the Spinal Cord Ependyma of Adult Rats

Blaško, J., Martončíková, M., Lievajová, K., Račeková, E., Košice, Slovakia.

28. Nursing Care in Patients with Hypertonic Intracerebral Haemorrhage.
Dimunová, L., Zamboriová, M., Košice, Slovakia.

Discussion

16,00 End of the Conference.

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The Importance of Very Early Decompressive Craniectomy as a Prevention to Avoid the Sudden Increase of ICP in Children with Severe Traumatic Brain Swelling.

Csókay, A.

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

Introduction

The DC studies have not dealt with the accelerating modality of process so far.
The fact experienced in children, that all pathologic process so traumatic brain swelling can also dramatically deteriorate, which leads to rapid incurable rise of ICP and death.

Method

We report 8 severely head injured children under age of 12. All of them recieved ICP monitored management according to AANS and EBIC guidelines. On admitted CT's space occupaing bleeding weren't detected wich should had been removed surgically. Significant intracranial mass effect and hemorrhages in brainstem were also exclusion criteria. The DC-s were performed with vascular tunnel method.

Results

Each patients DC were performed , not immediately but within 24 hours after addmission. In 7 cases where DC was performed at ICP=25 mmHg where 3 outcomes were favourable with GOS score 4 and 5, 1 patient GOS 3, 1 patient GOS 2 on follow up. In 2 cases GOS score was 1. The latter two instances we noticed the fact that ICP elevated so rapidly besides proper treatment defined in guidelines. Despite of premedication and decompression carried out in 30 minutes we faced hard dura mater, bilateral dilated fixed pupils, excessively high ICP and cerebral herniation. This brought to think directives over and take greater care for the onset of symptoms or deterioration. This gave the success. In the last case, a very early decompression was performed avoiding the fatal progression of ICP.

Conclusions

In children whom sustained blunt head injury and CT detects progressive edema, it is worth to perform preventive DC even with ICP 17-20 mmHg. Because as the most careful observation ICP may rise so rapidly so it is impossible to achieve substantive decompression at the range of reversible brain damages. Many studies have dealt with bridging veins compression and with it's harmful late effect induced by brain protrusion. The vascular tunnel method is issued

for 9 years, the efficacy has been demonstrated on venous protection.The use of protection of bridging veins (vascular tunnel) absolutely recommended to avoid not only the secondary cortical venous circulatory disorders, but it also makes DC less invasive due to decreased size of this intervention.

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Osteoporotic Vertebral Fractures

Gajdoš M., Kaťuch V., Pataky F., Džugan M.

Department of Neurosurgery, P. J. Šafárik University, Faculty of Medicine
and University Hospital of L. Pasteur, Košice, Slovak Republic.

Objective

Painful osteoporotic vertebral compression fractures (VCFs) are a significant cause of disability in the elderly population. Osteoporotic fractures, particularly of the hip and spine, are associated with premature mortality.
The diagnosis of osteoporotic and nonosteoporotic vertebral fractures relies on the observation of vertebral deformation on plain radiographs (vertebral fractures are often termed vertebral collapses). Differential diagnoses include Scheuermann's disease, scoliosis, spondylosis, and Schmorl's nodes.
Vertebroplasty and kyphoplasty is accepted as an effective, minimally invasive procedure in terms of immediate pain relief, and for restoration of the premorbid level of daily activities.
Authors report on their first experience with the early management of the osteoporotic vertebral fractures with kyphoplasty or vertebroplasty.

Methods

A retrospective analysis was conducted in 44 patients (24 women and 20 men) whose ages ranged from 55 to 77 years (mean age 70,5). The interval between onset of symptoms and surgical intervention ranged from 3 to 11 weeks. 49 levels were treated. All patients resumed routine activities one day after operation. No major complications were encountered in this clinical series.

Conclusions

Kyphoplasty (vertebroplasty) is a safe and effective method for the treatment of osteoporotic VCFs. Failure to restore VB height does not seem to interfere with the excellent pain management and good functional outcome provided by this procedure.

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The Effects of Infrared Laser Therapy and Weightbath Traction Hydrotherapy as a Component of Complex Physical Treatment in Disorders of Lumbar Spine: A Controlled Pilot Study with Follow–Up.

Oláh, Cs[1], Páll, V[1], Jancsó, Z[2], Bender, T[3], Oláh, M[4]

[1]Borsod County Teaching Hospital, Miskolc, [2]Debrecen Medical University, Debrecen, [3]Polyclinic of the Hospitaller Brothers of St. John of God in Budapest, [4]Hungarospa Health Resort, Hajdúszoboszló, Hungary

Introduction

The theapeutic modalities available for the conservative management of chronic lumbar pain included infrared laser therapy and underwater traction, which usefulness is not universally acknowledged. This study was intended to ascertain aní beneficial impact of infrared laser therapy and weightbath treatment on the clinical parameters and quality of patients with lumbar discopathy.

Material and methods

The study population compresed 54 randomised subject. I. group of 18 patients received only infrared laser therapy to lumbar region and painful Valley points. II. group of 18 subjects each received underwater traction therapy of lumbar spine with add-onn McKenzie exercise and iontophoresis. Th remaining III. group treated with exercise and iontophoresis, served as control.

VAS, Oswestry index, SF36 scores, range of motion, neurological findings and thermography were monitored to appraise therapeutic afficacy in lumbar discopathy. MRI scan was done at baseline and after 3 moths follow-up.

Results

Infrared laser therapy and underwater traction for discopathy achieved significant improvement of all study parameters. Among the controls, significant improvement of only a single parameter was seen in patients with lumbar discopathy.

