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DEAR READERS,

On behalf of Organizers and Scientific Committee we are happy to introduce a new supplement 7/2018 of Issue of Rehabilitation, Orthopaedics, Neurophysiology and Sport Promotion – IRONS. It is devoted to topics presented on 3rd STUDENTS INTERNATIONAL CONFERENCE “FRONTIERS IN NEUROLOGY, NEUROPHYSIOLOGY AND NEUROPHARMACOLOGY” and “30th CONGRESS OF EUROPEAN FEDERATION OF THE INTERNATIONAL COLLEGE OF SURGEONS” WITH PARTICIPATION “3rd CONFERENCE OF INTERNATIONAL COLLEGE OF SURGEONS, POLISH SECTION” which were held on 19th and 20th of May in Poznań under the honorary patronage of Rector of Poznań University of Medical Sciences, Professor Andrzej Tykarski with participations of invited lecturers from Taiwan, Australia, Canada, Switzerland, Greece, United States of America, Czech Republic, Germany, China and Poland.

Among issues of surgery, neurosurgery, neurophysiology and neurorehabilitation directly referred to the scope of IRONS, the readers may find abstracts of presentations related to topics regarding infections, gynecology as well as carrying the humanitarianism all over the world as the mission of International College of Surgeons.

We would like to thank Members of Student Scientific Society of Poznan University of Medical Sciences for their excellent help in organization of mentioned international scientific meetings.

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Department of Medical Microbiology, University of Medical Sciences, Poznań, Poland
Secretary of European Secretary of International College Of Surgeons, Polish Section



Juliusz Huber

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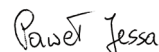
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DRODZY CZYTELNICY,

W imieniu Organizatorów i Komitetu Naukowego, jesteśmy szczęśliwi mogąc zaprezentować nowy suplement 7/2018 Zeszytów Promocji Rehabilitacji, Ortopedii, Neurofizjologii i Sportu – IRONS. Wydanie to jest poświęcone zagadnieniom prezentowanym na Trzeciej Międzynarodowej Konferencji Studenckiej „Współczesne kierunki w Neurologii, Neurofizjologii i Neurofarmakologii” oraz „30 Kongresie Europejskiej Federacji International College of Surgeons” z udziałem „3 Konferencji International College of Surgeons, Sekcja Polska”, które miały miejsce w dniach 19 i 20 maja w Poznaniu pod honorowym patronatem JM Rektora Uniwersytetu Medycznego w Poznaniu, Profesora Andrzeja Tykarskiego z udziałem zaproszonych lektorów z Tajwanu, Australii, Kanady, Szwajcarii, Grecji, Stanów Zjednoczonych, Czech, Niemiec, Chin i Polski.

Wśród zagadnień dotyczących chirurgii, neurochirurgii, neurofizjologii i neurorehabilitacji bezpośrednio powiązanych z tematyką IRONS, czytelnicy mogą zapoznać się z streszczeniami doniesień odnoszących się do problematyki infekcji, ginekologii jak również światowej misji humanitarnej International College of Surgeons.

Chcielibyśmy gorąco podziękować Członkom Studenckiego Towarzystwa Naukowego Uniwersytetu Medycznego im. Karola Marcinkowskiego w Poznaniu za ich wspaniałą pomoc w organizacji powyższych międzynarodowych spotkań naukowych.

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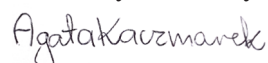
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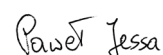
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PLENARY SESSION I – INTERNATIONAL COLLEGE OF SURGEONS – CARRYING THE HUMANITARISM**Management of complex anorectal fistulae sepsis**

Yik-Hong Ho

James Cook University, North Queensland, Townsville, Australia

The ligation of intersphincteric fistula tract (LIFT) is a relatively new sphincter preserving surgical technique with a yet confirmed potential for addressing complex anorectal fistulas. LIFT was compared with anorectal advancement flap management (ARAF) of complex anorectal fistulas requiring previous seton drainage. Crohn's patients were excluded. Patients with no confirmed recurrent sepsis after 6 months were randomized to day surgery performance of LIFT (25; 17 male) or ARAF (14; 10 male) with removal of the seton. Outcome measures included recurrences, surgical time, complications, hospital readmissions, and fecal incontinence. LIFT was 32.5 minutes shorter than ARAF ($P < .001$). Complications were similar, with no hospital readmissions. Return to normal activities was 1 week for LIFT patients, 2 weeks for ARAF patients ($P = .016$). At 19 months there were 3 recurrences (2 in the LIFT group). One ARAF patient had minor incontinence. The LIFT procedure was simple, safe, shorter, and patients returned to work earlier. All patients had preliminary seton drainage, possibly contributing to the low recurrence rates (compared to previous published reports with other techniques) by (1) improving drainage, (2) obliteration of infected granulation tissue and (3) identification of the correct tract.

We subsequently performed a long term follow-up study of 75 patients who underwent LIFT following seton drainage. Only patients with complex cryptogenic anorectal fistulas were included. After seton insertion and partial fistulotomy the tract was reviewed at 6 months for the absence of anorectal sepsis collections. Patients then underwent LIFT in a day surgery setting. Operative time, complications, recurrences and incontinence were evaluated. Between May 2008 and June 2013, 75 patients (51 men, mean age 49.5 SEM 1.4 years) were treated with LIFT protocol. The mean operating time for LIFT was 13.2 SEM 1.5 minutes. Complications included minor bleeding, superficial wound dehiscence and perianal pain. At a mean follow-up of 14.6 SEM 1.7 months, there were 9 (12%) recurrences, diagnosed at a mean 9.2 SEM 2.7 months. They were treated with seton insertion followed by LIFT with biomesh or anorectal advancement flap and have not recurred since. Review of pre- and postoperative continence scores revealed only 1 (1.3%) patient with minor incontinence following LIFT. Recurrences were significantly related to fistulas with multiple tracts ($p < 0.001$). Results suggest that the protocol of seton insertion \pm partial fistulotomy followed by LIFT has a low recurrence rate comparing well with published results from other techniques and protocols.

PLENARY SESSION II – SURGERY, NEUROSURGERY, NEUROPHYSIOLOGY**Impact of Hyperglycemia on Neuronal Apoptosis after Subarachnoid Hemorrhage in Rodent Brain**Yu-Hua Huang^{1,2}, Aij-Lie Kwan^{3,4,5}¹Graduate Institute of Medicine, College of Medicine, Kaohsiung Medical University, Kaohsiung, Taiwan²Department of Neurosurgery, Kaohsiung Chang Gung Memorial Hospital and Chang Gung University College of Medicine, Kaohsiung, Taiwan³Department of Neurosurgery, Kaohsiung Medical University Hospital, Kaohsiung, Taiwan⁴Department of Neurosurgery, University of Virginia, Charlottesville, VA, USA⁵Department of Surgery, Faculty of Medicine, College of Medicine, Kaohsiung Medical University, Kaohsiung, Taiwan**Objectives**

Hyperglycemia, which is a common derangement after subarachnoid hemorrhage (SAH), is known to be associated with unfavorable outcomes. In addition, cellular apoptosis is a major devastating component of early post-SAH brain injuries. Whether the connection between hyperglycemia and poor prognosis results from severe neuronal apoptosis is unknown. Therefore, we aim at investigating their relationship in a rodent model.

