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ABSTRACTS

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Platform presentations

Craniosynostosis

Can operative technique decrease blood transfusions in craniosynostosis?

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OBJECTIVE: The aim was to evaluate the operative technique with minimal blood loss and its ability to descrease politransfusion during craniosynostosis surgery.
MATERIAL AND METHODS: Seventy-three non syndromic craniosynostosis interventions were retrospectively analyzed between 2013 to 2015. Variables analyzed included: gender, weigth, age at surgery, anterior or posterior approach, procedure length, hemoglobin difference (HD) before and after operation and estimated blood loss (EBL).
RESULTS: The group included 68.5% boys and 31.5% girls. Anterior approach was performed in 75.3% ($p<0.001$). Mean age at operation was 10.9 months and the mean weight was 8Kg. Procedure mean length was 175 min. Fifty six percent received blood transfusion. The rate was 8,7ml/Kg intraoperatively and 11.2 ml/kg postoperatively. Those rates were inferior to the traditional described in literature [1,2].
CONCLUSIONS: Our clinical experience suggests that judicious technique is a valuable option to decrease blood politransfusions.

Keywords: Craniosynostosis, Blood conservation, Blood loss

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Complications associated with surgical treatment of craniosynostosis: review of 137 cases

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OBJECTIVE: Children with craniosynostosis usually require surgery to prevent or relieve intracranial pressure and to improve cosmesis. The main objective of this study is to determine per and postoperative complications in children with craniosynostosis.
MATERIAL AND METHODS: A retrospective study of patients with non-syndromic and single-suture craniosynostosis, who underwent surgical correction between January 1997 and November 2016 in a pediatric referral hospital, was done. Demographic data, type of synostosis, duration of surgery, blood transfusion requirements, fever and postoperative complications within 90 days following surgery were collected. The chi-square test of Person was used to evaluate the data, with $p<0.05$ rejecting the null hypothesis.
RESULTS: A total of 137 cases (39.2% females and 60.8% males) were analyzed. The mean age was 7 months with a minimum age of 1 month and a maximum age of 7 years. Seventy-three cases (53.3%) were diagnosed with scaphocephaly, 28 cases (20.4%) had trigonocephaly, 17 (12.4%) anterior plagiocephaly, 16 (11.7%) brachycephaly and 2 (1.5%) posterior plagiocephaly. Surgeries lasted an average of 3h (± 2.4 hours). Seventy (54.7%) patients required blood transfusion, per or post-operatively. There were 2 cases of postoperative infection (skin and soft tissues), 2 children developed convulsions post-operatively and 1 case had per-cutaneous cerebrospinal fluid leakage. Postoperative fever was present in 40.1% of the cases, most of the cases within 3 days after surgery, and did not present a significant association with blood transfusion ($p = 0.115$). There were no cases of death in this series.
DISCUSSION/CONCLUSIONS: The present study shows that, eventhough the mortality rates related to the correction of craniosynostosis can be as low as zero, morbidity should not be negleteded, since the majority of patients require blood transfusions [1,2]. Although 54.7% of patients required blood products, there were no reports of serious complications or infections related to the transfusions. Nevertheless, therapeutic options that could decrease the need for blood requirements are warranted [3]. Fever is a common finding, but rarely indicates infection in this setting.

Keywords: Surgery, Craniosynostosis, Complications

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Complications in craniosynostosis – review of the late approached cases

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OBJECTIVE: Analysis of the pitfalls and complications in a series of the nonsyndromic craniosynostosis.
METHODS: Seven children were operated on at our public university hospital, between 2013 and 2016, ranging from three and seven years old at the time of the surgery. All surgeries were headed by the same pediatric neurosurgeon. The first three cases were scaphocephalic boys, 3, 4 and 7 years old, performed cranial vault remodeling. The fourth case was a 3 y'o girl with anterior right plagiocephaly, that we've done a unilateral frontal advancement. The fifth case a 3 y'o boy, already operated on two years ago, with brachicephaly, and now performed a supraorbital bar advancement, and new frontal design. The sixth case, a 4 y'o boy with pansynostosis, operated on for a cranial vault remodeling. At least the seventh case, a 4 y'o girl with brachicephaly, performed a supraorbital bar advancement, and new frontal design.
RESULTS: There were early and late complications. The early were two: Intraoperative massive bleeding in the pansynostosis surgery, after decompression of the superior sagittal sinus, which lead to interrupt the procedure and leave the frontal bar advancement behind, the first and main serious complication. Controlled using hemostatic agents and sutures. The second, extreme difficult skin closure at the fourth case, brachicephaly whose bicoronal previous incision was linear and fibrous, impairing the elasticity of the skin. The plastic surgeon performed a "Y" relaxing incision, successfully reconnecting the wide-opened borders. Late complications were also two. Skin breakage seen in four cases, and exposition of the plates in one case. No absorbable plates and screws were available. Therefore, we had to use some titanium plates and screws, and in one case, we've seen skin breakdown by the hardware, which was surgically removed.
DISCUSSION/CONCLUSIONS: Craniosynostosis have an optimal surgical timing. Dismiss this issue may lead the pediatric neurosurgeon to deal with a more serious and harder condition. The late approach may find a thicker bone what promote the opening of venous channels and more blood loss. As well, a weak skin resiliency, especially in the reoperations, clouds the conditions. Titanium plates should never been used, anytime. That situation should encourage the better understanding of craniofacial disease since the first pediatric consultation until a quick reference to the pediatric neurosurgeon.

Keywords: Craniosynostosis, Late approach, Complications

Craniosynostosis: an analysis of operated cases

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OBJECTIVE: To analyze craniosynostosis cases operated in a brazilian pediatric hospital in southern Brazil, the prevalence of each type of craniosynostosis and surgical techniques used in these cases.
MATERIAL AND METHODS: Initial identification of operated cases and gathering of data was performed by means of electronic charts from Hospital Infantil Pequeno Príncipe. Information such as age, sex, diagnosis and surgical technique used was retrieved.
RESULTS: Data from 110 surgeries performed from January 16, 2014, to February 14, 2017, was analyzed in a total of 105 patients. The mean age by the time of surgery was nine months (± 4.96), with a variation of 1 to 42 months of age. Scaphocephaly was the most common craniosynostosis with 64 patients (58%), followed by trigonocephaly with 22 patients (20%) and Plagiocephaly with 11 cases (10%). Other cases were of complex craniosynostosis with multiple suture synostosis (12%) and included one case of cloverleaf skull syndrome, one case of Appert syndrome, and other non syndromic craniosynostosis. The double Pi procedure (anterior and posterior) was the most common technique, used in 56 procedures (51%), all related to scaphocephaly. All cases of trigonocephaly were treated using fronto-orbital advancement and frontal remodeling (20%). In complex craniosynostosis in which we detected intracranial hipertension were treated with a posterior Pi procedure as a first surgery and later treated with a fronto-orbital advancement (5%). We only had one case of a real posterior plagiocephaly that was treated with suturectomy of bilateral lambdoid suture and barrel osteotomies to correct the occipital deformities (1%).
DISCUSSION/CONCLUSIONS: Craniosynostosis is defined as a premature closure of one or more cranial vault sutures, and occurs in 1:2500 births [1]. It is more common among males (4:1). Classification is dependent on the type of deformity. Scaphocephaly is a result of sagital suture closure and is responsible for 45% of non syndromic craniostenosis – which is consistent with our cases. Neurocognitive disturbances have been demonstrated in untreated patients, due to increased intracranial pressure and morphological changes of the brain [2]. Therefore it is of great need to establish a fast diagnosis, to assess the best surgical technique for each case and provide follow-up in which cephalic perimeter and neuropsychological development is evaluated.

Keywords: Craniosynostosis, Trigonocephaly, Scaphocephaly

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Misconceptions involving craniostenosis and early fontanell closure: can referral and surgery timing be affected?