Conclusion

Infrared laser therapy and underwater traction treatment effectively mitigate pain, muscle spasms, enhance joint flexibility, and improve the quality of life of patients with lumbar discopathy.

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Risk Factors for Stroke

Gdovinová Z., Feketeová E.

Department of Neurology, P.J. Šafárik University, Faculty of Medicine, Košice, Slovak Republic

Introduction

Atrial fibrillation (AF) is known risk factor for stroke, studies on the relationship between alcohol consumption and stroke have shown partly inconsistent results.

Patients and methods

Study comprised two groups of patients, 47 patients with atrial fibrillation (group 1) and 134 heavy alcohol drinkers (group 2). In the 1st group, therapy before stroke and stroke consequences were studied. In the 2nd group, blood flow velocity (Vmean) in cerebral arteries by transcranial doppler and erythrocyte deformability (ED) were measured after admission to hospital and 2 weeks after withdrawal. Mean age of patients was 47 years and all of them drank more than 84 g of alcohol (84-400 g) daily.

Results

In the 1st group, only in 3 patients (6,4%) anticoagulants were used before stroke. Poor functional outcome occured in14 (29,8%) of the patients, 2 (4,3%) patients died. Only in 22 (46,8%) of the patients functional outcome was very good, in 9 (19,1%) patients mild improvement was present. In the group of heavy alcohol drinkers significantly decreased Vmean and ED were found after admission to hospital. But, while Vmean was significantly increased after 14 days withdrawal, ED showed very small change.

Conclusions

Insufficient anticoagulant therapy of AF is the reason of poor outcome of patients after stroke. We suppose that decreased blood flow velocity could be the reason of increased risk for stroke in heavy alcohol drinkers. Changes in blood flow velocity after withdrawal revealed, that velocity is probably more influenced by rehydratation during withdrawal than by changes in erythrocyte deformability.

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Non-Occlusive By-Pass Technique in the Course of Cerebral Revascularization

Csókay, A.

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

Introduction

The physiological tremor may cause difficulties in microsurgery, in spite of using armrest. The new fingertip support technique consists of the I-II-III fingertip support, on bridge (Bethlehem bridge) above the operation area, reduces the tremor at the end of instruments.

Methods

Exact measure of tremor reduction was performed. Last year 35 high precise microsurgical cases were operated on by the fingertip support technique. One of the most important application of fingertip support technique to perform non occlusive by pass procedures even if the diameter of recipient vessel not less than 1mm.

Results

The tremors of the operating hand reduces to quarter and the number of complications have decreased effectively. The cadaver non –occlusive by pass study by vaso-vasal shunt or tangentional clipping, prove the evidence of significant advantage of fingertip support technique. The non occlusive by pass could be performed by fingertip support technique from 1.0 mm diameter of recipient vessels.

Conclusion

By this technique the high and extreme precise microsurgical work has become more effective. It could provide the possibility to reassess of by bass in stroke therapy and routinely perfection of non occlusive by pass during giant aneurysm, parasellar tumors, AVM microsurgery. By fingertip support could be also possible to perform the by pass of bridging veins which eliminate the problem of “double key hole” during interhemispheric approach to expose the deep axial pathology (tu, AVM, pericallosal aneurysm).

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Cavernous Sinus and Parasellar Region from Clinical Point of View

Lovásová K[1], Boleková A[1], Šulla I. J.[2], Kluchová D[1]

[1]Department of Anatomy, P. J. Šafárik University, Faculty of Medicine, Košice,
[2]Department of Neurosurgery, AD Centre, P. J. Šafárik University, Faculty of Medicine, Košice, Slovak Republic

The parasellar region is a space on the both sides of sella turcica, which contains cavernous sinus - complex of chambers separated by the fibrous trabeculae, thus, they have the appearance of a cavern. The cavernous sinus also contains important neurovascular structures as: the internal carotid artery, oculomotor, trochlear, and abducent nerves, as well as the first (ophthalmic) and the second (maxillary) divisions of trigeminal nerve with the trigeminal (Gasser's) ganglion. The abducent nerve runs through the central part of cavernous sinus, whereas other nerves are more lateral. Cavernous sinus receives drainage from the superior ophthalmic vein, which runs through the superior orbital fissure into it. The parasellar region, traditionally referred as the cavernous sinus consists of three distinct compartments: orbital, pterygopalatine, and lateral sellar.

Knowledge of the hypophyseal and parasellar anatomy is important to understand the indications and expectations associated with a possible surgery in the middle cranial fossa. The lateral sellar compartment is an anatomically complex region where a number of neoplastic, inflammatory, infectious, and vascular diseases can develop. Therefore the interest of anatomists and radiologists about it is still very attracted in this time. Although the cavernous sinus represents the most relevant parasellar structure, from the practical and clinical point of view all the structures that surround the sella turcica can be included in the parasellar region.

The study was supported by the grant KEGA 3/7291/09

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Introducing the Nanotechnology Institute

Pungor, A.

BAYNANO Institute for Nanotechnology, Miskolc, Hungary.

The BAYNANO Institute for Nanotechnology was established in Miskolc in 2006 with the support of the NKTH (National Office for Research and Technology), and became a prominent research center of the region with 25 employees and 8-10 students. This is an institute with excellent equipments (including high resolution AFM, SEM, and TEM) and staffs, where more than half of the employees have academic degree. We collaborate with the regional and national universities, small and medium size companies, applying for research grants, developing new methods, and market those. With these collaborations and our high resolution measurement service we could help the companies to solve their quality and technical problems. The Institute – utilizing the equipments and knowledge of the staffs – is involved in the university education of nanotechnology.