Methods

Streptozotocin (STZ) was intraperitoneally administered (50 mg/kg) to trigger hyperglycemia 7 days before SAH induction in Sprague–Dawley rats that were randomly assigned to one of four groups (n = 6 per group): control, SAH only, hyperglycemia only, and SAH with hyperglycemia. The activity of apoptotic signal markers was determined by Western blot examination of the cerebral cortex. The severity of neuronal apoptosis was analyzed by terminal deoxynucleotidyl transferase-mediated dUTP nickend labelling (TUNEL) staining.

Results

When subjected to SAH, hyperglycemic animals had worse neurobehavioral functions than normoglycemic ones. Hyperglycemia-exacerbated neuronal apoptosis was evident by greater increases in cleaved caspase-3 expression and TUNEL-positive cell density in the SAH with hyperglycemia group than those in the SAH only group, whereas there was no significant difference in cleaved caspase-9 expression and Bax/Bcl-2 ratio between the two groups. Furthermore, there was a remarkable decrease in the ratio of phosphorylated extracellular regulated kinase (ERK)/total ERK in the hyperglycemic rats after SAH.

Conclusion

Hyperglycemia aggravated neuronal apoptosis after SAH and was associated with impaired neurological outcomes. Activation of the extrinsic caspase cascade through the ERK signal pathway may contribute to hyperglycemia-mediated apoptosis.

Keywords: subarachnoid hemorrhage, hyperglycemia, apoptosis, caspase, ERK

Perspectives Of Surgery In The Third Millennium In Context Of Historical And Social Development Of All Of Continents

Karel Novák and Marcel Hájek

Plzeň and Weiden, Czech Republic and Germany

Aim

Authors try to execute the estimation of perspectives of surgery in the third millennium

Methods

This is the qualified estimation of prognosis in discipline on the basis of summary of historical development of surgery and its contemporary status in all of continents. Surgery is understand as the discipline here, in which is mingled craft, science and the art and which represents one of the basic column of medicine to this time. In the lecture, there is described discrepancy between wide scope of surgery and deep specialization of its particular parts. We try to describe the insurmountable dependency of surgery in social development in history and today as well and there is emphasized present difference, sometimes dramatic in province of surgery in single continents. It pays in peace and quiet compared to war and disasters.

Results

The surgery will be dependent on social development of mankind in future in all of continents. We can suspect, that surgery will spread out of our planet and simultaneously, as in the Earth, its will utilize all of new knowledges of the science and the technology, which ones we cannot define currently. We can see one of its trend – in computer technologies and in microtechnology and genetics already. But sumiltaneously we can see these trends, how they are limited by economic boards and sometimes come to dead end street. We can presuppose, that it will be changed the spectrum of medical influence of surgery. We cannot exclude nevertheless, that dramatically negative development in society in some of parts of the world will have tendency to slow down the development of surgery and it will be forced to return back to economically accessible classic procedures.

Conclusions

The authors assert that as far in the third millennium can surgery keeps its authority in existence, so generally as in some of its form or specialization. Representatives of surgery will have to respect of social development however, not to close themselves for interdisciplinary cooperation and they will have maximally derived results from others, ostensibly distant scientific disciplines. Specialization should not means useless fragmentation of the discipline in future, this development can surgery dispropotionately economically burden and thus slows down. It can be disadvantageous for the patient in critical situation. It is necessary to maintain ethical principles of surgery permanently without religious and racial barriers. It is also necessary to protect surgery from total submission under economical or/and legal pressure.

Pitfalls of radical surgery of malignant pleural mesothelioma

Karel Novák, Christian Paetzel, Jürgen Altmeyen and Karl-Heinz Dietl

Czech Republic and Germany

Background

Opinions on the radical treatment of malignant pleural mesothelioma are not uniform and are often accompanied by some skepticism. Just hundreds of disease is registered in the German registry of malignant pleural mesothelioma in Bochum. The disease incidence of

one per one million populations per year is reported. Several classifications are proposed, none of which are fully satisfying. There are three different classifications according to the Hohenberg Onkochirurgie including the IMIG (International Mesothelioma Interest Group) one based on the tumor resectability.

Case

62-years-old patient turned to our clinic with a request for surgical treatment in a situation where he essentially refused chemotherapy and was rejected on a number of specialized departments in several federal states of Germany for operation. Histological confirmation of mesothelioma was made in another federal state by CT navigated puncture biopsy, followed by irradiation of the puncture channel. The patient himself accepts all surgical risks and was familiar with a high mortality and morbidity of similar performance. In literature is the common mortality about 10% (max. 30%) and morbidity up to 70%.

Results

The patient works in his profession 79 months after surgery, the mobility is not much limited, the deformity of the thorax is acceptable, the weight is normal.

Conclusion

The radical operability of malignant pleural mesothelioma is more successful, if thoracic surgeon free hands has and if he in anatomic and other pitfalls of this problem well oriented is. Interdisciplinarity on intensive care unit is one of more necessary conditions.

Can the axillary lymph node dissection be omitted in breast cancer women?

Červinka V., Štastný K., Šiller J., Havlíček K., Department of Surgery, Pardubice General Hospital, Czech Republic
vladimir.cervinka@gmail.com

Introduction

There was performed a retrospective study of female patients who underwent sentinel lymph node biopsy for breast carcinoma between January 2006 and December 2008 in four centers in the Czech Republic.

Aim

The purpose of this study was 1) to determine the rate of nonSLN (non-sentinel lymph node) involvement at CALND (complete axillary lymph node dissection), 2) to find predictive factors of positivity of NSLN and 3) to assess if the CALND can be omitted in some patients.

Patients and methods

The study group included 636 patients who underwent 637 breast procedures and SLN biopsy procedures. The mean patient age was 58.7 years. The mean number of SLN identified was 2.2. SLN metastases were identified by H&E (hematoxyllin-eosin) and immunohistochemistry in 189 cases (29.3%). Totally, 581 (91.2%) breast conserving surgeries (BCS) and 56 (8.8%) mastectomies were performed.

Results

Positivity of nonSLN was 6.7% in N0I+ subgroup, 26.7% in N1Mi subgroup and 50% in N1 subgroup. Grade and number of positive SLN were predictive factors of positivity of nonSLN. T stage and tumour size were not found to be predictors of positivity of SLN.

Conclusions

Based on above mentioned results and with respect to dependency of positivity of nonSLN on tumor size and grade of tumor we conclude, that CALND can be omitted in N0I + patients with T1a, T1b and G1-G2 tumors with positive 1 SLN.

Neurophysiological aspects of modern treatment in patients with thoracic spinal cord injuries. Attempts of determining the factors which influence positive results
Juliusz Huber¹, Agnieszka Wincek¹, Wojciech Fortuna^{2,3,4}, Stefan Okurowski⁵, Jagoda Łukaszek⁵, Paweł Tabakow²

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Background

Patients after incomplete injuries at mid- and low-thoracic as well as upper-lumbar neuromers of the spinal cord may especially present the phenomenon of the spontaneous functional regeneration in afferent and efferent transmission of neuronal impulses. Few clinical studies provided evidences on variable results of sensory and motor recovery when intensive and directional rehabilitation was carried out but main factors determining the success of treatment are puzzling.

Aim

It seems, that the range of primary structural deficits, level of spinal cord injury and support of neurosurgical procedures are important the most, therefore the aim of this study was the functional evaluation of two groups of patients with and without surgical interventions aiming the correction of spine stabilizing implants with partial glial scarf evacuation.

