

have been developed recently.

Methods: During the period 2018 – 2023, 30 patient (19 males and 11 females), diagnosed with potentially unstable (SINS 9-12) and unstable (SINS 12-18) spinal metastasis in the thoraco-lumbar spine, all with significant epidural compression (ESCC 1c-3), were operated on in our clinic by one surgical team.

Circumferential decompression of thecal sac and nerve roots was achieved in all of them. Traditional long segment posterior transpedicular stabilization was done in 13 cases (group A). For the rest 17 cases a short stabilization with 4 pedicle screws and kyphoplasty at the affected level was performed (Group B). Retrospective analysis conducted.

Results: The two groups were compared in terms of neurological improvement, median survival, postoperative drop in hemoglobin levels and need of hemotransfusion. Neurological status was evaluated pre- and postoperatively with Frankel score. All patients in both groups experienced pain relief and no decline in their Frankel score after surgery. The median survival time was 12 months for group A and 18 months for group B. The drop of hemoglobin levels on second postoperative day was 3,08g/dL in group A and 2,17g/dL in group B. Hemotransfusion was needed in 6 cases in group A and in only 1 case in group B.

Conclusions: Preserving neurological function and spinal stability, ambulation, pain control and quality of life are the goals of neurosurgical treatment of patients with spinal metastases. Short segment posterior transpedicular stabilization with kyphoplasty is a worthy alternative to traditional treatment. It provides fast recovery, less blood loss and a cost effective method of treatment of these patients.

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The Establishment and Initial Results of Whole Genome Sequencing Service for Meningiomas in a Single UK Centre

Daniel Fountain^{1,2}, Maite Cabes³, Joana Ribeiro³, Ellen Higgs³, Jonathan Williams³, Sanjeeva Jeyaretna¹. ¹ Oxford University Hospitals NHS Foundation Trust, Oxford, United Kingdom; ² The MRC Weatherall Institute of Molecular Medicine, University of Oxford, Oxford, United Kingdom; ³ Oxford Genetics Laboratories, Oxford University Hospitals NHS Foundation Trust, Oxford, United Kingdom

Oral e-Poster Presentations - Booth 3: Skull Base 1 (Meningiomas & Schwannomas), October 15, 2024, 4:40 PM - 5:20 PM

Whole Genome Sequencing (WGS) is a pivotal investigation in the advent of molecular diagnostics for brain tumours, both for stratification of disease outcome but also for future recruitment to clinical trials of targeted treatments for meningioma.

Methods: We established a WGS service with the multidisciplinary team and recruited 39 participants undergoing neurosurgical treatment for meningioma in a tertiary neurosurgical centre of the United Kingdom.

Results: Of all cases, one sample failed analysis. Five were WHO grade II and three WHO grade III. Sixteen meningiomas (39%) were convexity in origin, twenty-two skull base (61%). The most common location was right frontal (7/38, 18%) followed by olfactory groove (6/38, 16%). Three meningiomas were recurrences. The most common identified pathogenic variant was in NF2 (15/38, 39%), and in all cases there was a classic loss of heterozygosity in chromosome 22q. In keeping with major molecular studies, there were two distinct groups of NF2-mutated meningioma where loss of chromosome 1p was present in all higher grades of these tumours (n=3/38, 8%). Other pathogenic variants detected include TRAF7 (n=6/38, 16%), AKT1 (4/38, 11%), and SMO (4/38, 11%). No pathogenic variant was detected in six tumours (16%). Of these hyperdiploidy was characteristic which warrants further investigation.

Conclusions: Whole genome sequencing provides an ideal platform to establish molecular stratification of patients clinically while providing a rich resource to explore mechanisms of tumorigenesis in cases without an identified recognised mutation in meningioma, which remains a significant proportion of reported cases. Our cohort serves as a validation of existing molecular classifications and demonstrate how WGS can be incorporated as part of routine clinical care in patients undergoing neurosurgical treatment of meningioma

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Minimally invasive posterior approach for surgical treatment of craniocervical junction meningiomas: a single center experience

Stanislav Kaprovoy¹, Nikolay Kononov¹. ¹ Burdenko Neurosurgical Center, Moscow, Russian Federation

Oral e-Poster Presentations - Booth 3: Spine 7 (Tumors), October 15, 2024, 12:40 PM - 2:10 PM

Background: Surgical treatment of extramedullary tumors affecting the region of the craniocervical junction is one of the most difficult problems in modern neurosurgery. Despite the extensive and comprehensive development of this problem, a single universal approach to the surgical treatment of this nosology of neoplasms has not been formed.

Methods: At the Burdenko Neurosurgical Center in the period from 2016 to 2021, 61 patients (13 men, 48 women) underwent surgical removal of meningiomas of the craniocervical junction. The mean age of the patients was 58 years (40-66 years). The patients were divided into 2 groups: group I consisted of 32 patients operated on with the classical open surgical approach; Group II consisted of 29 patients operated on with a minimally invasive surgical approach. The Frenkel, Karnofsky, VAS, neurological status and control MRI scales were used to assess patient outcomes.