Beyond the metrological potential mentioned above, the other departments of the institute are conducting chemical and medical-biological research, including the development of new technologies in the fields of medicines, medical implants, nanodispersions, and nanocomposites. The Institute is aware of the fact that health care is one of the motors of development in nanotechnology. As a first step a new Laboratory site has been developed.

This Innovative Medicine Laboratory includes a small animal surgical room, clean room for small and medium scale production, chemical, microbiological, and cell-biological laboratory. I think a world-class laboratory has been successfully installed, which is expected to bring new cooperation and research areas into the Institute.

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Long–Term Results of Meningioma Treatment Using Leksell Gamma Knife

Kollová, A.[1], Liščák, R.[2], Šemnická, J.[3], Šimonová, G.[2], Vladyka, V.[2], Urgošík, D.[2]

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Objective

Evaluation of the results of meningiomas as slow growing tumors treated by stereotactic radiosurgery requires a long term follow up. The current study analyzes cohort of 226 patients harboring 249 meningiomas treated between 1992 and 1997 at Na Homolce Hospital, Prague. Follow up longer than 120 months was available in 81 patients.

Methods

Analyzed cohort of patients consisted of 179 (79,2%) women and 47 (20,8%) men with mean age of 61 years (18-84 years). Volume of tumor was between 0,1 and 44,9 cm^3 (median 4,37 cm^3). 53,4% of meningiomas were located in convexity, 46,6% in skull base. Dose to tumor margin ranged between 6,5 and 24 Gy (median 12,9 Gy), usualy on 50% isodose. Follow up records of 217 patients with 239 meningiomas were available for final analysis.

Results

Ten year tumor control was observed in 94,7% cases. Partial regression of the tumor size was recorded in 163 (68,2%), stabilisation in 70 (29,3%) and progression in 6 (2,5%) meningiomas. Improvement of symptoms was found in 89 patients (41%). The most common complication was postiradiation edema in 40 (18,4%), symptomatic in 24 (11,1%) patients. Temporary morbidity occured in 30 (13,8%) and permanent in 14 (6,4%) of treated patients.

Conclusion

Stereotactic radiosurgery is safe and effective treatment method of meningiomas in a long term perspective. The decision on treatment options have to be assessed for every patient individually.

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Management of Recanalised Aneurysms

Lázár, I., Szólics, A., Oláh, Cs.

Department of Neurosurgery and Department of Imaging and Interventional Radiology
Borsod County Teaching Hospital, Miskolc, Hungary

Introduction

Is recanalisation or neck remnant dangerous for the patients with intradural aneurysms? When do we need to retreat them? Is it ethical to suggest a second treatment for an otherwise symptomfree patient?

Method

All of our endovascularly treated aneurysm patient is searched for recanalisation of the sac who underwent any imaging method at least 3 months after the coiling procedure. Complications or rerupture are noted.

Result

Our results show 50 recanalised aneurysms of 203. 22 patients (10,8%) underwent retreatment without permanent morbidity.

Discussion

Partial recanalisation of a previously embolised aneurysm was found to be frequent (24,6%) but no rebleeding occurred and less than half of those aneurysms (44%) were retreated. Second coiling procedures were uneventful. Endovascular treatment thus seems to be safe. The primary good results can be safed for longer period of time.

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Some Immunophenotypic Characteristics of Brain GBMs

Balik, V.[1], Šarišský, M.[2], Gál, P.[1], Šulla, I.jr.[3]

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Background

Glioblastoma multiforme (GBM) represents one of the most malignant brain tumors with a median survival time of 14.6 months despite aggressive multimodal therapy.

Objective

Authors evaluated the immunophenotypic characteristics of cells from resected material earned during surgical procedures performed in 11 patients with histopathologically identical primary brain GBMs operated on at the Department of Neurosurgery, University Hospital in Košice with an aim to identify possible differeces in their biological properties.

Material and methods

The expression of selected neural and non-neural differentiation markers including A2B5, CD34, CD45, CD56, CD117, CD133, EGFR, GFAP, Her-2/neu, LIFR, nestin, NGFR, Pgp and vimentin was analysed by flow cytometry in eleven GBM (WHO gr.IV) patients. All tumours were positive for A2B5, CD56, nestin and vimentin. CD133, EGFR, LIFR, NGFR and Pgp were expressed only by minor tumour cell subpopulations. CD34, CD45, CD117, GFAP and Her-2/neu were constantly negative.

Conclusions

The study showed that cells from histopathologically identical GBM tumors can display marked biological heterogeneity. Results suggest that flow cytometric immunophenotypic analyses of GBM cells may help to identify a subgroup of patients who could potentially benefit from oncological therapy.

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Lessons Drawn from Regular Fresh Cadaver Exercises in Sigmoid Sinus Mobilization

Csókay A.

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

Introduction

Radio- and endovascular surgery have been preferred to a great number of just those operations affording opportunities for microsurgeons' development in practice.
At the same time, a significant part of the most difficult operable pathologies (giant vascular malformations) demanding basis exposures larger than 3 cm around the brain stem, have remained for open surgery. Even in a big centre, it is not rare that a microsurgeon does not perform a difficult basis exposure or attend a giant aneurysma for two months. To eliminate these problems, we have worked out a method in further training which keeps a high standard level of surgeons' practice as well as has provided us with unexpected results. In relation to sigmoid sinus mobilization we consider an operative technique different from the previous ones as follows. We have experienced a significantly time-saving skull base approach which is especially advantageous for elderly patients in terms of anaesthesiology.