Patients and methods

Two groups of patients (from 3 to 6 months after spine stabilization procedures) with similar range of incomplete injuries at Th6-Th12 neuromers (preliminary evaluated with MRI findings) without (SCI, N = 14) or with (NSSCI, N = 9) surgical intervention were studied twice, before and after 16-months similar conservative treatment in Neurorehabilitation Center for the Treatment of Spinal Cord Injuries (AKSON, Wrocław, Poland; directional strengthening exercises, proprioception recovery, antispasticity post-isometric relaxation procedures, attempts of verticalization and walking, repetitive transcranial stimulation with magnetic field, electrostimulations applied to motor fibers of lower extremity nerves). Preliminary patients presented the same disability basing on results of neurophysiological studies which included surface electromyography (sEMG) recordings from chosen upper, abdominal and lower extremity muscles at rest and during maximal contraction lasting 5 seconds, electroneurography of evoked potentials in motor fibers in proximal and distal parts of nerves (ENG; M and F waves), dermatomal perception studies with von Frey's filaments (vFf) as well as the motor evoked potentials recordings induced with magnetic field from motor cortex (MEP).

Results

After 16-months lasting rehabilitation treatment, in patients from SCI group sEMG recordings improved at 14%, ENG results at 8%, vFf results at 21% and MEP recordings at 12%. In patients from NSSCI group sEMG recordings improved at 20%, ENG results at 9%, vFf results at 31% and MEP recordings at 19%.

Conclusion

Presented preliminary results may support the hypothesis that secondary surgical intervention aiming the correction of spine stabilizing implants with partial glial scarf evacuation are important for sensory and motor recovery in patients after incomplete injuries at Th6-Th12 neuromers.

The study was supported by the Nicholls Spinal Injury Foundation, UK.

Keywords: incomplete thoracic spinal cord injury, surgical and conservative treatment, neurophysiological evaluation

PLENARY SESSION III – GYNECOLOGY, INFECTIONS, MISCELLANEOUS

Clinical skill training for international medical students as part of humanitarian surgical service

Cheuk-Kwan Sun

Department of Medical Research E-Da Hospital, I-Shou University Kaohsiung, Taiwan

Background

Although providing surgical services for medically underserved countries is a straightforward way of improving healthcare, it is usually not sustainable. The present study investigated the effectiveness of clinical skill training for medical students from underprivileged countries at a Taiwanese tertiary referral center in the face of language and culture barriers.

Methods

From August 2016 to June 2017, hands-on clinical skill training courses were implemented for consolidating the daily practice of medical students during their two-year clerkship in the hospital. The courses comprised physical examination, procedural skills, communication skills, and surgical training. By the end of their clerkship, their overall performance was assessed with an eight-station objective structured clinical examination (OSCE) that covered the core competencies for medical students. All students were encouraged to give their feedbacks and suggestions after OSCE.

Results

Totally 32 students from Africa, Central America, and Pacific islands underwent the clerkship training program with strong emphasis on hands-on practice. At the end of the program marked by OSCE, 94% of students agreed that hands-on practice in a simulation setting and communication with standardized patients greatly enhanced their clinical skills as well as their confidence before actual clinical practice back to their countries.

Conclusion

Clinical skill training for medical students could be successfully implemented across linguistic and cultural barriers. Medical education emphasizing on hands-on practice for students from medically underserved countries may be a novel sustainable resource model for underprivileged health support.

Delayed Presentation of Tension Pneumocephalus in A Head Trauma History Patient. Case Report and Literature Review

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Introduction

Intracranial pneumocephalus was first described by Thomas in 1866. A review of 295 patients with pneumocephalus by Markham indicates that head trauma is the most common cause of pneumocephalus which comprised 75% of cases. Other causes of pneumocephalus including infection, skull base neoplasm, barotrauma and iatrogenic such as spinal anesthesia, receiving neurosurgical procedure and surgery and of course, spontaneous, though it is rare.

Case

A 56-year-old female who had the past history of traumatic head injury received craniotomy and ventriculo-peritoneal shunt. The condition was stable during out patient department follow up. However, gradually right side weakness, walking became slow and unsteady gait with fall down in recent 1 week was noted. Then the head CT showed left frontal pneumocephalus. Surgical intervention had been performed which showed dura defect and then dura repair had been done. Series head CT follow up also checked which is improved. Tracing back to her travel history, she had returned from abroad with air traveling just before the presentation of right hemiplegia.

Conclusions

The development of pneumocephalus follows two theories that can be called the “ball-valve” and the “inverted bottle” mechanisms. DelGaudio *et al.* suggested that pneumocephalus resulting from small bone defects responds well to conservative measures including bed rest, head of bed elevation, avoidance of positive pressure, and pain control. In their series, three patients with larger defects (> 15 mm) failed to resolve their pneumocephalus with conservative therapy and underwent lumbar drainage, followed by surgical closure of the defect. Here is a survey of advice given to patients with air travel after intracranial surgery by consultant neurosurgeons in the United Kingdom. Air travel following intracranial surgery is considered to be associated with a risk of tension pneumocephalus. However, there is a large range of duration after surgical procedure to flying according to the suggestion by the experts. It is still difficult to decision whether or not to air travel since the complication of tension pneumocephalus sometimes maybe catastrophic.

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Robotic Surgery – Overview, Economic Considerations, Public Policy Impact

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Introduction

The first surgical robot for standard clinical use was the “Arthrobot”; introduced in Canada in 1983 it was used for total hip arthroplasty. In 1985 the “PUMA 560” was used to place a needle for a brain biopsy using CT guidance. This was followed by the “PROBOT” in 1988, a system developed to perform prostate surgery. Next, the “ROBODOC” was introduced in 1992 to mill out precise fittings in the femur for hip replacement. These initial advances paved the way for development of the robotic surgical platforms that are in use today.

Methods

In the year 2000, approximately 1.000 robotic operations were performed in the United States. By the end of 2014, 570.000 robotic operations had been performed in that single year. The majority of procedures in 2014 were: robot-assisted hysterectomies – 203.000 and prostatectomies – 125.000. At the end of 2014, 3.266 systems were being used worldwide, 2.223 of which were in the United States (68%). The total revenue for Intuitive Surgical in 2014 was \$2.1 billion, 70% of which (\$1.47 billion) was from purchases in the United States. Current general surgical residents in the United States received formal robotic training which includes: simulation, animal laboratories, and hands-on mentored training by a senior attending. Established surgical attendings wishing to start a robotic practice usually take a course sponsored by the company and then are proctored through a pre-determined number of procedures prior to performing robotic operations independently.

Results

Robotic surgery is an expensive technology. The da Vinci Surgical System, (Intuitive Surgical), starts at about \$600.000 (used) but can increase to as much as \$2.5 million (new). The platform has yearly maintenance fees that range from \$150,000 to \$220.000. Addition of robot-specific instruments/accessories, can add \$700 to \$3.200 to a simple surgical procedure. The average lifetime of a da Vinci robot is a maximum of seven years. These factors have led even large, well-endowed, U.S. academic institutions to closely study the cost-effectiveness of robotic technology for general use in surgery, while continuing in their mission to develop advancement in medical technology.

(* all amounts listed are in U.S. dollars)

Dry eye syndrome – the effect of drugs on vision and lense

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Introduction

The use of drugs, both systemically and locally, can have a huge impact on the functioning of the eye. The most common complication of treatment is the so-called “Dry eye syndrome” that is popular in community. Some medicines used in everyday practice of a family doctor, cardiologist, gynecologist, dermatologist and even psychiatrist can lead to a reduction or complete inhibition of tear production. The most important drugs causing this kind of discomfort include: antihistamines, diuretics, cardiac drugs, e.g. beta-blockers, analgesics, anti-inflammatory, hypnotics and psychotropic, oral contraceptives, medicines used in hormone replacement therapy and in the treatment of peptic ulcer disease. The eye drops

may even affect eye, because of the on included in them preservatives or chronic use of vasoconstrictor medicines. The use of contact lenses, long-term work with the computer and infection with Demodex is also not irrelevant.