Results: Patients in group II postoperatively had lower VAS scores (average difference between groups was 4 points), lower need for postoperative analgesia, shorter hospital stay (average hospital stay for group I - 6 days, for group II - 3 days) with a similar percentage of radical removal and Frenkel scale indicators.

Conclusions: Minimally invasive surgical approach in the treatment of craniocervical junction meningiomas allows for complete tumor resection with lower intraoperative soft tissue and muscle trauma based on postoperative MRI findings, lower postoperative pain, lower analgesic consumption, and shorter hospital stay compared to classical open surgery.

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Management of perimesencephalic non-aneurysmal subarachnoid hemorrhage: results of an EANS survey

Christina Wolfert¹, Björn Sommer¹, Andreas Raabe², Ehab Shiban¹.

¹ Department of Neurosurgery, University Hospital Augsburg, Germany;

² Department of Neurosurgery, Inselspital Bern, Switzerland

Oral e-Poster Presentations - Booth 1: Vascular 2, October 15, 2024, 12:40 PM - 2:10 PM

Background: Based on the current guidelines, there is no clear consensus on best clinical management modalities concerning cerebral vasospasm prophylaxis (CVP) and follow-up imaging for perimesencephalic non-aneurysmal subarachnoid hemorrhage (NASAH). This survey aims to evaluate the incidence of NASAH patients treated annually as well as the estimated complication rate.

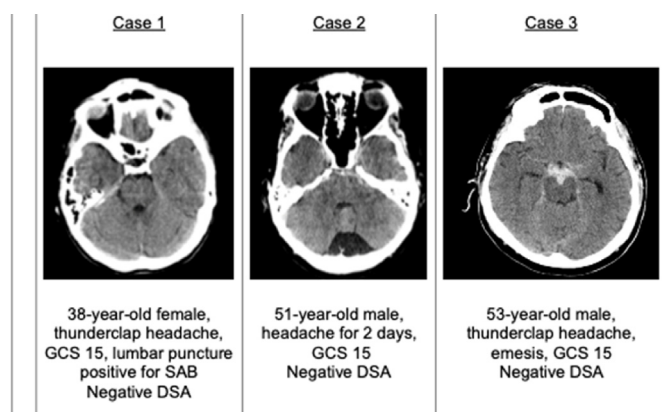
Methods: The survey was conducted on an online platform and distributed through the Vascular Section of the European Association of Neurosurgical Societies (EANS). General information about the hospital, the employees' status and the NASAH patients' treatment were gathered. Encompassing three clinical vignettes of NASAH with the initial CT-scans, questioning the in-hospital treatment including initial observation, blood pressure management, CVP and the need for digital subtraction angiography (DSA). The case vignettes are depicted in picture 1.

Results: Thirty-two questionnaires were answered from eighteen different countries. Most questionnaires were filled out by departments located in Italy (n=6; 18.8%) and Greece (n=4; 12.5%), followed by the United Kingdom (n=3; 9.4%). The answers were most often provided from employees of University Hospitals (n=27; 84.4%). Nearly half of the departments reported an annual caseload of more than 2000 patients (n=14; 43.7%), whereof the remaining n=18 reported annual caseloads less than 2000 patients (56.3%). Up to five NASAH cases annually were reported by n=10 (31.3%), another 12 (37.4%) treat more than 20 cases in the same time period. In case of a negative DSA, a second one is performed in most of the centers (n=25; 78.1%). With regard to the three different case studies, most centers admit their patients (case 1) to the regular ward (n=17, 51.5%), while only n=9 (27.3%) in the third case. Non-invasive

blood pressure management is performed in n=24 (72.7%) in the first case, compared to n=18 (54.5%) in the third. In the third case, most centers perform a CVP (n=15; 45.5%), in comparison to n=8 (24.2%) in the first case.

Conclusions: This study confirms the inconclusive treatment of NASAH throughout the EANS members. Furthermore, it depicts that the amount of hyper-density in the first native CT scan influences the treatment decision. However, clear intercontinental differences cannot be worked out based on the low numbers.

Optional Image



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Clip-first policy in aneurysmal subarachnoid hemorrhage – an European center experience

Rodrigo Batata¹, Sérgio Sousa¹, João Monteiro Silva¹, Vasco Sá Pinto¹, Tiago Ribeiro da Costa¹, Armindo Fernandes¹, João Fernandes¹, Eduardo Cunha¹, Sérgio Moreira¹, Joaquim Reis¹, Mário Gomes¹, Alfredo Calheiros¹. ¹ Centro Hospitalar Universitário De Santo António - Porto, PORTO, Portugal

Oral e-Poster Presentations - Booth 1: Vascular 2, October 15, 2024, 12:40 PM - 2:10 PM

Background: Aneurysmal subarachnoid hemorrhage (aSAH) is a devastating disease. Mortality still reaches 35% in some contemporary series. Since the publication of ISAT, there has been a shift in treatment paradigm, with most centers preferring a “coil-first” policy. Although ISAT evaluated a select cohort of aSAH patients, the generalization of its results spread well beyond its supporting evidence. BRAT was the largest single-center study to compare endovascular treatment to surgical clipping and found no differences in functional outcome. Centro Hospitalar Universitário Santo António has a “clip-first” policy in aSAH treatment. Our purpose was to evaluate our functional outcomes and compare both treatments with the reported literature.