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OBJECTIVES: Timely diagnosis of craniosynostosis is mandatory to appropriate management. Patients and families depend on referral from general pediatricians and practitioners to have access to a pediatric neurosurgeon assessment. Aim of this study is to evaluate current pediatrician`s conceptions about craniosynostosis and fontanel closure (FC) and compare to objective clinical findings.
MATERIAL AND METHODS: A questionnaire about craniosynostosis and FC was proposed to 50 pediatricians and 100 mothers of non neurosurgical patients in a pediatric hospital in Fortaleza, Brazil. A two years service casuistic of craniosynostosis was reviewed to compare the data with clinical findings.
RESULTS: Among general population, 87% of responders said there is association between early FC and craniosynostosis, but only 2,5% could define craniosynostosis. 50% of pediatricians said FC should happen between 13-18 months, 54% believe in a link of FC time and craniosynostosis. When facing early FC, 60% of pediatricians consider direct referral to a neurosurgeon, while 25% prefer surveilling head circumference and neurological development. 98% of pediatricians claimed have previous knowledge about craniosynostosis, but 46% pointed out a a link between suture fusion and FC. Asked about clinical presentation, 39% said craniofacial deformities are the main manifestations of early FC, mental retardation in second place. In the last two years, 27 children with craniosynostosis were in our service, of wich 17 underwent surgery, 10 scaphocephalies, 6 anterior plagiocephalies and 1 trigonocephaly. All of them were diagnosed based on cranial deformities, not early FC, 47% of them had an open fontanel at diagnosis. Two scaphocephalic patients arrived older than one year, referral being retarded due to existence of an open fontanel.
DISCUSSION/CONCLUSIONS: Diagnostic confusion involving craniosynostosis and FC are the cause of inappropriate referral and may lead to useless neurosurgical assessments or retarded surgery timing. Pediatric neurosurgeons should have a role in the education of practitioners and the general population to avoid these errors.

Keywords: Craniosynostosis, Fontanel, Cranial sutures

Scaphocephaly and cranial vault reconstruction: Renier's 'H' technique

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OBJECTIVE: Resulting from an early fusion of the sagittal suture, scaphocephaly (SC) is the most frequent form of all craniosynostosis and represents 40–60% of all cases [1,2]. The scope of this study is to describe the first series of Renier's 'H' technique [3] to be applied in children with SC outside of France.
MATERIAL AND METHODS: The Brazilian Research Ethics Committee approved this research. A consecutive review is made of the medical records of children hospitalized in the last 6 years (between March 2007 and March 2013) with isolated SC in whom Renier's 'H' technique was performed.
RESULTS: 13 children met the criteria for inclusion in the study. 06 bone flaps (03 flaps on each side of the cranium) are created: 02 immediately behind the coronal suture, 02 immediately before the lambdoid sutures, and 02 temporal parietal bone flaps that are osteotomized or 'greenstick-fractured', maintaining the pedicle attached to the temporal muscle level and thereby increasing the cranial width. At the level of the sagittal suture, a 4-cm sagittal strip of bone (from the bregma to lambda) is carefully detached from the superior sagittal sinus. This flap should then be divided into two halves and repositioned over the superior sagittal sinus.
DISCUSSION/CONCLUSIONS: We consider the Renier's 'H' technique to be effective in the cranial reshaping of children with isolated SC, with a low rate of complications, which can be used for the surgical treatment of children suffering from SC and excellent postsurgical results were observed, considering both the neurosurgical evaluation and parental satisfaction with satisfactory esthetic postsurgical results.

Keywords: Craniosynostosis, Scaphocephaly, Surgical treatment

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Scaphocephaly: is there a diagnosis' delay?

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OBJECTIVE: Scaphocephaly is defined as a congenital malformation characterized by the premature fusion of the sagittal suture, resulting in a cranial or craniofacial deformity [1]. The diagnosis is mainly clinical, through history and physical examination. Once diagnosed, treatment is surgical [2]. The purpose of this research was studying the epidemiological profile of children previously diagnosed with Scaphocephaly and identifying the occurrence of delay in the diagnosis and/or definitive treatment of these children.
MATERIAL AND METHODS: Report of epidemiological features of children diagnosed with Scaphocephaly in a Children's Hospital of Curitiba, Brazil. A questionnaire was filled by the children´s parents about the historical of the disease´s diagnosis and treatment.
RESULTS: The sample consisted of 53 patients who underwent corrective surgery for Scaphocephaly between January, 2010 to March, 2016. Most of them (39) were male gender. It was observed that in 45.28% of cases, the first person to identify a cranial malformation was a family member, specially mothers. Although the diagnosis is mainly clinical, through history and physical examination, it was necessary an average of 3 medical appointments (with different doctors) before getting a final diagnosis. This one was determined in more than 60% of cases by a neurosurgeon. Once diagnosis is set, surgical correction should be performed as soon as possible, ideally between 3 and 6 months of age, when bones are still adapted and malleable [2]. However, the average age was 3 months at diagnosis and 7.5 months and at treatment, later than recommended in the literature. Furthermore, it was observed that the diagnosis rates and treatment were later in children attending public health system in comparison to private health insurances.
DISCUSSION/CONCLUSIONS: Therefore, it reinforces the concept that the high presumptive diagnosis of Scaphocephaly is required for early surgery, which requires less complex surgical technique and produces better results, aesthetic and functional ones, and avoids complications.

Keywords: Scaphocephaly, Diagnosis, Treatment

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Neuro-oncology

Giant pediatric intracranial tumor management. When ressection in stages is the best option?

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OBJECTIVE: The aim was to analyze the strategy of ressection in stages of giant pediatric intracranial tumor (GPIT) and its impact in outcome.
MATERIAL AND METHODS: A prospective analysis was performed in 20 pediatric patients who underwent ressective procedure for GPIT from 2006 to 2016. Giant tumor was included when the dimensions reach 5cm in length. Were considered demographic features, clinicopathological aspects, number of procedures per patient, and outcome. Glasgow Outcome Scale (GOS) was used in follow-up.
RESULTS: Gross total resection was achieved in 30% of patients using 2 to 4 stages. The mean age was 47 months. Seventy percent were supratentorial; headache was the most prevalent symptom. The pathological features were: Choroid plexus carcinoma (3), Teratoid Rhabdoid tumor (AT/RT)(2), Ependimoblastoma (1), Medulloblastoma (3), Anaplastic Ependimoma (2), Hemangiosarcoma (1), Choroidplexus papilloma (1), Ganglioglioma (1), Hemangiopericytoma (1), Prolactinoma (1),Craniopharyngeoma (1) Subependymalgiantcellastrocytoma (1) and Pilomyxoid astrocytoma (1). The mean follow up was 20 months. Ten patients (50%) achieved 5 in GOS, 2 (10%) GOS 4, 1 (5%) GOS 3 and 7 (30%) GOS, during follow-up period.
DISCUSSION/CONCLUSIONS: GPIT management remains a challenge for the pediatric neurosurgeon. En bloc subpial resection was described as a safe procedure in other studies [1,2]. However, in the present study, this strategy was considered impractible due to deep position and surrounding eloquent areas. Multistaged resection is a valuable an option in the GPIT treatment.

Keywords: Giant pediatric intracranial tumor, Pediatric neurosurgery, Brain tumor

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Hypothalamic involvement in craniopharyngioma: challenges of surgical therapy

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OBJECTIVE: To associate the grade of preoperative hypothalamic involvement (HI), in children with craniopharyngiomas (CF), to post operative outcomes, aiming to provide a better preoperative evaluation and decision-making.
MATERIAL AND METHODS: We analyzed pre and postoperative MRIs and clinical outcomes of 26 patients younger than 18 submitted to surgical treatment for CF between 2011 and 2016. Subjects submitted to neo-adjuvant therapy were excluded from the analysis. We evaluated and compared endocrine, neurological and cognitive symptoms before and after surgery. These data were correlated to the radiological HI grade, using the preoperative Paris radiologic scale (PRS), in order to establish an outcome predictor through this classification.
RESULTS: Preoperative PRS evaluation of 26 patients showed: two (7.7%) were classified as grade 0, eleven (42.3%) as grade 1 and thirteen (50%) as grade 2. Both subjects with grade 0 underwent gross total resection (GTR), with good outcomes. Among grade 1 patients, four achieved GTR and seven subtotal resection (STR); hypothalamic damage (HD) on postoperative MRI was identified in five children. GTR was performed in 11 of 13 (84.6%) grade 2 patients, and all of those presented some postoperative HD. Obesity was the most frequent sign of hypothalamic disorder, found in 16 of 18 (88.9%) patients who had radiological evidence of HD after surgery. Of those, 13 (81.2%) presented grade 2 lesions before surgery.
DISCUSSION/CONCLUSIONS: Our results confirmed that Paris Scale is a powerful tool to evaluate preoperative HI and predict postoperative HD. Surgical treatment of CF patients is challenging and can be associated to high morbidity. Therefore, Paris scale must be used on the decision-making process.