Methods

Beta-blockers – Block beta-adrenergic receptors, inhibit the action on the body – adrenaline and noradrenaline (catecholamines). They provoke the reduction of the secretion of the aqueous layer of the tear film responsible for moisturizing the surface of the eye. In addition, they reduce the decrease in the secretion of lysozyme and antibodies in the IgA class, leading to inflammation of the eye and additional bacterial (e.g. *S.aureus*, *S. epidermidis*, *S. pneumoniae*, *H.influenzae*, *P. aeruginosa*) or viral infections. This group of medicines are commonly use in the treatment of ischemic heart disease, hypertension, heart failure, and in some types of arrhythmias. They are also used locally in the treatment of glaucoma, reducing the production of aqueous liquid.

Hormone medications – In the case of hormone replacement therapy used in menopausal women (estrogen preparations or combined with progesterone) and oral contraceptives, an increased incidence of “dry eye syndrome” may occur. These drugs most likely reduce the layer of tear film, and consequently lead to inflammation of the eye, bacterial and viral secondary infections.

Antihistamines – Which are used in allergies or urticarial, they work by blocking histamine, which leads to a reduction in the secretion of the mucus and water layers of the tear film, causing similar side effects as the drugs aforementioned.

Antidepressants – Used in schizophrenia, cause similar disorders as the above drugs, leading to various complications, and their use is strongly related to the dose of administered drugs.

H₂ receptor antagonists – Reduce the secretion of hydrochloric acid in the stomach by blocking the histamine receptor. The most popular drug is Ranitidine known as Ranigast. The use of these drugs leads to disturbances of mucus and water layer secretion of the tear film. Diuretics and medicines used in rheumatic disease treatment have similar effects.

The derivative of vitamin A (isotretinoin) – Affects the secretion of sebaceous glands and influences the secretion of lipids by Meibomian glands and causes their dysfunction or disappearance, leading to disorders in the oily layer of the tear film that protects eye from infections, stabilizes the tear film and allows slipping during eyelid movements.

Demodex sp. – parasite on the edges of the eyelids which is undervalued by ophthalmologists. There are two types of human *Demodex sp.*: *D. brevis* and *D. folliculorum*.

PLENARY SESSION IV – NEUROPHYSIOLOGY, NEUROREHABILITATION, INFECTIONS

Reactions to stress-related physical exercises as measured by BDNF level in saliva
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Background

Brain-derived nerve growth factor is regarded as both growth factor for peripheral nerves, but also as marker of activity of the central nervous system. Its increase in plasma/serum was described in various stress conditions, both in animals and in humans.

Aim of the study

To assess to what extent the concentration of BDNF in saliva may reflect the stress combined with physical exercise, in trained and untrained adolescents.

Investigated group

64 adolescents aged 13–14 years, out of them 25 untrained secondary school students (16 girls and 9 boys) and 39 adolescents regularly performing rowing or swimming, 17 girls and 22 boys.

Methods

All adolescents were subjected to selected tests of EUROFIT battery (FLB, PLT, SUP, SAR, HGR, SBJ) and to endurance test on running track with ergospirometer Start 2000 (Poland) to measure maximal oxygen consumption. In all subjects one saliva sample was gained before the tests and another one after them, using Salivette sampling system. BDNF concentration was measured using R&D, USA ELISA kit.

Results

Highest saliva BDNF concentrations were shown in untrained school girls, in the second sample. Increased BDNF concentration correlated with worse results of both fitness and endurance tests. In adolescents regularly performing sport higher values of BDNF concentrations were observed before testing and they did not increase afterwards; higher initial values correlated with better endurance test results.

Conclusions

BDNF in saliva may reflect both stress in positive sense (mobilisation) and stress as negative reaction, worsening the physical performance.

Vojta therapy – how does it work in practice?

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Background

Rehabilitation according to Vojta is a neurophysiological method used to obtain reflex responses in muscles following stimulation of particular activation zones. The beginnings of Vaclav Vojta diagnostic and therapeutic method, based on reflex locomotion, date back to 1954. Initially, movement reactions were triggered by means of resistance, using the same postural positions as applied nowadays: prone, supine and the lateral positions, referred to as reflex creeping and reflex rolling. The description of the reflex rolling pattern was presented for the first time in 1965, along with the description of the thoracic zone, the first movement trigger zone.

Objectives

This study aims to objectively evaluate the muscular responses following stimulation according to Vojta's method. The possible routes of spinal transmission responsible for the phenomenon of muscle activation in upper and lower extremities are considered.

Methods

Polyelectromyographic (pEMG) recordings in the upper and lower extremities in healthy volunteers (N = 25; aged 24 ± 1 year) were performed to find out the possible routes of spinal transmission, responsible for muscle activation. The left acromion and right femoral epicondyle were stimulated by a Vojta therapist; pEMG recordings were made including the bilateral deltoid and rectus femoris muscles.

Results and conclusions

Following acromion stimulation, muscle activation was mostly expressed in the contralateral rectus femoris, rather than the contralateral deltoid and the ipsilateral rectus femoris muscles. After stimulation of the lower femoral epicondyle, the following order was observed: contra lateral deltoid, ipsilateral deltoid and the contra lateral rectus femoris muscle.

One of the candidates responsible for the main crossed neural transmission involved in the Vojta therapy mechanism would be the long propriospinal tract neurons.

Clinical and neurophysiological correlations in patients with temporomandibular disorders

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Objective

The pathophysiology of the muscle pain in temporomandibular joint (TMJ) area related to myofascial pain symptoms detected in the head and neck areas is still the aim of extensive studies utilizing different approaches. This study presents results of surface electromyographic (sEMG) recordings performed from the masticatory, face, neck, and chosen shoulder girdle muscles in patients with clinically confirmed temporomandibular disorders (TMD) symptoms. Diagnosing of mutual relationships of muscles pathological activity may provide the choice of the effective conservative treatment.

Methods

Seventy women with clinically confirmed symptoms of diagnosed myalgia, according to Axis I of DC/TMD were studied. The reference group of healthy volunteers included 50 women with no clinically detected pathologies or history of TMD symptoms. Subjects were examined once with clinical and neurophysiological methods in order to identify symptoms of TMD and changes in chosen face, neck, and shoulder girdle muscles activity in sEMG studies.

Results

During sEMG recordings at rest, significant differences associated with an increase of amplitude parameter in comparison to healthy volunteers were found more in the masseter than the temporalis muscles on symptomatic side and to the less degree in patients with bilateral TMD symptoms. Low sEMG amplitude parameter during the test of maximal contraction recorded in the masticatory, face, neck and chosen shoulder girdle muscles was associated with significant low motor units action potentials frequency index indicating the pathology advancement more than it was found in previous studies.

Conclusions

sEMG provides objective results on the muscles function in stomatognathic system. Pain and other TMD symptoms detected mostly unilaterally result in increase of muscle tension of the masticatory muscles and decrease of muscle motor units recruitment during maximal contraction. This fashion of pathology influences significantly the neck and shoulder girdle muscles abnormal activity. Relaxation physiotherapeutic procedures applied to symptomatic painful muscles with increased tension seem to be reasonable method of conservative treatment.

Long – term results of repetitive transcranial magnetic stimulation on recovery of motor function and decreasing of muscles spasticity in the patient with incomplete spinal cord injury.