Method

The point of the new method is practical work not on an annual or semi-annual basis but on 2-3 days a week when the neurosurgeon does not operate or do outpatient clinical work.
We performed more than 200 cadaver operations during the last two years.The application of the well-known cotton jet' technique instead of high-speed drilling speeded up exposure so much that operative time has become remarkably short.It has especially great significance during sigmoid sinus mobilization where the dura is extremely thin. We have compared 10 exposures completed with the traditional high-speed drilling technique to 10 ones executed with the technique we called 'wet cotton jet'.

Results

The avarage time of mobilization with the traditional high speed drill(ing?) technique was 1h 18 min between the two points. The avarage time of mobilization with the 'wet cotton jet' technique was 22 min. The sinus wall happened to be injured just once in both cases.

Conclusion

Exacting microneurosurgery is similar to the art of music or to games such as tennis requiring mental as well as physical endurance.The time of regular practice or training is usually more than ten times as long as that of concert or tournament.This has been certified by the time-saving practice of sigmoid sinus mobilization with the cotton jet technique that is

new only so far as it pays more attention to the ridges in the bone structure of the sigmoid sinus sulcus.

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Chaharacteristics of Daytime Sleepiness in Obstructive Sleep Apnea, Narcolepsy and Secondary Hypersomnias.

Feketeová E., Tormášiová M., Gdovinová Z.

Department of Neurology, University hospital of L. Paster and P. J. Šafárik University, Faculty of Medicine, Košice, Slovak Republic

Background

About 20% of adults experience the level of daytime sleepiness that interferes with their daily activities at least a few days per week or more. Primary sleep disorders, especially obstructive sleep apnoea (OSA), narcolepsy, and hypersomnia due to depression are the most frequent causes of the excessive daytime sleepiness (EDS).

Material and Methods

The present study was conducted to compare the self and objective EDS evaluation in OSA, narcolepsy, and hypersomnia due to depression.The Multiple Sleep Latency Test (MSLT) and Epworth Sleepiness Scale (ESS) in the retrospective analysis were used for the assessment of EDS in 70 patients divided into 5 groups based on disease and its severity (in OSA according to apnoea-hypopnea index).

Results

The Tukey-Kramer multiple comparisons showed significant differences in ESS between mild OSA and narcolepsy ($p<0,0001$), and depression ($p=0,005$), the difference between moderate OSA and narcolepsy was proved ($p=0,0194$), too. The results of MSL were similar (mild/moderate OSA-narcolepsy: $p<0,0001/p<0,05$, mild OSA-depression: $p<0,005$). ESS scores and MSL in OSA patients did not significantly varied between mild, moderate and severe OSA, while simple linear regression showed significant correlation between ESS, resp. MSL and AHI ($r=0,64548$, $p<0,0001$, resp. $r=-0,572494$, $p<0,0001$).

Conclusions

The results of the present study underline that 1. subjective and objective measures of EDS in OSA reflect severity of the disease and cheap questionnaire evaluation provides the same precise information as the objective measure, 2. ESS and MSLT are not sensitive enough in differential diagnose of primary and secondary hypersomnias, and have to be used together with other variables.

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Dumbbell Tumors of the Spine: Our Experience

Dobai, J. I.

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Introduction

The dumbbell tumors are typical well circumscribed mass growing both to intraspinal and extravertebral space through the intervertebral foramina /Eden I-IV. type/.
The majority of dumbbell tumors are neurogenic tumors, the meningioma is rare, however hydatid cyst, chrondosarcoma, osteoid osteoma, lymphoma were also observed very rarely as dumbbell tumor. Their location is mostly thoracic, however they could be found in every region. Histologically they are mare frequently benign and rarely malignant form, sometimes they occur with M. Recklinghausen.

Clinical observations

From January 1, 1991 to December 31, 2006 there were 333 patient operated on for spinal tumors and among them 18 (5,4 %) patients had dumbbell tumor: 5 cervical, 6 thoracic, 4 lumbar, 1 sacral and 2 multiple (C+L and Th+L) in location. Histologically they were 12 neurinomas/schwannoma, 1 neuroblastoma, 1 malignant schwannoma (MPNST), 1 lymphoma, 1 haemangioma cavernosum (we did not find other case in the literature) and 2 multiple neurinomas associated with Recklinghausen's disease. The surgical technics applied by us and our results are presented.

Conclusions

The huge size of tumor are not equivalent of malignancy; at the removal of the intraspinal tumor the microtechnic is very important, at multiple neurinomas the observation of patients are proposed instead of radicality and the huge neuroblastoma thought firstly as inoperable tumor may become successfully removable tumor after aggressive preoperative chemotherapy.

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Development of Cholinergic Neurons in the Rat Spinal Cord is Completed at Third Postnatal Week

Boleková, A.

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Introduction

Acetylcholine (ACh) is the first neurotransmitter to be discovered, functioning as a typical chemical neurotransmitter. Enzyme acetylcholinesterase (AChE) regulates the cholinergic neurotransmission by hydrolysis of synaptic ACh. During development is AChE abundant in the nervous system.

Aim of the Study

The purpose of the present study was to confirm and compare the presence of AChE located in the spinal cord during different stages of postnatal development, to examine their distribution, morphology and the relationship in rat the spinal cord. The main aim was to determine the time of the completion of cholinergic neurons development.

Material and Methods

Spinal cord sections from Wistar rats both sexes were examined during the four postnatal days (P1, P7, P14 and P21). Spinal cord of the adult rats were considered as a control sample (P90). Histochemical method for visualisation of AChE was used and in that way the functioning of ACh as a neurotransmitter was considered. Spinal cord segments were sectioned transversally and evaluated by light microscope.