Keywords: Craniopharyngiomas, Hypothalamus, Surgery

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Pediatric tumors in temporal lobe and association with pre- and post-operative epilepsy

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OBJECTIVE: The temporal lobe is a common location of pediatric brain tumors. Usually these lesions are low-grade glial tumors but there are few cases of high-grade tumors described. The objectives are to correlate initial symptoms with histology and evaluate seizure control after surgical procedure.
MATERIALS AND METHODS: Forty-three patients with temporal lobe lesions were analyzed retrospectively, all of them from a single institution, period between 1990 and 2016. Data collected were initial symptom, tumor

location (mesial or lateral, extension for adjacent lobes), side of tumor, type of operation (lesionectomy or also amygdalohypocampectomy), histology, seizure control.
RESULTS: Seizures were the initial symptom in 72% of cases, and the mean age to initial symptoms was 8year-old (from 1 m to 10 yo). Other 12 patients presented symptoms related to intracranial hypertension (ICH) such as headaches and vomiting. Lesions were in mesial temporal lobe in 44.2% of cases, they were in lateral temporal lobe in 23.3% of cases and these lesions had extension to adjacent lobes in 32.5% of cases. There were 53.5% of cases with left sided lesions. These temporal lobe lesions presented a benign histology in 74.4% of cases and only four of these patients did not present seizure as an initial symptom. Ganglioglioma was the most frequent diagnosis, and it was in 19 patients. Other eleven patients had high-grade histology lesions, and 72.7% of them had ICH symptoms. It was performed lesionectomy in all high-grade histology lesions and in eight benign lesions. Amygdalohippocampectomy was also performed in 13 low-grade lesions and patients who presented seizures pre-operative, and in two more cases these second procedure was performed due to low seizures control. Patients with benign histology lesions were seizure free after procedure in 46.8% of cases, and other 34.4% of cases improved seizure control. Patients with high-grade lesions presented seizure after procedure around half of cases.
DISCUSSION/CONCLUSIONS: Pediatric patients with lateral temporal lobe lesions, lesions with extension to adjacent lobes and who presented ICH symptoms had correlation with high-grade tumors. The seizure control was independent of amygdalohippocampectomy procedure.

Keywords: Temporal lobe, Pediatric tumor, Epilepsy

Primary tumors of the medullary cord in childhood: an epidemiological study in a reference neurosurgery hospital

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OBJECTIVE: Primary Central Nervous System tumors are the second leading cause of childhood cancer death and occur with severe pain and potential irreversible neurological damage. Medullary tumors of childhood correspond of 1 to 3% of malignant tumors in pediatrics. In individuals, younger than 10 years, astrocytomas represent 90% of these, being 90% benign. Magnetic Resonance Imaging (MRI) is the gold standard examination for diagnosis and the treatment of choice is microsurgery. In this context, the present study aims to describe the epidemiological profile of spinal tumors in children admitted to the reference hospital in neurosurgery.
MATERIAL AND METHODS: A retrospective cross-sectional study was accomplished with medical records of 16 patients. The sample was defined with patients below 18 years of age with such tumors found by MRI and post-surgical pathology report between January 2010 and March 2016.
RESULTS: There was a higher prevalence in the male gender, 68.75% (11). The mean age was 9.6 years. The most affected sites were thoracic spinal cord and cervical spine, both with 31.2% (5), followed by cervicothoracic junction, 18.75% (3), equine tail, 12.5% (2) and skull and cervical spine, 6.25% (1). Low-grade astrocytoma was the most frequent pathology, with 50% of cases (8), with a genres ratio of 1.7: 1 and reaching patients between 8 and 15 years. The most frequent symptom was paresis with 62.5% of cases (10) followed by pain in 50% of patients (10) and location associated with the level of spinal cord injury. Other symptoms were plegia: 18.75% (3), gait claudication; 18.75% (3), torticollis; 12.5% (2) and loss of sensitivity and respiratory failure 6.25% (1).
DISCUSSION/CONCLUSIONS: Despite the low prevalence of such neoplasms, the knowledge about these is essential due to the important differential diagnosis of the children's syndromes with neurological deficits and their important morbidity. Such lesions have an optimistic post-surgical prognosis, since they are usually benign neoplasms.

Keywords: Medullary tumors, Childhood tumors, CNS tumors

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The supraorbital eyebrow approach for craniopharingiomas in children

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OBJECTIVE: The surgical management of craniopharyngioma remains a challenge to neurosurgeons. The role of complete surgical removal of these tumors is still somewhat controversial and can be associated with several complications. The aim of this paper is to present an alternative cranial base surgical strategy (supraorbital approach - SOA) to these lesions and to provide the rationale for this technique [1].
MATERIAL AND METHODS: A retrospective review of eight patients with craniopharingioma who had undergone a SOA from 2014 to 2016. Only cases involving patients younger than 18 years with a minimum follow-up of six months were included in this study. All inpatient and outpatient records were retrospectively reviewed and clinical/ radiological, operative outcomes, cosmetic results, and complications were recorded.
RESULTS: The SOA was used successfully in elective surgery of eight craniopharingiomas. The average age of the patients was 10 years (range 2-16 years). The preoperative magnetic resonance imaging according to the degree of hypothalamic involvement [2] showed hypothalamic displaced by the tumor in three patients or severe involvement in 5 patients. Subtotal resection was achieved in six patients. However, three of them had previous cranial surgery by other route. A gross-total resection was observed in two cases. The endoscope assisted was used after standard microscopic visualization in all cases. Cosmetic outcomes were excellent. In six cases, the incisional scar was barely visible at 6 weeks. In 2 cases a minor bone defect was observed on the forehead. In one patient a large subdural collection needed surgery for evacuation. Diabetes insipidus was presented in 3 out 8. Additionally, no CSF leak or wound infection was identified.
DISCUSSION/CONCLUSIONS: The supraorbital eyebrow approach is an excellent surgical alternative in achieving desired results in properly selected cases of craniopharingioma of all pediatric age ranges. There is sufficient working space for the endoscope and all instruments, allowing for endoscopic assistance and bimanual surgical technique. Cosmetic results are excellent, and complications related to the approach are minimal.

Keywords: Craniopharingiomas, Supraorbital approach, Minimally invasive surgery

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Hydrocephalus

Clinical and epidemiological aspects of 103 pediatric patients submitted to endoscopic neurosurgery treatment in referral hospitals in the Brazilian Amazon

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OBJECTIVE: To describe clinical and epidemiological features of pediatric patients submitted to endoscopic neurosurgery treatment and identify the diagnosis entities and the relevant neuroendoscopic procedures used in referral hospitals in the Brazilian Amazon.
MATERIAL AND METHODS: The data were collected at Fundação Santa Casa de Misericórdia do Pará and Ophir Loyola hospitals. Inclusion criteria considered patients treated with neuroendoscopic procedures (NP) with age from 1 day old to 18 years old, from 2011 to 2015. The patients were grouped according to their age. Group A constituted from 1 day to 5 months, group B from 6 to 11 months and group C from 1 year to 18 years old.
RESULTS: 103 patients were selected. 59% were males and 41% females. 36% were from the capital and 64% from other cities. The mean age was 4 years and 5 months old. Group A included 23% of patients, mean age of 2 months and 15 days. Group B with 24%, from 6 to 11 months, average of 8 months and Group C included 53%, from 1 to 18 years, mean age 8 years and 6 days. Regarding the diagnosis, hydrocephalus was the most frequent finding with 55,3%, tumor 24,27%, hydranencephaly 19,43% and isolated ventricle 0.97%. NP performed were endoscopic third ventriculostomy (ETV) in 43.68%, endoscopic choroid plexus coagulation (CPC) in 20.38%, septostomy in 12.62%, endoscopic microsurgery (EM) in 22.32% and others in 1%. In Group A, CPC was the most frequent procedure, 46% of the cases, ETV in 33% and septostomy in 21% of the cases. In Group B, ETV was the most frequent treatment, 76% of the cases, CPC in 16% and septostomy in 8%. In Group C, ETV was realized in 39%, EM in 19%, CPC in 11%, septostomy in 11% and others in 20%.
DISCUSSION/CONCLUSION: Hydrocephalus was the most frequent etiology treated with neuroendoscopy. ETV was the most frequent treatment modality after 6 months age. CPC was the most frequent before 6 months. According to our findings further studies with a longer follow-up are needed to better define the success rate of these procedures.