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Introduction

Patients with incomplete spinal cord injuries (iSCI) are characterized by impairments of motor and sensory functions often associated by increased spasticity. One of the contemporary physical rehabilitation method toward recovery or diminishing the above disabilities is a high-frequency repetitive transcranial magnetic stimulation (rTMS) applied to brain motor cortex. It was shown that such therapy improve motor score, walking velocity and spasticity in lower extremities. Short term observation confirmed presence of moderate improvement but long lasting effect of rTMS on clinical outcome has not yet been elucidated.

Aim

The aim of this study is evaluation of long-term changes in surface electromyography (sEMG) and motor evoked potential (MEP) recordings obtained after regularly repeated sessions of rTMS in the iSCI patient.

Material and methods

The patient with iSCI at cervical level C5-C6 had applied seventeen sessions of rTMS lasting three to four days. Patient received 800 biphasic pulses per day (frequency 20 Hz, 2 s trains, 28 s intertrain interval) at maximal intensity of stimulation at 42–44% of resting motor threshold (RMT). Stimulator with a circular coil C-100 (MagPro X100 with MagOption, MagVenture A/S, Denmark) was used for rTMS. The coil was placed against the scalp over the motor hand area of the primary motor cortex. RMT was set at the lowest intensity able to produce MEPs in abductor pollicis brevis muscle roughly 38% of maximal stimulator output. Surface sEMG (during attempts of maximal contraction lasting 5 seconds) and MEPs (amplitudes) recordings from nine observation periods lasting seventeen months were analyzed before and after rTMS.

Results

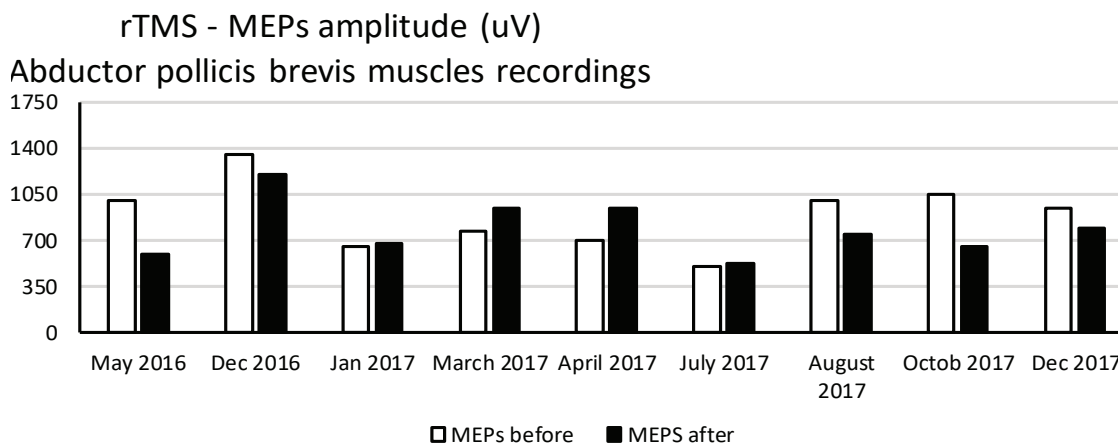
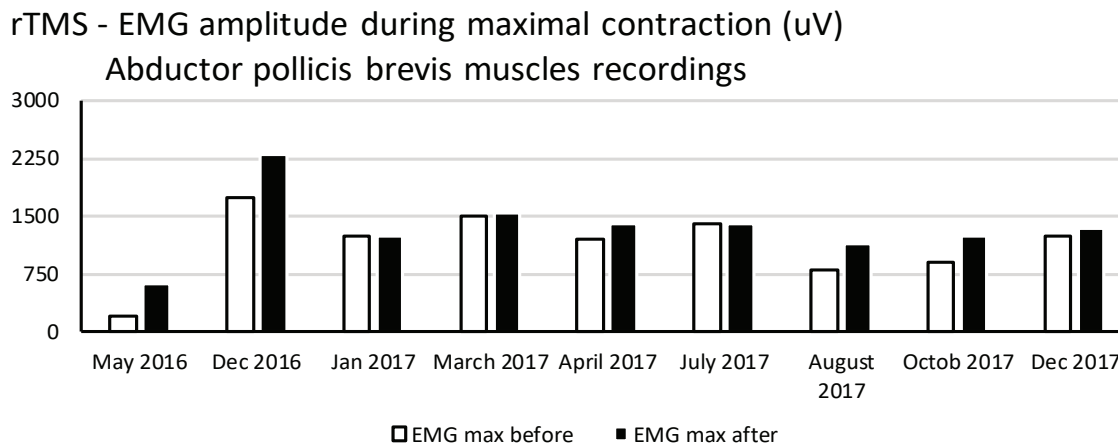
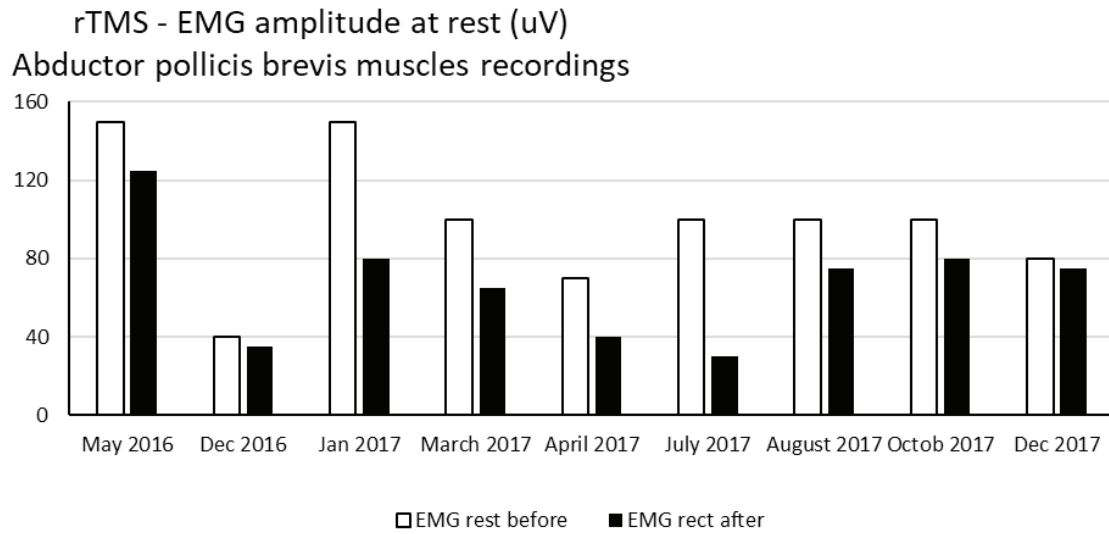
In long-lasting observation rTMS evoked significant decrease of mean sEMG amplitudes recorded at rest and moderate increase of mean sEMG amplitudes recorded during attempt of maximal contraction. It was paralleled with a moderate increase of mean MEPs amplitudes. Decreased sEMG amplitudes recorded at rest was observed in short-term observation periods.

Conclusion

rTMS provides decrease of spasticity and evokes simultaneous improvement of muscle's motor units contractile properties in patient with cervical iSCI. Direct mechanisms responsible for observed phenomena may be excitatory inhibition of motor cortex and brain subcortical structures.

The study was supported by the Nicholls Spinal Injury Foundation, UK.