Results

The presence of AChE positive amber yellow neurons was confirmed in deep parts of the dorsal horn, in the autonomic nucleus, in the pericentral area and mostly in ventral horn of the spinal cord in all investigated postnatal days. Their positive staining gradualy increased and these neurons were moderately reactive at P14. By P21 cholinergic neurons were seen strongly AChE positive. AChE positive neuronal type achieved adult level of staining intensity at P21.

Conclusion

Results showed that the adult pattern of AChE expressions in the rat spinal cord was evident at the third postnatal week. At this time were cholinergic neurons were intensively AChE stained and confirmed full functioning of marked structures.

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Patient Based Carotid Stenting in More than 70 Year Old Patient

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Purpose

To report our single center experiences with carotid stent procedures in elderly. We present a consecutive series of patient during a 6 year's period.

Materials and methods

Between April 2002 and April 2008, 80 carotid stent procedures were performed in more than 70 years old patients (55 males, 25 females). 57 patients (71,2%) were symptomatic, 23 asymptomatic for the ipsilatera carotid stenosis. The average percent of stenosis was 87,4%. 13 patient had contralateral carotid occlusion; another 26 patients had more than 50 % carotid stenosis. Risk factors were: hypertension 94%, coronary disease 66%, diabetes mellitus 33%, hypercholesterolemia 39%, myocardial infarction 31%. Embolic protection was introduced in 42,5 % only according to the decision of the interventionist. Ultrasonographic and clinical follow-up was peroformed 6 weeks after the procedure than every 3 months.

Results

All procedure was technically successful. One patinet died in 48 hours in myocardial infarction. One major stroke occurred. Two patients presented temporary dizzingess after the angioplasty and another two patients had TIA-s in 30 day. No restenosis or reocclusion occurred the follow-up.

Conclusion

Carotid stenting is safe and efficacy even in elderly patinets. Our results suggest that high surgical risk patients have to be treated with carotid stenting.

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A Short Review of the Evolution of Cervical Interbody Spacers

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Degenerative conditions of the spine represent a group of most common lifestyle associated diseases with significant medical as well as social impact.

Clinical symptoms and syndromes of surgically considerable degenerative diseases of the spine mostly result from nerve root or spinal cord compression caused by a herniated intervertebral disc or a dorsal osteophyte. Therefore, the main goal of the surgical treatment is decompression of the neural structures by complete removal of the intervertebral disc and the osteophytes followed by insertion of an artificial disc spacer into the remaining space.

The most frequently used procedure for treating such conditions is an anterior cervical discectomy. Since the first introduction of the method in 1950, several modifications of the original technique have been introduced. Their common feature is that removal of the degenerated intervertebral disc or the osteophytes requires stabilization of the adjacent segments by fusion. Thus, implantation of an interbody spacer results not only in intervertebral space reconstruction, but by immobilizing the adjacent vertebral bodies also in forming a firm bony bridging between them – and ultimately a solid bony block.

Our review provides an overview of cervical interbody spacers in the order of their evolution from auto- and allografts, through compact materials to hollow cages. Furthermore, different types of cage filling materials used for fusion augmentation are also discussed.

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Spontaneous Cerebellar Haemorrhages: Diagnosis and Therapy

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Introduction

Spontaneous cerebellar haemorrhages are account for 10% of spontaneous intracranial intraparenchymatous haemorrhages. Before the CT era these bleedings were mostly fatal. According to the localization, intracerebellar haemorrhages are classified in three groups: dentatum, vermis (medial) and hemispheral (lateral) bleedings. Among the cerebellar haemorrhages dentatum and vermis haematomas have often bled into the fourth ventricle causing occlusiv hydrocephalus, while the hemispheral types have broken into the subarachnoideal and subdural spaces.

Material and Methods

During the period of 2005-2009 years 58 adult patients (37 male and 21 female) were admitted in our department. From them 18 were treated conservatively and 40 ones underwent surgery for space-occupying lesions and/or occlusive hydrocephalus. The mean age of the patients was 53 years for male and 67 years for female. CT-angiography was done in six cases and DSA in two cases without any signs of vascular malformations.

Results

The most common clinical signs were gait disturbance (ataxia), occipital headache, vertigo, dysarthria, horisontal or vertical gaze palsy, nystagmus or other intracranial nerve palsies at the time of admission. The most cases were operated on within 12 hours after the bleeding. The surgical indication was determined by the preoperative clinical condition of the patient and the CT morphology of the cerebellar haemorrhage. We used Glasgow Coma Scale to define the clinical condition of the patients. The most cases operated on were belong to the severe group (GCS under 9). Patients had GCS over 13 and if the bleedings were not space-occupying (only mild fourth ventricle compression without hydrocephalus), the patients were treated conservatively. Those patients, who had GCS under 13 and the size of bleedings were over 25 cm^3 and/or occlusive hydrocephalus was seen, underwent decompressive suboccipital craniectomy and/or ventricular drainage. In cases of conscious patients (GCS 14/15) having occlusive hydrocephalus, the first step was the ventricular drainage and in the cases of clinical deterioration as a second step a decompressive craniectomy and haematoma evacuation were carried out. The outcome was defined by Glasgow Outcome Scale, from the 58 patients 25 died (46%). The perioperative mortality was 55% which is almost similar to the literature (around 20-50%). Among the survivor cases, most of the patients have been in good clinical condition (GOS 4-5).