Keywords: Neuroendoscopy, Neurosurgery, Pediatrics

Efficacy of endoscopic aqueductoplasty in the treatment of trapped fourth ventricle

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OBJECTIVE: The goal of the study was retrospectively analyze the benefit of Endoscopic Aqueductoplasty (EA) in the treatment of trapped fourth ventricle and correlation with posterior fossa morphometry.
MATERIAL AND METHODS: Were included 11 patients with isolated fourth ventricle who underwent EA with or without stent from 2006 to 2015. Demografic and clinicoradiological features were considered. Posterior fossa morphometry included the fourth ventricle volume, measured before and 6 months after the procedure. Linear parameters and fourth ventricular index was achieved by Osirix® software. EA Faillure occurred when clinical parameters did not changed. Mean follow up was 34 months.
RESULTS: The mean age was 8.9 years. Sixteen EA were performed. Prematurity was presented in 54.4%. Infection was the most commom ethiology. Frontal approach were made in 68.75%. The fourth ventricular volume was reduced after surgery (25.8 to 11 cm^3; p=0.003). The EA success rate was 65.2%.
DISCUSSION/CONCLUSION: In a prospective study, Schulz et al [1] showed reduction in fourth ventricle volume after EA. This was also observed in this present serie that fourth ventricular quantitative parameters have a prominent role in radiological follow up. The evidence supporting the efficacy and safety of cerebral aqueductoplasty is limited to small surgical series [2]. Our study suggests that EA is efficient to treat trapped fourth ventricle.

Keywords: Isolated fourth ventricle, Aqueductoplasty, Pediatric neurosurgery

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Efficacy and complications of ventricular endoscopy in pediatric patients: A retrospective analysis of 19 cases

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OBJECTIVE: Treating children with hydrocephalus represents a large portion of everyday practice for pediatric neurosurgeons and is associated with significant complication rates, mainly related to ventriculoperitoneal implants. The ventricular endoscopy is an effective treatment for obstructive hydrocephalus and has expadend the horizons of its management, and thus avoiding the complications associated with shunts [1-3]. The objective of this study is to analyze the efficacy and complication rates of ventricular endoscopy in pediatric patients in a tertiary reference hospital.
MATERIAL AND METHODS: A retrospective observational study was performed including pediatric hydrocephalus cases managed with ventricular endoscopy between the years 2015 and 2016 in a tertiary reference hospital in Florianópolis, Brazil. The patient's medical records were reviewed for demographic data, etiology of hydrocephalus and the outcome related to its compensation or not, the need for repeated endoscopy and complications associated with those surgeries. All data were analyzed using the SPSS software 17.0.
RESULTS: A total of 19 children, with an average age of 3.36 years (range, 4 months-8 years), underwent endoscopic procedures for different causes of hydrocephalus. Those causes included posthemorragic in 3 (15.8%), congenital multicystic in 3 (15.8%), congenital aqueduct stenosis in 3 (15.8%), meningomyeloceles in 2

(10.5%), brain tumors in 2 (10.5%), congenital idiopatic hydrocephalus in 2 (10.5%), VACTERL syndrome in 2 (10.5%), post-infection multiloculated hydrocephalus in 1 (5.3%) and Dandy Walker syndrome in 1 (5.3%). Six patients (31.6%) ultimately needed a VP shunt after a ventricular endoscopic procedure. Re-operation (repeated ventriculostomy) was performed, with success, in 2 (10.5%) patients. Six patients (31.6%) had complications as follows: 1 (5.3%) SIADH, 1 (5.3%) meningitis, 1 (5.3%) post operative bleeding, 1 (5.3%) bleeding during the procedure, 1 (5.3%) seizure and 1 (5.3%) wound infection. The bivariate correlation analysis between patients with a history of prematurity and the failure rate of ventriculostomy showed statistical significance at $p<0.041$.
DISCUSSION/CONCLUSIONS: Ventricular endoscopic surgery was effective in 68.4% of the cases, with a general complication rate of 31.6%. As expected, there were significantly variable outcomes depending on the etiology of hydrocephalus and gestacional age at birth. Patients undergoing endoscopy procedures with a history of prematurity had a significantly higher failure rate than those born at term.

Keywords: Ventriculostomy, Hydrocephalus, Neurosurgery

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Hydrocephalus after decompressive craniectomy: 06 cases and literature review

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OBJECTIVE: Increasingly used in neurological emergency services, the decompressive craniectomy (DC) has brought to tertiary hospitals a universe of patients prone to complications of cerebrospinal fluid (CSF) dynamics. The recognition of cases that evolves with hydrocephalus and the indication of treatment (shunt) are questions that exist in the literature [1]. We report here the experience with 06 cases in pediatric population and questions related to the current literature.
MATERIAL AND METHODS: Review of medical notes from 06 patients submitted to DC from 01/2012 to 12/2015. The definition of hydrocephalus was based on the indication of ventriculoperitoneal shunt (VPS), ventricular index of Evans greater than 0.33, and the presence of Gudeman's criteria.
RESULTS**:** Of the 06 patients, 05 were males (83.3%). The pathologies that evolved to DC indication were traumatic brain injury (TBI) in 04 (66.6%), encephalitis and complication of meningitis in 02 (33.3%), and stroke in 02. The follow-up was 591 days. The mean age was 9.3 years (1.9-16). All patients had a Glasgow coma scale <6 on admission. In 05 cases (83.3%), a subdural hygroma appeared and preceded the development of hydrocephalus. The mean time to the development of hydrocephalus was 72 days (21-301). One patient, shunted for 09 months, developed abdominal complications, which motivaded its removal.
DISCUSSION/CONCLUSIONS: Several described factors have been associated with the development of post-DC hydrocephalus. The presence of hygroma, clinical severity, and the proximity of craniotomy in relation to the midline are examples [2]. The ideal moment to indicate the surgical treatment and the association with early and late cranioplasty are questions not yet satisfactorily answered in the literature [3]. We have seen in our sample that the association of hygroma/hydrocephalus seems to correspond to events of the same disease. The hydrodynamic behavior in some cases suggests a continuous change in the equilibrium situation between the craniotomy area and the atmospheric pressure.