Keywords: incomplete cervical spinal cord injury, repetitive transcranial magnetic stimulation, therapeutic effect



Post-operative wound infections

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Complications of the post-operative infections most commonly are associated with the surgical site (SSI). They occur with varying frequency and they belong to nosocomial infections. Research on reducing the risk of post-operative wound infections in terms of their epidemiology are based on the analysis of the causes of infections, etiological agents, sources of infection and risk factors [5, 6]. The highest percentage of these infections is found in intensive care departments, surgical, burn and orthopedic (infection of endoprostheses) ones. In addition, SSI is an important problem for the microsurgery departments as ophthalmology or laryngology. Surgical site infection (SSI) is recognized as surface or deep infections but also organs or body cavity infections in direct contact with the surgical site. The origin of SSI may be of both exogenous (environmental) and endogenous (patient flora) nature. The risk factors for post-operative wound infection also include: the age of the patient, the immune system, accompanying diseases and the use of long-term antibiotic therapy [1].

It is important the threat recognition, the exact cause of the infection, its source and the application of rational antibiotic therapy [2, 4]. The most frequent SSI etiological factors are still the Gram positive cocci as: *Staphylococcus aureus* (both MSSA or MRSA), *Staphylococcus epidermidis* (MSSE and MRSE), *Enterococcus* sp. (e.g. VRE) and Gram negative bacilli e.g. *Pseudomonas aeruginosa*, *Escherichia coli*, *Klebsiella pneumoniae*, *Bacteroides fragilis*, and *Acinetobacter baumannii* [3].

The use of procedures related to reducing the risk of SSI plays an important role in further therapeutic treatment and increasing antibiotic resistance.

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Meningitis

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Introduction

Due to the important morbidity and mortality related to worldwide acute bacterial meningitis, accurate information is required regarding the important etiological agents and populations at risk (bacterial and clinical subgroups) for public health measures to be initiated and to establish adequate management. There are five most common etiological agents of bacterial meningitis: *Haemophilus influenzae*, *Neisseria meningitidis*, *Streptococcus pneumoniae*, *Listeria monocytogenes*, and *Streptococcus agalactiae*. The global changes in epidemiology of bacterial meningitis are important to register by development of identifying strategies (available laboratory methods for making the diagnosis of bacterial meningitis) and effective prevention e.g. vaccines against these pathogens. Throughout the world, bacterial meningitis is considered as a disease with disastrous attack rates but is becoming also more and more resistant to treatment due to the growing drug resistance among causative bacteria. Ultimately, several factors need to be considered for the specific bacteria causing this disease. These factors are risk factors of the population (e.g. age, immunological system status), clinical features, and microbiological diagnostics (e.g. laboratory diagnostic procedures, antibiotic resistance).

Aim

This paper objective is to give a current and evidence-based knowledge of the epidemiology of the major bacterial etiological agents of meningitis in diverse clinical subgroups (e.g. neonates, children, and adults) and current microbiological laboratory diagnostic.

Materials and methods

Pubmed databases were applied for the search of pertinent scientific papers.

Results

In the subsequent sections, the epidemiology, characteristics and microbiological diagnostics of the common etiological agents of bacterial meningitis have been reviewed in order to demonstrate the importance of prevention (e.g. vaccines) in the epidemiology of bacterial meningitis change.

H. influenzae type b – a visible reduction in the occurrence of *H. influenzae type b* meningitis have been observed following conjugate vaccines, which consist of a carrier protein covalently conjugated to the polyribosylribitol phosphate (PRP), or parts of the PRP, of the outermost layer of the microorganism. *H. influenzae type b* is one of the major cause of meningitis in children.

S. pneumoniae – is among the most common etiological agent of bacterial meningitis. In order to reduce the pneumococcal meningitis incidence (particularly for children < 5 years of age), vaccination strategies based on administration of a pneumococcal polysaccharide vaccine (capsular polysaccharides were conjugated to carrier proteins) have been applied. *Neisseria meningitidis* – serogroups A, B, C, Y and W-135 are the major serogroups causing meningitis. Meningococcal polysaccharide vaccine is used to prevent from invasive meningococcal infection.

Listeria monocytogenes – meningitis cases, non- and perinatal are mostly caused by serotypes 1/2b and 4b. Prevention is based on an appropriate food preparation.

Streptococcus agalactiae – The group B streptococcus is a prevalent cause of meningitis in neonates. The current prevention of neonate meningitis is the screening of all pregnant women for rectovaginal colonization (35 to 37 weeks of gestation) and the administration of antimicrobial prophylaxis to carriers.

The CSF microbiological diagnosis is mandatory and its culture is the “gold standard” to get the in vitro susceptibility tests of the causative microorganism and to rationalize treatment. Additional diagnostic tools, especially for patients with negative CSF cultures, are CSF Gram staining, latex agglutination testing, and PCR. Supportive evidence to diagnose bacterial meningitis consists of other biological material (e.g. blood culture, skin biopsy, urine for antigen testing) and laboratory diagnostics tests (e.g. serum inflammatory markers).

Conclusions

Based on the scientific literature it can be concluded, that a major impact on the epidemiology and characteristics of bacterial meningitis have been the introduction of prevention as conjugate vaccines and preventive treatment of colonized pregnant women. Local drug resistance patterns and clinical subgroups should be closely taken into consideration in the empirical antibiotic therapy. To confirm the diagnosis it is required CSF microbiological examination, which remains crucial. Identification of the etiological agent and detection of antibiotic resistance help rationalize treatment. The “gold standard” for the diagnostic remains culture combined with susceptibility testing, taking into consideration increasing antibiotic resistance and emerging pathogens. Continuous effort in improving microbiological diagnostic methods (for pathogen detection and identification), progression in prevention and rationalized treatment aim to bring benefits for patients.

Keywords: meningitis, bacterial etiological agents, CSF microbiological diagnostics

Neurophysiological diagnostic supporting the clinical evaluation of the patient after an iatrogenic injury to the brachial plexus

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Introduction and general aim

Iatrogenic injury to the brachial plexus (BP) is a rare condition. Direct intraoperative damage to the brachial plexus like partial or complete transection, traction, and compression is the most frequent mechanisms of damage during orthopedic surgery. Iatrogenic nerve or root injury also may be due to a complication during another type of surgery, mainly nerve sheath removal or tumor excisions in the area adjacent to the brachial plexus. The clinical, as well as neuroimaging and ultrasonography examinations and neurophysiology studies, allow choosing the right surgical repair procedure. Compilation of the above examinations provides value and objective data about the functional state of brachial plexus. The lecture aims to present principles of neurophysiological studies applied to the evaluation of brachial plexus.

Subject and methods

Patient with iatrogenic injuries to the BP after removal of lipoma localized in neck triangle (II and III area). The neurophysiological study of brachial plexus consisted of electroneurography (ENG) of the motor (CMAP) and sensory (SCV) nerves fibers, and motor evoked potentials (MEP) induced by the magnetic field applied on the cervical roots level (C5-C8) and at Erb's point. Functional state of muscles (denervation and reinnervation process) was evaluated by needle electromyography (EMG).

Result

ENG results verify the demyelinating or axonal type of nerves injury, level, and range of pathology in BP fibers. EMG study enables the evaluation of muscles acute or chronic state of the muscles. Reduction of MEP amplitude following cervical roots stimulation

in comparison with the amplitude of CMAP after electrical stimulation at the Erb's point confirms the proximal level of damage to the BP.

Conclusions

The use of MEP study induced after magnetic stimulation of cervical roots allowed the confirmation of damage to the brachial plexus structures above the Erb's point. This test is crucial in the assessment of proximal lesions to the brachial plexus, especially in the neck triangle level.