Conclusions

The early recognition of the neurological signs and the early correct diagnosis due to the spreading of CT and MRI gave the possibility, that patients with previously fatal spontaneous cerebellar haemorrhages could be treated succesfully in neurosurgical centers. Special attention must be payed to the cases of spontaneous cerebellar haemorrhages associated with coagulopathy caused by antithrombotic drugs (warfarin, ticlopidin, clopidogrel). These cases need a lengthy, carefully and circumspect preoperative preparation. In the early recognised and adequately treated cases of spontaneous cerebellar haematomas have had a favourable prognosis. Otherwise the outcome is negatively influenced by the extreme hypertension (over 200 Hgmm systolic pressure and 100Hgmm diastolic pressure), the size of the bleeding (over 25 cm^3), the brainstem compression, acute occlusive hydrocephalus, intraventricular bleeding and GCS under 9 at admisson.

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Problems with Stability of Adult Rat Bone Marrow Derived Stem/Progenitor Cells

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Introduction

Stem/progenitor cells (S/PCs) derived from the adult bone marrow expressing Nestin are considered a potentially promising source of neural precursors for replacement therapy after brain or spinal cord damage. The aim of the presented study was to evaluate stability of immunophenotypic characteristics of adult rat bone marrow-derived S/PCs.

Material and methods

Bone marrow cells were harvested from rat femoral bones and cultured in alpha-MEM medium supplemented with 10% ES-FBS, 2 mM L-glutamine, 10 ng/ml rat LIF and 10 ng/ml human LIF. At passage 4, cultures were split in two parts. The first one continued with the same medium, whereas the second part received additional supplementation with human FGF-b and EGF. The immunophenotype of cells was analysed by flow cytometry at different cell culture time points.

Results

After initial 14 days, a heterogeneous culture of adherent cells was obtained. Twenty-five per cent (range 21.2%-30.3%) of the cells displayed phenotype (CD45−, CD90+++, cyNestin++) compatible with that of neural stem/progenitor cells (NS/PCs). During subsequent cultivation cells started to gradually lose expression of both, CD90 and cyNestin, but retained their viability. This decrease of NS/PCs markers expression was even more pronounced when cells were cultured in the medium containing human FGF-ß and EGF. Results of the study showed, that cultivation of rat bone marrow cells in appropriate culture media lead to the generation of cells with phenotype characteristic of NS/PCs. However, expression of this phenotype has been gradually reduced with elapsing time.

Conclusions

These observations suggest, that quality of rat bone marrow-derived S/PCs and their suitability for replecement therapy is highest between 12^{th} to 15^{th} day of cultivation (passages P4-P5), then diminishes.

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Surgical Treatment of Spinal Extradural Meningeal Cyst: A Case Report and Short Review

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Introduction

Spinal meningeal cysts account for 1-3% of all spinal tumours Spinal meningeal cysts are uncommon causes of spinal cord and nerve root compression. According to the classification described by Nabors et al. for spinal meningeal cysts, extramedullary cysts of the spinal canal can be divided into three main groups.

Method

We show a well documented case of a 18-year-old female presented with progressive paraparesis, wich was identified and treated as SM. at first.. Magnetic resonance image and computed tomography , showed an extradural meningeal cyst extending at the Th VII-IX levels in the thoracic area, widening the vertebral canal. Total resection of the cyst , dural defect closure and spinal canal reconstruction was performed . Histopathological examination confirmed that the cyst wall was formed by nonspecific fibrous connective tissue without a single-cell layer of inner arachnoid lining. After 10 months the patient is without symptoms, MR controll scans are shown good result without remnant and cord compression.

Conclusion

Most spinal meningeal cysts are asymptomatic these are should be followed . Symptomatic cysts should be surgically resected . Many methods are described for treating extradural meningeal cysts-aspiration of cyst , fenestration of cyst wall, drainage and shunting, CT-guided percutaneous injection of fibrin glue and partial and complete resection . In this case we performed the total resection of cyst wall with laminoplasty. We have no experience with other methods, but we think that the best and definitive result can be achived by total surgical resection.

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Our Experience with Vagus Nerve Stimulation (VNS) Therapy in Treatment of Refractory Epilepsy

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Objectives

Refractory epilepsy is found in about one third of epilepsy patients despite adequate pharmacological treatment. In selected patients, surgical procedures help to control seizures. One of them is vagus nerve stimulation (VNS), performed for the first time in Slovakia at our department in February 2007. The goal of the study was to evaluate effect of VNS treatment to seizure frequency and overall quality of life.

Material and Methods

Retrospective anaysis of our three years experience with 12 out of 14 implanted patients was performed. Age of treated patients ranged between 7 and 63 years; average time of epilepsy duration was 24,2± 9,1 years (range 6-41 years); VNS in these patients was implanted for 2-42 months. Analysed was also effect of external magnetic stimulation, adverse effects and complications of VNS therapy.

Results

Seizure frequency was reduced in 30-50% in 8 patients. In two patients, seizure reduction was greater than 50%. In two patients, there was no effect on frequency of seizures. In 70% of patients, there was positive effect of external magnetic simulation recorded, in terms of severity and duration of the seizure. In 50 % of patients positive effect on quality of life and mood was recorded. Left vocal cord paresis was found in one patient. Unpleasant sensations in neck during stimulation were found in 2 patients; in one of them the symptoms decreased over time. In one patient VNS was removed due to painful sensations in neck and face during stimulation; in this patient, there was no effect of VNS therapy on epilepsy. Temporary hoarseness during stimulation, initially after change of stimulation parameters was recorded in all patients.

Conclusions

First experience with VNS in patients with refractory epilepsy was presented. It is effective adjunctive treatment improving quality of life of epilepsy patients.

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Adjacent Segment Disease of Cervical Spine: Theoretical Overview and Illustrative Case Study.