Keywords: Decompressive craniectomy, Hydrocephalus, Pediatric neurosurgery

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Third endoscopic ventriculostomy and coagulation of the choroid plexus - a strategy for the treatment of hydrocephalus secondary to myelomeningocele: a series of cases

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OBJECTIVE: Identify the efficacy of the association of endoscopic third ventriculostomy (ETV) with choroidal plexus coagulation (CPC) in the treatment of hydrocephalus secondary to myelomeningocele (MMC) in previously patients undergoing ventriculoperitoneal shunting (VPS).
MATERIALS AND METHODS: We report our experience with 12 cases of patients with a diagnosis of MMC that were previously corrected in the first year of life, who developed hydrocephalus, and underwent VPS implantation. The patients came with clinical and radiological signs of shunt dysfunction. The follow-up of the endoscopic procedure was at least 6 months. The patients' age at the time of endoscopic surgery ranged from 5 to 18 years. The female gender represented 66% of the cases.
RESULTS: The criterion for success of ETV associated with CPC was an evolution without signs of intracranial hypertension and no need for VPS implantation, and was observed in 83.3% of the patients (10 cases). Postoperative complications were verified in two patients: one case of fistula and other of infection
DISCUSSION: ETV has been shown to be the treatment of choice for obstructive hydrocephalus, but success rates drop significantly in children under 1 year, especially those with a history of previous bleeding or infection. Recent studies in sub-Saharan Africa have shown that the association of ETV with CPC can double success rates in hydrocephalus related to aqueduct stenosis, myelomeningocele (MMC) or Dandy-Walker complex and triple success rates in infants with post-infectious disease or communicating hydrocephalus. The occurrence of VPS could lead to an obstructive component of the initial cause of hydrocephalus, due to a possible stenosis of acquired aqueduct secondary to a

continuous diversion of the liquor through the shunt to the detriment of the aqueduct. Re-expansion of the subarachnoid spaces explaining a greater ETV's success as a strategy for shunt dysfunction.
CONCLUSIONS: Our series of case, according the literature review, showed that the ETV association with CPC could be effective in the treatment of hydrocephalus secondary to myelomeningocele (MMC). We will therefore need a greater number of cases and comparative studies to identify these additional findings in our service.

Keywords: Endoscopic third ventriculostomy, Ventriculoperitoneal shunt malfunction, Hydrocephalus

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Ventriculomegaly associated to congenital zika syndrome: does shunting improve clinical features?

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OBJECTIVE: Congenital Zika Syndrome (CZS) is a new entity, with few information about its course and natural history. It is known that prenatal infection by zyka virus is associated wIth disrupted nervous system development, leading to typical neurological disabilities and deformities. Some children from the initial CZS 2015 cohort in Brazil are presenting progressive ventriculomegaly associated to aggravation of seizures and neurological impairment. The aim of this paper is to evaluate the impact of ventriculoperitoneal shunt implantation in the clinical condition of these children.
MATERIAL AND METHODS: Data was obtained from charts review, direct interviews with patient's parents, direct neurological examination and analysis of pre and post-op neuroimages. To this moment, 5 CZS patients were submitted to ventriculoperitoneal shunt in our service.
RESULTS: All five patients had clinical improvement after ventriculoperitoneal shunt implantation. Parents reported amelioration concerning waking time during the day and better eye contact. Overall improvement was noted regarding seizures, with remarkable diminution of daily episodes. Regarding neurological examination, patients presented less spasticity and more cervical control post-operatively. There were no clinical or image based shunt complications. In two out of five cases, a slight increase in parenchymal lenght could be noted in the CT scans. One children eventually deceased 45 days after surgery due to pulmonary sepsis.
DISCUSSION/CONCLUSIONS: This series point out the possibility of hypertensive hidrocephalus development in CZS patients after the first year of life. Affected children may benefit from ventriculoperitoneal shunt implantation. These findings suggest a dual pathology association: brain parenchyma damage by the virus itself and hypertensive hydrocephalus, as already seen in some cases of congenital rubella, toxoplasmosis or cytomelovirus associated hydrocephalus.

Keywords: Zika virus, Microcephaly, Hydrocephalus

Dysraphisms and spine surgery

Clinical aspects and surgical techniques on craniocervical malformations: Chiari and basilar impression

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OBJECTIVE: Authors report clinical and surgical aspects of craniocervical malformations in pediatric patients.
MATERIALS AND METHODS: Medical records of 5 pediatric cases among 70 patients submitted to posterior fossa surgical treatment between August 1994 and July 2015 were retrospectively analyzed. All cases were diagnosed with Magnetic Resonance Images.
RESULTS: Three patients were male and two female. Age range was 8 to 12 years old. One case presented with basilar invagination (BI) alone and one case presented with Chiari Malformation (CM) alone. Syringomyelia associated to CM was found in one case, and 3 cases presented with BI associated to CM. Three cases had scoliosis, brachycephaly, brevicollis and muscle weakness. Two cases had headache, neck pain and head stance disturbance. Hyperreflexia was the most common sign (4 cases), followed by paresis and clonus (3 cases). The typical epidemiological/clinical profile was: male, scoliosis, brachycephaly, brevicollis, muscle weakness, hyperreflexia, paresis and clonus. All surgeries were performed in ventral decubitus. Tonsils aspiration and opening of the fourth ventricle were performed in 4 cases. Duraplasty with synthetic dura was performed in 4 cases. All patients had good outcome, without major complications and with clinical improvement.
DISCUSSION/CONCLUSIONS: Posterior fossa malformations correspond to 3% of central nervous system malformations. Among posterior fossa malformations, BI is a common pathology in Northeast of Brazil, usually in individuals between 30 and 50 years old and rare in children between 2 and 4 years old. CM is also common, alone or associated to BI, and was found in 4 cases (80%) in this sample. This case series enhances clinical and surgical characteristics of craniocervical malformation in pediatric population and brings us back to the importance of this diagnosis in unusual ages, especially when similar symptomatology is found.

Keywords: Craniovertebral Malformation, Basilar impression, Chiari malformation

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Gestational and perinatal analysis of newborns with myelomeningocele

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OBJECTIVE: The aim of this study was to analyze the influence of folic acid supplementation, before and during gestation [1] of women who had children affected by myelomeningocele (MMC) in a pediatric hospital in southern Brazil.
MATERIAL AND METHODS: A retrospective observational study was carried out and 89 MMC patients admitted in the period January/2003 to December/2016 were identified. Relatives were contacted by telephone, but only 27 patients were evaluated. The research sought information about the gestational period, mothers' knowledge regarding folic acid and its use, the complications resulting from the disease and the child's current situation.
RESULTS: The results showed that 14 women (51.9%) had no previous knowledge of the importance of folic acid and did not replace it before and during pregnancy. The other 13 mothers, even with knowledge, did not achieve adequate folic acid replacement, compromising the effectiveness of this prevention. Therefore, it was observed that 100% of the children had orthopedic complications, 92.5% urological and 66.6% had hydrocephalus [2].
DISCUSSION/CONCLUSIONS: It was verified that the MMC affects the quality of life of the child and his/her relatives, being necessary a greater discussion about the importance of the folic acid replacement as prevention of this disease [3]. This research will be continued in the future, in order to increase the number of cases and data collected.

Keywords: Myelomeningocele, Folic acid, Dysraphism

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Lumbar type 1 dimples: is the screening for occult spinal dysraphism effective? prospective study in a maternal hospital

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OBJECTIVE: Occult lumbosacral spinal dysraphisms are a group of malformations associated to cutaneous stigmata and neurological damages. The objetive of this study is to evaluate the incidence of spinal dysraphism in children with lumbar type 1 dimple in a brazilian maternity hospital.
MATERIAL AND METHODS: The authors evaluated consecutively 4817 neonates selected from 6417 newborns between November first, 2015 and october 31, 2016 with at least 3-days-old in a maternal hospital for high risk pregnancy. The exclusion criteria were stillbirths, newborn deaths in the first 48 hours, abscence of prenatal consultation or penatal consultaion in other states, foreigner mothers and patients with parental refusing to participate in the study. Lumbar type 1 dimples were defined as those only visible after spreading the guteal crease, located near the anus, with the gluteal crease straight. For these children a lumbar spine ultrasonography was conducted after 3 months of age and the results grouped in three groups: normal, spina bifida without spinal deformity – conus in L1 level and spina bifida with spinal deformity – conus below L2L3 interspace.
RESULTS: We found cutaneous lumbar stigmata in 187 patients. Of those, 85 had type 1 dimpleS (36M:49F). The ultrasonography did not diagnosed abnormalities in 70% of patients (60 children), detected spina bifida without spinal deformity in 37% (22 patients), and 3 patients had spina bifida with spinal deformity (3%). The neurological assessment was normal in all patients. There were no statistical difference for type 1 dimples and spinal deformity ($p = 0.77$) neither for type 1 dimples and spina bifida without spinal deformity ($p = 0.99$), using p value < 0.05.
DISCUSSION/CONCLUSIONS: Many studies were conducted trying to classificate cutaneous lumbar stigmata with risk for spinal deformity. Dimples occurring cranial to the gluteal crease or outside the midline, or dimples with diameters >5 mm are consider atypicals [1]. Gomi et in 2013 published a simple classification for lumbar Dimples according the complexity, with type 1 dimples no associated with spinal deformities [2]. We tested this classification for a brazilian children population with similar results. We concluded that there is no significant clinical value screening children with type 1 dimples for spinal deformities in our population.