Keywords: brachial plexus, iatrogenic injury, clinical study, neurophysiological studies

Introduction to Mind-Body Medicine: Reducing Stress, Preventing Burnout

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Burnout is a response to chronic stressors that wear on a person over time. It manifests by: emotional exhaustion, depersonalization, negative self-evaluation, lack of empathy. One in every two physicians experiences burnout, all healthcare professionals' exhibit high rates of burnout's symptoms.

Clinical implication of burnout: more errors, adversely affects physician-patient relationship, decrease in quality of care.

Outcomes of burnout in physicians include: absenteeism, incivility, high rotation of employees, health problems, depressions, higher costs of organization, poor job performance.

It has been proved, that practicing methods increasing self-awareness, like mindfulness, prevents the symptoms of burnout. Mindfulness is the mental discipline of systematic self-observation and self-awareness. It means paying attention on purpose in the present moment as open heartedly and non-judgmentally as possible.

Psychological, interpersonal and physical benefits of Mindfulness include decreasing of stress, anxiety, unhealthy behavior, depression, aging processes in brain as well as enhancing of self-evaluation, communication skills, satisfaction, emotional intelligence, immunity and cardiovascular related diseases.

PLENARY SESSION V (STUDENTS SESSION)

Respiratory system activity in mitochondrial fraction of a lumbar herniated disc obtained during the operation

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Background

70 to 80% of people suffer from backache due to intervertebral disc degeneration (IVD) at least once in their lifetime. The etiopathogenesis of IVD is still not fully clarified. Clinical studies, physicochemical tests and histological examinations aimed at understanding of the degeneration and aging processes occurring in the intervertebral discs prove insufficient. Investigation of the IVD molecular mechanisms may provide new valuable information regarding this issue.

Aim

The aim of this study was to assess respiratory system activity in mitochondrial fraction of the intervertebral disc homogenate.

Methods

Herniated discs were obtained during surgical treatment of 12 patients (6 men, 6 women), aged 28–68 years due to lumbar discopathy in the PUMS Department of Neurosurgery from 29 November 2016 to 15 March 2017. Clinical data, Magnetic Resonance Imaging (MRI) studies and histological findings in the hematoxylin and eosin (H+E) stained tissue slices were analyzed. Activity of the basic mitochondrial respiratory system activity (ROUTINE), proton leak (LEAK), electron transport system (ETS), residual oxygen consumption (ROX) was assayed in the intervertebral disc homogenate. Studies of the mitochondrial electron transfer system are based on high-resolution respirometry using Oroboros Oxygraph 2k an.

Results

Preliminary results are presented. The statistically significant correlation was observed between duration of pain, neurological symptoms, MRI (degree of prolapse or protrusion) and ROX in mitochondrial fraction of the intervertebral disc homogenate. The similar relationship to ROUTINE, LEAK, ETS was not proved.

Conclusions

Increase of an oxidative stress in the intervertebral discs has potential influence over disc lesion and clinical symptoms.

The study was supported by the Scientific Student Grant 502-05-01122178-06542.

Surgical management of scaphocephaly

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Introduction

Scaphocephaly is the most common form of craniosynostosis, caused by the early closure of the sagittal suture. 90% of these malformations are isolated conditions without any form of congenital mental retardation. However the reduction of volume may be a cause of increased cerebral pressure and the abnormal shape can manifest as an emotional and psychological problem.

Case report

Patient, 10-months old, was admitted in March 2018 to the Pediatric Surgery Clinic in Poznań for a surgical treatment of scaphocephaly. The patient did not show any form of retardation in psychomotoric development. A craniotomy of the bone fragment covering the superior sagittal sinus was performed. Mobilization of the frontal bone was performed by conducting radial incisions and dissecting two triangle parts above the zygomatic arch. Transverse incisions of parietal and temporal bones were made. Previously removed fragment was firmly attached to the parietal bone with the reduction of the anterior-posterior length of the skull. The parietal bones were formed and reduced. One cm-wide fissures were left in the parasagittal and temporal areas. During his stay on the ward the patient suffered from gastrointestinal tract infection. The wound was healed without any complications. After 7 days patient was discharged in good condition.

Conclusions

Cranioplasty performed in a 10-month old patient is a successful method of treatment for scaphocephaly. The surgery allows patients to avoid possible worsening of their condition due to rising intracranial pressure. However, it is important to employ a multidisciplinary team during preoperative and postoperative care in order to facilitate healthy psychomotoric development.

Proprioceptive sensibility among street workout players

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Introduction

Street workout is part of calisthenics, a variety of artistic gymnastics, which descends from cities in which elements of sprawl were mainly used for exercises with one's body mass. Isometric exercises such as dragon flag, human flag, front lever, back lever involve the whole body in keeping right position on the bar in space. We have assumed that the figures the street workout players are presenting have influence on possibility of retracing the movement thanks to proprioceptors what we have decided to examine.

Aim

The aim of the study was to assess the upper limb proprioception by joint position sense among professional street workout players.

Materials and methods

Eleven street workout players (all men, average age 30-years) were examined with joint position sense, the device for shoulder flexion and adduction measurement was provided. Three trials for angles 60/90/120 degrees for both upper extremities were measured. Every player has realized 6 stabilisation tests on time for right and left limb placed by us based as listed: standing on one leg with eyes closed, standing on one leg – with leaning forward (statics), jumping with both legs at a time and landing on one leg (dynamics), supported kneel with alternately holding upper limbs, front bracing on hands with alternately holding upper limbs, back bracing on forearms with alternately holding lower limbs (trunk stabilization). The total score the players could gain was 54.

Results

The joint position sense error of active reproduction were 4.7 degrees for dominant and 5.1 for nondominant limb for flexion movement. Results were non significant.

Conclusion

The exercises are performed symmetrically what helps in eliminating the differences between upper limbs action. The wide variety of exercises such as front lever, back lever or human flag have a positive influence on stability of core muscles. It is also important for proprioception because the accurate kinaesthetic patterns are being repeated.

Challenge of neurosurgical diagnosis – pituitary abscess. Case report

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Introduction

Pituitary tumors constitute 15% of primary intracranial tumors. Due to their location pituitary tumors are the most common cause of visual defects and pituitary hormonal dysfunctions. Pituitary abscess is a rare disorder of the pituitary gland. It is less than 1% of pituitary lesions. Lesions > 10 mm are removed neurosurgically through the sphenoidal sinus.

Case report

A 73-year-old male patient was admitted to the endocrinology ward with diagnosed pituitary adenoma and with the classic symptoms of significant visual deterioration intensifying for several months to regulate hormonally before the planned neurosurgery. During the stay in the hospital the patient underwent CT and MRI examination which confirmed a lesion in the sella turcica. The patient was qualified for transsphenoidal pituitary resection. The patient did not present any symptoms of infection in laboratory tests. During the operation, the examination of evacuated pus confirmed the diagnosis of the pituitary abscess. Staphylococcus was identified in the sample taken from the patient. The antibiotic therapy was applied.

Conclusions

Pituitary tumors are often detected cerebral pathology. Because of their location they give a quite characteristic set of clinical symptoms. However the differential diagnosis of the pituitary gland may be very perplexing. Even the most typical clinical picture may mimic less typical lesions.

Atypical abnormalities in speech development and motoric functions in 2.5-year-old patient

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Introduction

Landau-Kleffner syndrome is a rare form of epileptic syndrome in children. The main symptom is acquired aphasia in children with proper previous speech development. In EEG, during non-REM phase, spike-wave complexes are observed. This leads to necessity of further differential diagnosis with continuous spike-wave during slow wave sleep syndrome (CSWS), in which global developmental abnormalities are observed. Chronic demyelinating-axonal polyneuropathy is a rare disease observed in pediatric patients' age group. Patients suffer from motoric and sensoric functions abnormalities. There have been no case reports so far, describing patients with both Landau-Kleffner syndrome and polyneuropathy.