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Introduction

Standard treatment of cervical spine degeneration is anterior cervical decompresion and fusion.
Surgical outcomes of anterior decompression and fusion (ACDF) can be deteriorated by the development of adjacent segment degeneration or disease (ASD),what is complex spondylotic and chondrotic changes to previosly treated segment. Morphologicaly ASD represents chondrotic protrusion or extrusion and osteophytes formation.ASD can be asymtomatic or symtomatic.Patient with ASD can presents with cervical pain, radiculopathy or myelopathy and can affect up to 25 % previously fused patients within 5 years after surgery.Over the last few years arthroplasty is playing key role in prevention of ASD but indication or exclusion criteria are limited.Ideal patient for cervical arthroplasty is patient with single level disc degeneration, no osteophytes formation ,no instability, no inflamatory proces, no tumors and no osteoporosis.From this reason number of patients- candidates for cervical arthroplasty is relatively low but according last international study represents solution in prevention ASD.According our experience can be comprimise solution using DCI/ semidynamic/ implants, where indication criteria are less strict comparing with indication for arthrodesis.

Case presentation

31 years old lady suffered from neck pain for 5 yars and right upper limb for last 3 month before admission to our hospital. She was treated conservatively with physiotherapy but without effect. MRI showed significant C5/C6 disc herniation. After evaluation clinical symtoms and MRI we decided for anterior decompresion and fusion with Brantingen cage. Operation was done in february 2005. After operation patient was free of pain and discharged from hospital on third day.3 years later in 2008 she started again to have neck and right upper limb pain and MRI showed C3/C4 and C4/C5 cervical disc herniation. We evaluated this complex clinical symtoms and MRI as a ASD.Because was no reponse on conservative treatment and physiotherapy and MRI showed significant two level disc herniation we performed in april 2008 C3/C4 and C4/C5 discectomy and fusion with same implants like before with anterior plate fixation/ Zephir/ Also after this procedure was patient free of pain and discharged from hospital in satisfactory condition.In June 2010 she come back again with neck and left upper limb pain.MRI C spine was done and showed C6/C7 disc herniation, what we can again evaluate as a ASD.In this moment for patient is pain tolerable, she is able to do normal activity without regular medication with regular physiotherapy.

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Unilateral Spinal Cord Injury and its Effect on Changes in NO-cGMP Signalization

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Introduction

Cervical spinal cord hemisection results in the paralysis of the ipsilateral hemidiaphragm and leads in the interruption of descending bulbospinal respiratory pathway (BRP).

Aim

The goal of our study was to find out, whether BRP, previously found as nitrergic, is acting through NO-cGMP signalization.

Material and Methods

NO-cGMP was observed eight days after C2-C3 spinal cord hemisection in C4-C5 segments. The retrograde tracer Fluorogold (FG) was used to label neurons of ventral respiratory group (VRG) located in medulla. These neurons are nitric oxide synthase (nNOS) immunopositive and terminate in the phrenic nucleus (PN).

Results

Two days after the injections of the FG into the PN, we revealed many FG fluorescent neurons mostly contralaterally to the site of injection. Under physiological conditions we noted nNOS-fluorescent terminals of VRG neurons around beta 1 soluble guanylyl cyclase (ß1sGC) fluorescent motoneurons in PN. These motoneurons were nNOS negative. Spinal cord hemisection caused a significant decrease in the nNOS and Synaptophysin (SYN) fluorescent terminals around alfa motoneurons in PN 8 days after hemisection on contralateral side. On the side of injury, nNOS/SYN fluorescent puncta were detected around phrenic motoneurons only sporadically. Phrenic alfa motoneurons responded to C2-C3 hemisection by a loss of ß1sGC positivity.

Conclusion

These results together suggest that bulbospinal respiratory pathway is acting through NO-sGC.

Acknowledgement

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Suppression of Reflex Activity and Astrocytes Reaction after Baclofen Treatment of Transected Animals

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Introduction

Astrocytes are a sub-type of glial cells in the central nervous system taking part in maintenance of blood-brain barrier, regulation of ion concentration in the extracellular space, modulation of synaptic transmission and repair of nervous system by forming a glial scar after spinal cord injury.

Material and Methods

In this study we investigated the astrocyte′s expression after Th9 transection and baclofen treatment. The GABA agonist baclofen (30mg/b.w., p.o.) was administered daily for 6 days, starting firstly 1 week, and secondly 4th week after injury. Experimental animals survived for 9 weeks. The astrocytes were visualized by a cell-type specific marker GFAP, which is the major constituent of the glial intermediate filament. In addition, the tail-flick test was used to monitor a reflex acitivity.

Results

GFAP immunoreactivity was moderate in control; the astrocytes were presented by a small, stellate perikaryon and a few thin branched processes. We detected increased number of astrocytes with thickened, elongated processes seen in lumbar segments 9 weeks after Th9 transection. The hypertrophy of glial cells was diminished after baclofen treatment. The heat-induced reaction time was significantly longer 1 week after injury than in control. Baclofen temporarily suppressed reflex response, but only up to 20th day after its administration. The reflex response was effectively decreased after repeated baclofen treatment.

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Surgical Treatment of a Complex Lumbo-Sacro-Pelvic Fracture. Case report.

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PKK, 29 years old woman
Traffic accident, when the car fell on patient.
Status on admission: distal type paraparesis,right peroneus plegia, caudal laesion.
Diagnostics:

X-ray: LV/SI traumatic? (no fracture on L.V vertebra) spondylolisthesis (more then half vertebral body), pubic bone butterfly fracture

MRI: at the level of L.V/S.I intervetebral disc, sever extraforaminal nerve root compression

CT: sacral bone left trasfoaminal fracture, with slight anterior dislocation and angulation of the lateral mass.

Treatment:

Acut: decompression at the L.V/S.I level. The neurological status remain unchanged. Traumatology decided to treat the pubic fracture conservatively.