Keywords: Occult spinal dysraphism, Lumbar dimples, Tethered cord syndrome

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Surgical aspects of spinal neuroectodermal appendages: analysis of five cases

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OBJECTIVE: Neuroectodermal appendages are appendages with tail appearance, known by many authors as "human-tail" [1,2]. They are often located on the midline, or near, with a lipoma in the base that infiltrates up to the neural elements. These five reported cases brings attention to the existence, etiopathogenesis and surgical aspects of this pathology.
MATERIAL AND METHODS: Five cases of neuroectodermal appendices were all operated on at the Santa Paula Hospital Ltda, João Pessoa - Paraíba, Brazil. The data regarding this report, was base on the patient's medical records, photographs and imaging exams. We had one cervical case and four lumbosacral cases, in the largest length had seven centimeters. None of the patients had focal deficits.
RESULTS: All patients were operated on and, during the surgical procedures, a continuous lipoma was observed up to the cone in three of the cases. Another case had a lipoma in the base of the process, with subcutaneous termination. And, finally, one of the patients in the series had a lipofibro-neural stem attached to the cervical cord. No appendages had bones or muscles in its structure.

DISCUSSION/CONCLUSIONS: It is a rare pathology, one of our cases being the longest reported in the literature (7cm) [3]. There are only few papers in the literature discussing its etiopathogenesis, but the authors attribute these malformations to the low rate of care during pregnancy, such as lack of prenatal care, folic acid insufficiency and of basic guidelines during pregnancy, besides being directly associated with the stigmatization of poverty. Failure to recognize the neural structures during surgery can cause irreversible damages and MRI is the best exam to analyse the anatomical aspects of the appendage.

Keywords: Neuroectodermal appendages, Congenital malformations, Spinal dysraphisms

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Surgical treatment of spinal deformities secondary to myelomeningocele in children.

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OBJECTIVES: Spinal deformities in children with myelomeningocele occurs frequently and is multifactorial in origin [1]. The aim is to evaluate the correction rates and complications of late surgical treatment of kyphosis and scoliosis in children with myelomeningocele.
MATERIAL AND METHODS: Retrospective analysis of the medical records of patients who underwent surgical treatment for the spinal defprmities secondary to myelomenigocele. We reviewed 51 patients operated in the period of 2003 a 2015. The variables analyzed were: gender, age, type of deformity for surgical indication, Cobb angle measured during preoperative and postoperative period, surgical technique, blood loss, complications and mortality.
RESULTS: Prevalence of the female sex with 61.5%. The average age of the patients when they underwent the procedure was 9.5 years old, while the maximum age was 18 and the minimum was 3. The surgical indication was for the correction of scoliosis in 82% of the cases and for the correction of kyphosis in 18%. The posterior approach was used in all cases of kyphosis and in 47% of cases of scoliosis. In 53% of the cases of scoliosis correction it was necessary a combined anterior and posterior approach. The rate of correction of kyphosis varied from an average angle of 115 degrees in the preoperative period to 19 degrees in postoperative and from 85 degrees to 30 degrees in cases of scoliosis correction, respectively. Blood loss during treatment ranged from 100 to 2600 ml and the most common complication was an infection in 15% of the circumstances. There was no surgical mortality.
DISCUSSION/CONCLUSIONS: Although it is a very aggressive surgery, this procedure can obtain a satisfactory correction rate, rendering a significant improvement in the quality of life of the patients with acceptable morbidity rates and no mortality.

Keywords: Spinal deformities, Myelomeningocele, Kyphosis, Kyphoscoliosis

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Transversal curved incision instead of linear incision in the lipoma of the conus surgery treatment

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OBJECTIVE: The most common incision used in surgery of the spinal lumbossacral disraphysms is the linear straight incision. We present a case that we have used an alternative incision for large lipomas on the conus with a good outcome for the patient [1].
MATERIAL AND METHODS: A two years old, feminine patient, presented with urinary, motor and sensitive disfunction and a large lumbossacral palpable mass. MRI show a sacral lesion with fusion failure of S1 to S4, a large extradural mass with a few intradural components of fat tissue and a syrinx above the lesion extended between T9 and T12. Surgery was performed and we used a transversal curved incision, all the lipomatous subcutaneous lesion was removed. For the intradural component excision we used motor neuromonitorization. The release of the lipomatous filum was performed and dura was closed with primary suture. After few days the patient remain with no sings of dehiscence of suture and no CSF leak. In many patients with spinal lipoma we may have a difficult closure by the lack of a "healthy" skin sorrounding the lesion.
DISCUSSION/CONCLUSIONS: We believe that the use of a transversal incision instead of a linear incision respects the anatomical aspects of the skin Langer's and Borges's lines [2] in the lumbossacral region and for this, we recommend its use as an option to reduce postoperative complications related to tension of the skin.

Keywords: Spinal lipomas, Skin incision, Occult dysrasphisms

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Traumatology

Most prevalent causes of pediatric post-traumatic brain injury: a referral center experience

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OBJECTIVE: To evaluate the most prevalent causes of pediatric hospitalizations in cases of TBI (Traumatic Brain Injury) admitted to a referral hospital in neurosurgery.
MATERIAL AND METHODS: A retrospective study, descriptive, was carried out with data from 100 patients admitted to a referral hospital in Neurosurgery with TBI, who needed hospitalization, between February

2015 and March 2016. The data was compiled and organized using standard form and spreadsheets.
RESULTS: Linear fracture of the skull was prominent, with 30 cases (30%); Followed by subdural hematoma, with 18 patients (18%); Extradural hematoma was present in 14 cases (14%); Vomiting and dehydration 8 cases (8%); 7 cases of brain contusion (7%); Skull sinking 6 cases (6%); Liquid fistula 5 cases (5%); Traumatic meningeal hemorrhage 4 cases (4%); Convulsion 2 cases (2%); In addition to cerebral venous thrombosis, carotid dissection, diabetes insipidus and headache with 1 case each (1%).
DISCUSSION/CONCLUSIONS: Linear skull fractures usually do not cause major problems, but may be associated with vascular lesions. For the age group, this finding becomes especially prevalent due to the immaturity of the bone, making it more vulnerable. In addition, the study revealed that subdural and extradural hematomas are common after TBI, requiring further attention. Therefore, it can be concluded that subdural hematoma and skull fractures are the two major causes of hospitalization in patients previously affected by TBI.

Keywords: Traumatic brain injury, Wounds and injuries, Causality

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Technologies in Pediatric Neurosurgery

Guided bone regeneration by poly lactic-co-glycolic acid membrane with hydroxyapatite

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OBJECTIVE: To evaluate in vivo the bone repair using poly lactic acid co-glycolic (PLGA) membranes associated or not with hydroxyapatite (HA) on guided bone regeneration (GBR).
MATERIAL AND METHODS: 53 adult male rats (Rattus norvegicus albinus, Wistar) (20-24 weeks) and a weigh of 180 g approximately were used. The animals were distributed in 3 groups: control group (SHAM) in which bone defects were performed without the use of membranes, PLGA and PLGA+HA groups, in which bone defects were covered with a PLGA and PLGA+HA membranes, respectively. The defect was created with a 5 mm diameter trephine burn on each parietal bone and then treated randomly according to the proposed groups. The samples were collected in experimental periods of 7, 15, 30 and 60 days post-surgery and processed for bone densitometry analysis *ImageJ64* – National Institute of Health, Bethesda, MD, USA) in order to evaluate the bone repair. The statistical analysis was performed using Kruskal-Wallis and Mann-Whitney tests with a level of significance of $p < 0.05$.
RESULTS: Statistically significant differences were found in the PLGA+HA group compared with SHAM group in the first two experimental periods.
DISCUSSION/CONCLUSIONS: PLGA membranes associated with hydroxyapatite seem to accelerate bone repair in its early stages, so it could be indicated in GBR.