Case report

2.5-year-old patient, male, was admitted to the hospital to perform diagnostics of speech development abnormalities, due to regression of speech. In EEG during non-REM sleep, recurring spike-wave complexes were described. The patient was diagnosed with Landau-Kleffner syndrome. The patient has been also presenting gait and position control

abnormalities for 2 months. In stimulation test of lower and upper right extremities nerves, nerve conduction velocity was lower. Lower amplitude of motoric response and prolonged onset latency were also observed, what indicated demyelinating-axonal polyneuropathy.

Conclusions

Coincidental occurrence of Landau-Kleffner syndrome and demyelinating-axonal polyneuropathy was a great diagnostic challenge. Overlapping of those two diseases could have caused incorrect diagnosis of continuous spike-wave during slow wave sleep syndrome, which can lead to negligence of proper therapy of polyneuropathy. It is still equivocal, whether it should be a standard procedure to perform electromyography and electroneurography in diagnostics of CSWS, to exclude concomitance of polyneuropathy. It requires further scientific research.

Correlation of ACTH concentration with Congenital Adrenal Hyperplasia (CAH)

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Adrenocorticotrophic hormone (ACTH) is secreted by the anterior pituitary gland. Evaluation of its concentration is useful in clinical practice, especially in endocrinologist's point of view. One of the most prominent diseases associated with disturbances of ACTH is Congenital Adrenal Hyperplasia (CAH). CAH is an autosomal recessive disorder which most commonly results in 21-hydroxylase deficiency, which is responsible for the conversion of 17-hydroxyprogesterone to 11-deoxycortisol. CAH features chronic cortisol deficiency causing constant stimulation of hypothalamic-pituitary axis into increased secretion of ACTH. This results of adrenal hyperplasia and over secretion of androgens. Clinical manifestation of the disease mainly includes symptoms of hyperandrogenism (i.e., hirsutism, acne, alopecia) as well as metabolic disturbances (hyperglycemia, hypercholesterolemia). Therefore, concentration of ACTH, cortisol, 17-hydroxyprogesterone, androgens and metabolic parameters is essential.

Combined treatment approach with citicoline and thrombolytics in cerebrovascular stroke

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Introduction

Thrombolytic therapy (TLT) for today is the only evidence-based method for stroke treatment. In cerebral ischemia, the disintegration of phosphatidylcholine occurs with the release of free fatty acids. Citicoline in acute stroke reduces damage to the integrity of membranes and reduces the production of free radicals.

Aim

The aim of this work is to analyse the treatment outcome with and without Citicoline as a combination therapy to TLT in patients with ischemic stroke.

Materials and methods

Our study included 37 patients with hemispheric ischemic stroke aged 42 to 70 years, who received thrombolytic therapy in the period from 2–4.5 hours from the onset of the disease. Patients were divided into 2 groups: 1st group (n = 21) treated with Actilyse at a dose of 0.9 µg per kg, 2nd group (n = 16) in addition to TLT received citicoline at a dose of 1000 mg per day. In all patients the presence of the focus was confirmed by CT/MRI. The content of malate (µmol/ml) on 1st, 7th, 14th days, the level of succinate dehydrogenase activity (nmol/mg

protein/min) and the dynamics of adenosine triphosphate (ATP) in erythrocytes (μ /mol/ml) were studied.

Results

The motor deficit regression by the 7th day of the disease in the 1st group was increased from 1.9 to 2.6; in the 2nd group from 1.7 to 3.1 points, and by 14th day in the first and second groups by 2.8 and 3.3 points respectively. The parameters of ATP before TLT in the first group were 1.48 (on the 7th day – 1.48, on the 14th day – 2.0), in the second group 1.56 (on the 7th day – 1.94, on the 14th day – 2.63). The level of activity of succinate dehydrogenase in the first group was 7.2 till TLT (7th day – 11.42, 14 days – 12.83), in the second group of 6 (7 days – 6.82, 14 days – 8.3). Malate in the 1st group before TLT was 0.26 (day 7 – 0.36, day 14 – 0.41), in the 2nd group 0.28 (day 7 – 0.3, day 14 – 0.31).

Conclusions

As evidenced by reduction in size of the lesions, Citicoline significantly improves the clinical outcome in treatment of ischemic stroke and it can be concluded that after supplementation it potentiates the effects of TLT.

Posterior reversible encephalopathy syndrome as a complication of a simple operation in the young female patient. Case report

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Background

Posterior reversible encephalopathy syndrome (PRES) is a subacute disease with symptoms of damage or dysfunction of the brain, mostly with the etiology of a sudden rise in blood pressure. In the literature, however, many other etiological factors are mentioned including bacterial infection, chemotherapeutic agents, porphyria, nephrotic syndrome, autoimmune disease, hemolytic-uremic syndrome (HUS), thrombotic thrombocytopenic purpura (TTP). The most common symptoms are headaches, consciousness impairment, visual abnormalities, seizures. Diagnosis is made on the basis of characteristic imaging patterns in MRI or CT, which include symmetrical oedema within the parieto-occipital regions (95%) corresponding to the posterior cerebral arterial supply. In most cases, the symptoms pass without any long-term repercussions.

Case report

33-years-old patient KK was admitted to the hospital in a severe condition with symptoms of TTP/HUS as complication of the urgent cholecystectomy. She presented features of immune hemolytic anemia, thrombocytopenia, also blood pressure spikes. Started to be treated with plasmapheresis and renal replacement therapy. The condition worsened: respiratory failure, seizures and delirium appeared. The patient was neurologically consulted because of the symptoms of PRES in the CT of the head. Control MRI confirmed the diagnosis and made it possible to observe the reversion of pathological changes.

Conclusions

PRES is a rare disease, but – due to development of neuroradiology – the number of diagnoses is increasing. Especially SWI sequence can reveal larger and more numerous hemorrhages. Furthermore, the effectiveness of hypertension treatment decreases the influence of this factor as the etiology of PRES. Those patients should remain under neurological and radiological control including MR/CT of the head.

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This guide examines case studies, a form of qualitative descriptive research that is used to look at individuals, a small group of participants, or a group as a whole. Researchers

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Acknowledgements

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Elhassan, B., Bishop, A., Shin A., Spinner, R. (2010) 'Shoulder tendon transfer options for adult patients with brachial plexus injury.' *J Hand Surg Am.*, 35 (7), pp. 1211–1219. Books:

Rang, H.P., Dale, M.M., Ritter, J.M., Moore, P.K. *Pharmacology*. 5th Ed. Edinburgh: Churchill Livingstone; 2003.

Phillips, S.J., Whisnant, J.P. *Hypertension and stroke*. In: Laragh JH, Brenner BM, Editors. Hypertension: pathophysiology, diagnosis, and management. 2nd Ed. New York: Raven Press; 1995. pp. 465–478.

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Elhassan, B., Bishop, A., Shin A., Spinner, R. (2010) 'Shoulder tendon transfer options for adult patients with brachial plexus injury.' *J Hand Surg Am.*, 35 (7), pp. 1211–1219. Article from journal:

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Rang, H.P., Dale, M.M., Ritter, J.M., Moore, P.K. *Pharmacology*. 5th Ed. Edinburgh: Churchill Livingstone; 2003.

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