Second surgery: lumbopelvic fixation with spondylolisthesis reduction.

Outcome: able to walk alone without any help, slight paraparesis, no incontinentia, mild right peroneus paresis.

Conslusion: with the used system, the bridging of the sacrum gives enough stability and allows to resolve the spondylolisthesis.

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Excitation Emission Matrices (EEM) and Constant-Wavelength Synchronous Matrices (CW-SM) of Human Cerebrospinal Fluid

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Introduction

Although it was shown that changes in chemical composition of human urine and serum during illness can be used in a one step complementary diagnostic method, the total fluorescence of native human cerebrospinal fluid (CSF) has not received particular attention until now.

Material and methods

For the first time excitation/emission matrices (EEM) and constant-wavelength synchronous matrices (CW-SM) have been created for CSF samples obtained from twenty patients with intervertebral disc disease, considered as metabolically intact. The excita-tion maxima of fluorophores present in human CSF lie in the range of 260-340 nm, whereas their emission maxima lie in the range of 280-440 nm.

Results

Both EEM and CW-SM showed the same fluorescence maxima ($\lambda_{exc}/\lambda_{emi}$) with highly comparable fluorescence intensity (R^2=0,99): i) shoulder at 260/350 nm with a low intensity (189,7±118,1 A.U. vs. 187,5±126,3 A.U. for EEM and CW-SM, respectively); ii) broad peak at 280-300/350 that overshadows the whole plot and was the highest one in this range with intensity more than 1000 A.U., iii) shoulder at 340/440 nm with a lower but recognizable intensity (71,7±17,5 A.U. for EEM vs. 73,3±17,1 A.U. for CW-SM).
However, CW-SM shows more potential in describing the fluorescence properties of CSF in one step diagnostic application.

Conclusions

The fluorescence of native CSF is strong enough to be detected by a standard luminescence spectrofluorimeter and shows one strong protein peak and another two small shoulders. Moreover, CW-SM seems is more useful in providing a one-step diagnostic analysis of CSF, compared to EEM. However, more research has to be done to find out if the changes in the fluorescence of CSF during illness, mainly malignancy, are easily detectable via changes in topographic patterns of fluorescence matrices.

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Spinal Cord Glioblastoma

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Background

Primary Anaplastic Astrocytoma - Glioblastoma multiforme (GBM) of the spinal cord is a very rare clinical entity with only little information regarding its presentation, course and prognosis available in the literature. That is why authors decided to report on their personal experience with treatment of three patients operated on due to these neoplasms.

Clinical presentations

During the period of time from 1st January 1986 to 31st December 2009 there were operated on 3 patients with primary spinal cord GBM at the Department of Neurosurgery, University Hospital in Košice. All of them were males – one a 6-month-old child, second a 16-year-old boy and the third one a 44-year-old man. In the oldest patient the tumour was located in cervical (C6-C7), in the adolecent boy in thoracic (Th3-Th8) part of the spinal medulla and in the child in conus medullaris. Clinical symptoms progressed rapid-ly (e. g. in the oldest patient a light hemiparezis became severe during about 3 weaks, then respiratory distress appeared; the 16-year-old boy complained of painful sensations in a thoracic region at first, then severe paraparezis developed; severe paraparezis of lower extremities forced parents of the 6-month-old child to search for a medical help. The diagnosis of spinal cord expansive lesion was established by perimyelography or
CT-MG (in two older patients) and by MRI (in the child). Surgical approach to the spinal canal was achieved by laminectomy (in the oldest patient) or by laminotomy (in the boy and the child). The appearance of tumours as well as their relationship to surrounding structures clearly indicated their malignant character. Surgical procedures were restricted to biopsy accompanied by decompression (in two boys), or to resection of exophytic part of the tumor and decompression in the man respectively. Histopathologic examinations established diagnosis of spinal cord primary anaplastic astrocytoma - glioblastoma in all three patients. A short-time improvement of neurological deficit in postoperative period was followed by an unstoppable deterioration (in spite of an aggressive chemotherapy in a child, or a combined radio-chemotherapy in two older patients) and death after 3 to 5 months.

Conclusions

Spinal cord GBMs operated on by authors occurred only in males. They had highly malignant character. Neither extent of resection nor adjuvant oncological therapy were able to alter an unfavourable prognosis of the disease and fatal outcomes.

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Proliferation Activity in the Spinal Cord Ependyma of Adult Rats

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Besides the brain, in the spinal cord, the ependyma of the central canal is thought to be another source of neural progenitor cells. The spinal cord is divided into five regions: cervical, thoracic, lumbar, sacral and coccygeal. Anatomically all these parts are connected via central canal and also with four brain ventricles. Clinical studies report also about existence of ventriculus terminalis - the “fifth ventricle”, as a small ependyma-lined cavity in conus medullaris, usually in continuity with the central canal of the rostral spinal cord and associated with glial and neuronal degenerative tissue. Thus, the aim of our study was to compare neurogenic acitivity within the ependyma of conus medullaris and the rest rostral part of the spinal cord. To investigate the proliferation rate in the ependyma of the spinal cord, adult male rats were injected with a single dose (100 mg/kg) of bromodeoxyuridine (BrdU) and allowed to survive 4h. BrdU-positive cells were counted on 15 randomly selected sections from each spinal cord region. Quantitative analysis showed significantly higher number of proliferating cells in ependyma of conus medullaris in comparison with the rest spinal cord regions. These data indicate a privileged status of conus medullaris ependymal lining in adult spinal cord neurogenesis.

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Nursing Care in Patients with Hypertonic Intracerebral Haemorrhage.

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