Keywords: Bone repair, Membranes, Hydroxyapatite, Polymers

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Intraoperative electrophysiological monitoring in pediatric neurosurgery: initial experience of 13 cases

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OBJECTIVE: The study aims to demonstrate, through clinical results, the effectiveness of intraoperative electrophysiological monitoring in neurosurgeries performed at a state reference pediatric neursurgical unit.
MATERIAL AND METHODS: Data were retropectively collected from medical notes, from 2014 through 2016, and refer to 13 pediatric patients who underwent neurosurgeries in which intraoperative electrophysiological monitoring was employed as an auxilliary technique. The following patient data were analyzed: age, sex, diagnosis, pre and post-operative neurological status and complications.
RESULTS: Thirteen patients were analyzed, 9 females and 4 males, with an average age of 8.6 years (range 1 to 17 years). The diagnosis were as follows: 7 children (53.8%) had post myelomeningocele tethered spinal cord, 1 (7.7%) had hydrosyringomyelia, 1 (7.7%) presented with meningocystocele (7.7%), 1 (7.7%) had a thalamic low grade glioma, 1 (7.7%) patient presented with a dermal sinus, 1 (7.7%), 1 (7.7%) a thalamic pilocytic astrocitoma and 1 (7.7%) had spinal cord pilocitic astrocytoma. Despite worsening of their neurological status at discharge in 2 (15.4%), other 8 (61%) were unchanged neurologically, while the remaining 3 (23%) faired better than before surgery. After 8 weeks, 6 (46%) kept their previous neurological status, while the remaining 7(54%) patients improved neurologically. Two children (15.4%) presented percutaneous CSF leak as a complication, which resolved with bed rest and re-stitching of the skin. There was no complication linked to the intra-operative monitoring.
DISCUSSION/CONCLUSIONS: Recent studies demonstrate the high efectiveness of IONM in preventing worsening of neurological function following [1,2]. This small series of neurosurgical procedures, assisted with intra-operative neuromonitoring in children, revealed that the technique is safe and effective in preserving neurological function after the procedures. Soon after surgery some patients may worsen, but this is probably linked to local edema, since all of them fully recovered after 8 weeks. Larger series with different procedures at various ages is needed to corroborate the findings of the present study.

Keywords: Neurosurgery, Children, Intra-operative monitoring

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Tools for acquisition of technology and implementation of a pediatric neurosurgical unit: the role of the pediatric neurosurgeon and his interaction with society

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OBJECTIVE: Through an individual experience, lived outside the great centers of Brazil, and scarce in economic resources, demonstrate to the neurosurgical community existing means for the acquisition of necessary technology for the exercise of pediatric neurosurgery in a worthy manner [1].
MATERIALS AND METHODS: Report of actions, ordinances, partnerships and achievements related to the objective of the acquisition of technology in pediatric neurosurgery service.
RESULTS: Starting from a reality of a philanthropic pediatric hospital seen as the regional reference, we initially recognize minimal conditions for the practice of the neurosurgical specialty. Tracing a long-term strategy, various resources can be achieved throughout several sources. Along with philanthropic social organizations, we received the donation of craniotome and drill. A local company interested in philanthropy purchases a head holder. Throughout meetings with representatives of the prosecution office, a series of actions are taken that culminate in the purchase of a neuroendoscope by the municipality and the assignment of a surgical microscope to the service. Finally, in the hearing with the judiciary, a lease agreement is granted as well as a private initiative for the use of a neuronavigation system and an ultrasonic aspirator.
DISCUSSION/CONCLUSIONS: The neurosurgeon who intends to exercise pediatric neurosurgery, with a minimum of quality, depends on technology [2]. In several places with a large population of patients it is necessary to find means of acquiring it. Little of this content is taught in the technical specialization. Knowing to use the laws of the public health system and interacting ethically and professionally with certain actors in society, the professional can create a suitable environment for the resolution of various cases in which he will act.

Keywords: Pediatric neurosurgery, Technology, Public health system

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Miscellanea

Clinical and topographic profile of brain aneurysms in children and teenagers

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OBJECTIVE: To describe and report the Clinical and topographic profile of brain aneurysms in children and adolescents admitted to a referral hospital in neurosurgery in the city of Campina Grande-PB.
MATERIAL AND METHODS: A retrospective study, of descriptive character, with quantitative data approach. The sample consisted of 8 patients between 8 and 16 years of age, admitted to a referral hospital with a diagnosis of subarachnoid hemorrhage during the period from 2014 to 2016.
RESULTS: In the sample, the female sex prevailed 75% (n = 6) in relation to the male sex 25% (n = 2). As for the clinical profile, had heart disease 12.5% (n = 1), sickle cell anemia 12.5% (n = 1) and Marfan syndrome 12.5% (n = 1), the remaining 62.5% (n = 5) had no pathological history. Regarding the topography of the aneurysms, 37.5% (n = 3) was in the posterior communicating artery, 50% (n = 4) in the carotid bifurcation and 12.5% (n = 1) in the middle cerebral artery, being the left side 50% (n = 4) affected in the same proportion as the right side 50% (n = 4). The size of aneurysms varied between 7mm and 15mm. They were surgically treated a total of 62.5% (n = 5) and died 37.5% (n = 3) of individuals.
DISCUSSION/CONCLUSIONS: Among cerebrovascular disease of childhood, the haemorrhages of the central nervous system occur in 45% of cases. Aneurysms are among the leading causes of hemorrhagic stroke in children and teenagers, with subarachnoid hemorrhage being the most common prodrome of intracranial aneurysms. Early diagnosis and treatment prevents sequelae and promotes quality of life. The choice for conservative or endovascular treatment depends on the number, location, dimensions, anatomy of the vessels and the wall of the aneurysms in this age group. The microsurgical approach needs to be very cautious in order to avoid negative outcomes such as aneurysm rupture and intraoperative death.

Keywords: Intracranial aneurysm, Subarachnoid hemorrhage, Hemorrhagic stroke

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Endovascular treatment of cerebral arteriovenous malformations in a pediatric population

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OBJECTIVE: To analyze the treatment and characteristics of cerebral arteriovenous malformations (AVMs) in patients below the age of 18 years.
MATERIAL AND METHODS: Retrospective observational study performed on the database analysis of a Neurosurgery reference service throughout an eight years period.
RESULTS: Eleven patients younger than 18 years with an AVM diagnosis were analyzed. The endovascular embolization was performed in a single session in 36.4% (n = 4) of the cases, two sessions in 27.3% (n = 3), four sessions in 18.1% (n = 2) and three and five sessions both with 9.1% (n = 1) each. Regarding gender, females accounted for 54.5% (n = 6) and males for 45.5% (n = 5). The average age of the patients was 14 years (0.5-18 years). Chronic headache was present in 72.7% of the cases (n = 8), epilepsy in 45.4% (n = 5), hemorrhage in 45.4% (n = 5) and focal neurological deficit in 18.2% (n = 2). Regarding Spetzler-Martin classification, 36.4% (n = 4) of the cases were grade III, also with 36.4% (n = 4) were grade IV, 18.1% (n = 2) grade II, and 9.1% (n = 1) grade I. Regarding the location of AVMs, the occipital located cases were 27.3% (n = 3), frontal 18.1% (n = 2), and others (temporo-occipital, frontobasal, ventricular, corpus callosum and thalamic structures) equally with 9.1% of cases each (n = 1). Regarding the embolization material used, NBCA (N-butyl cyano-acrylate) was used in 65.4% (n = 17) of the procedures and Onyx 18 in 34.6% (n = 9).
CONCLUSIONS: AVMs are the most frequent cerebral vascular malformations and also present relevant morbidity and mortality, especially when they present hemorrhagic manifestations. Generally, the data found in this research were similar to those found in the literature. The endovascular treatment of AVMs at the beginning of this sample with NBCA was discontinued, since Onyx 18 showed better long-term results and cure of this pathology. The low morbimortality of the endovascular treatment allows us to treat these malformations.

Keywords: Arteriovenous malformations, Cerebral arteriovenous malformation, Embolization

Percutaneous treatment of facial infantile hemangiomas

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OBJECTIVES: To analyze the percutaneous treatment and the characteristics of facial hemangiomas in patients under the age of 18 years.
MATERIAL AND METHODS: A retrospective observational study was carried out based on a database analysis of a reference Neurosurgery service in Blumenau – Santa Catarina (Brazil), in a seven-year period.
RESULTS: Eleven cases of patients younger than 18 years with Hemangioma diagnosis were analyzed. Regarding gender, there was a higher frequency in females with 72.7% (n = 8) of cases, while males had 27.3% (n = 3). The mean age of the patients was 11 years (1.4-18 years). Regarding the location, the facial hemangioma was the most frequent with 81.8% (n = 9) of the cases, the auricular hemangiona with 9.1% (n = 1) and the fronto-temporal associated with the cervical region with 9.1% (N = 1). The treatment performed in a single session corresponded to 54.5% (n = 6) of the cases, two sessions in 18.2% (n = 2) and three sessions in 27.3% (n = 3). The most used embolizing materials were 100% Absolute Alcohol and Bleomycin Sulfate in 100% (n = 11) of the cases.
CONCLUSIONS: The data found agree with the literature, especially being the female more affected and the facial region the most frequent location. The percutaneous treatment with Absolute Alcohol associated with Bleomycin Sulfate was the treatment with better results in single embolization and also the most used material. The percutaneous treatment of these hemangiomas has reduced morbidity and mortality rate and shows results of relevant regression of these lesions, besides showing important improvement of the facial aesthetics.

Keywords: Facial hemangioma, Infantile hemangioma, Embolization

Retrospective analysis of endovascular treatment of cases of Galen's vein malformations in patients under the age of 2 years

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OBJECTIVE: To analyze the characteristics of three cases of vein of Galen malformations in patients under the age of 2 years treated by endovascular approach and its epidemiology in a reference neurosurgery service.
MATERIAL AND METHODS: Retrospective observational study performed from the database analysis of a Neurosurgery service in the city of Blumenau from November 2005 to March 2016.
RESULTS: Three cases of vein of Galen malformations were recorded, in 33.33%, there was a mural type (n = 1) malformation of the vein of Galen, and 66.66% of the choroidal type (n = 2). The mean age was 11 months (5-16 months). The predominant sex was female, with 66.66% (n = 2) of the cases, while the male sex was 33.33% (n = 1). The most common clinical findings were moderate to severe heart failure in 100% of cases (n = 3), increase in the cephalic perimeter in 66.66% (n = 2), respiratory failure in 33.33% (n = 1) and delay in the neuropsychomotor development in 33.33% (n = 1). In relation to the malformations of the vein of Galen, the aneurysms were giant size in 100% of the cases (n = 3), and were located to the left in 66.66% (n = 2). Regarding the endovascular surgical procedure, all 3 cases were treated by arterial and venous access, femoral access, embolized with NCBA (N-Butylcyanoacrylate) by arterial route and placement of Coils within the venous aneurysm. A second surgical procedure was performed in 33.33% of the cases (n = 1).
CONCLUSIONS: Vein of Galen malformations are important differential diagnoses for pathologies that lead to heart failure and increase in the cephalic perimeter. The early identification of changes by arteriography and endovascular treatment has a low morbidity and mortality rate, being important for the outcome of this pathology.

Keywords: Vein of Galen malformations, Vascular malformations, Pediatric vascular malformations

XII Brazilian Congress of Pediatric Neurosurgery

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Poster Sessions

Craniosynostosis

Case Report: Down syndrome patient, improving hear impairment after orthotic treatment for severe positional brachycephaly and plagiocephaly

João Ricardo Penteado, Cinthia Gitahy, Érica Coelho, Carolina Matarazzo, Gerd Schreen (Rio de Janeiro, Brazil)

Surgical treatment of metopic suture craniosynostosis: experience with 11 cases and technical considerations

Angelo R.S. Neto, André H.N. Toledo, Marcus V.C.T. de Paula, Fausto D.M. Morel, Henrique E.R. Arboés (Natal, Brazil)

Neuro-oncology

Determination of the profile of the main CNS tumors in pediatric population

Amauri Pereira da Silva Filho, Lais de Albuquerque Vasconcelos, Adysia Moreira Florentino da Silva, Erica de Carvalho Bandeira, Anne Jamille Ribeiro Sampaio, Ayanne Alves de Oliveira, Verônica Cavalcanti Pedrosa (Campina Grande, Brazil)

Diffuse leptomeningeal glioneuronal tumor: a biopsy dependent diagnosis.

Pedro Paulo Marchesi Mello, Melina Bertotti Moré, Marcos Rodrigo Pereira Eismann, Giulliano Silveira Bertazzo, Jean Costa Nunes, Charles Kondageski (Florianópolis, Brazil)

Lymphoma of the sellar region and leukemia: an unusual association

Thaís Moura Borille, Evelyn Della Giustina, Marília Vieira Bonsfield, Marina Piquet Sarmento, Mateus Leszczynski Guerra, Maurus Jurgen Weege Junior, Danielle de Lara (Blumenau, Brazil)

Multiform glioblastoma in children - series of cases

Amauri Pereira da Silva Filho, Ronaldo Barbosa de Farias Júnior, Luana Talita Bezerra Antunes, Adysia Moreira Florentino da Silva, Diego Henriques de Melo Lula, Lais de Albuquerque Vasconcelos, Verônica Cavalcanti Pedrosa (Campina Grande, Brazil)

Pre-puberty malign gliobastoma multiform (GBM): a case report

Maria Luiza Lacerda Ribeiro, Ana Luisa Castelo Branco Gomes, Rodolfo Vinicius Celerino, Alan Douglas de Oliveira Lima, Euliny Santos Santana, Anne Jamille Ribeiro Sampaio, Amauri Pereira da Silva Filho, Verônica Cavalcanti Pedrosa, Thiago Farrant Braz Pedrosa (Campina Grande, Brazil)

Primary giant intracranial myeloid sarcoma: case report

Tiago P. Cavalcante, Joanna H.S.F. Correia, Tacia L.R. Ferreira, Beatriz P. Rios, Marianna R.M. Freire, Rilton M. Morais (Aracaju, Brazil)

Hydrocephalus

Causes of hydrocephalus in children at a referral hospital in neurosurgery

Keyvid dos Santos Pereira, Tiago Farrant Braz Pedrosa, Alan Dolglas de Oliveira Lima, Clarisse Alves de Carvalho, Verônica Cavalcanti Pedrosa, Amauri Pereira da Silva Filho (Campina Grande, Brazil)

Remission of hydrocephalus after intraventricular hemorrhage in newborns – case report

Antonio Gomes Neto, Carlos Eduardo Barros Juca, Yasmin Camelo de Sales, Rafaela Barros de Menezes, Helano Luiz Gomes Barbosa (Fortaleza, Brazil)

Secondary ocular dysfunction and slit ventricle syndrome: report of two cases

Angelo R.S. Neto, Francisco A.F. Tavares, André H.N. Toledo, Bruna B.M. Silva, Larissa Q. Oliveira, Hugo L.N. Lima, Henrique E.R. Arboés (Natal, Brazil)

Post-operative transient posterior fossa sindrome in a child: case report and literature review

Luiz Severo Bem Junior, Isabella Silverio Almeida Lira, Suzana MB Serra (Recife, Brazil)

Traumatology

Post traumatic midline frontal leptomeningeal cyst (LC): a case report

Marcos R.P. Eismann, Antônio C.M. Mussi, Melina M. Bertotti, Daniel S. Sousa, Athos T.A. Athayde Jr, Pedro P.M. Mello, Giuliano S.B. Silveira, Charles Kondageski (Florianópolis, Brazil)