Methods: We reviewed all surgically treated aSAH patients between 2015 and April 2023. Patients treated by endovascular coiling were also reviewed between 2019 and April 2023. Primary outcome was functional status at 6 months. Good outcome was considered for patients with a modified Rankin scale ≤ 2 .

Results: 194 patients were submitted to aneurysm clipping. Good outcome was observed in 71.9% of patients at 6 months. This result is similar to ISAT and BRAT reported outcomes. Between 2019 and the present time, surgical clipping was favored in 70% of aSAH patients. Patients in the endovascular treatment group were older (63.7 years vs 55.9 years) ($p = 0.007$), but pre-morbid functional status was comparable between the 2 groups, as well as WFNS score at admission. Posterior circulation aneurysms were preferentially assigned to endovascular treatment ($p = 0.002$). Functional outcome at 6 months showed no differences between endovascular and surgical treatments ($p = 0.571$).

Conclusions: Clip-vs-coil is an unsettled question, despite the ever-increasing tendency to favor endovascular treatment. As durability of treatment is becoming increasingly important in decision-making, a multidisciplinary team including elements with microsurgical capabilities should discuss all aSAH patients to provide patients with the best possible treatment.

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Clinical outcomes of cervical spine chordoma: a multicenter retrospective study in the Republic of Korea

Chun Kee Chung¹, Hangeul Park², Sun-Ho Lee, Professor³, Jin Hoon Park, Professor⁴, Yoon Ha, Professor⁵, Yun Sik Dho⁶, Hyun Ah Kim, Professor⁷. ¹ Seoul National University, South Korea; ² Seoul National University Hospital, South Korea; ³ Sungkyunkwan University School of Medicine, South Korea; ⁴ Asan Medical Center, Ulsan University, South Korea; ⁵ Severance Hospital, Yonsei University, South Korea; ⁶ National Cancer Center, Goyang, South Korea; ⁷ Hallym University Sacred Heart Hospital, Pyeongchon, South Korea

Oral e-Poster Presentations - Booth 3: Spine 7 (Tumors), October 15, 2024, 12:40 PM - 2:10 PM

Background: Chordoma in the cervical spine is a rare malignant tumor. Compared to the sacral or clival chordoma, cervical spine chordoma poses several major surgical challenges in dealing with vertebral artery and spinal cord. The purpose of this study is to review the outcomes of patients with cervical spine chordoma.

Methods: This study is a multicenter retrospective study involving five largest tertiary referral hospitals in the Republic of Korea. We analyzed the oncologic outcomes of 45 patients who underwent surgery, radiation, or proton therapy for cervical spine chordoma from January 1998 to March 2023.

Results: The mean age of the patients was 46.4 ± 22.0 years, with 30 males (66.7%). The mean No. of vertebrae involved was 2 (range, 2 to 3). Maximal tumor diameter was 3.9 ± 1.7 cm. (mean SD). GTR was achieved in 14 (2 en-bloc and 12 intralesional). There were 6 operative complications (13.3%). The mean follow-up period was 52.0 months (range, 31.6 to 88.2). At the last follow-up, 36 (80%) were in a stable condition and 9 (20%) were in a progressive status. Local recurrence occurred in 21 patients (46.7%) after initial treatment, and the median progression-free survival (PFS) was 28.6 months. The factor influencing local recurrence was surgery and adjuvant therapy (HR 0.31, $P = .018$). Overall survival was a median of 58.7 months, and the factors influencing OS were higher age (HR 1.05, $P = .009$) and presence of distant metastasis (HR 4.30, $P = .041$).

Conclusions: For the local control of cervical spine chordoma, receiving adjuvant therapy after surgery is important, while increasing age and presence of distant metastasis are significant unfavorable factors affecting overall survival.

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The Cellular Composition of Chronic Subdural Hematoma

Thorbjørn Søren Rønn Jensen¹, Markus Harboe Olsen¹, Christina Christoffersen¹, Tina Binderup¹, Kåre Fugleholm¹. ¹ Copenhagen University Hospital Rigshospitalet, Copenhagen, Denmark

Oral e-Poster Presentations - Booth 4: Trauma and Critical Care 2, Trauma and Critical Care 3, Trauma and Critical Care 4, October 15, 2024, 12:40 PM - 2:10 PM

Background: The pathophysiology of chronic subdural hematoma (CSDH) remains to be fully understood. Basic knowledge of the composition and features of cells in the CSDH fluid may contribute to the understanding of the seemingly complex processes involved in CSDH formation and recurrence.

With this study, we identified the composition of cells and of cellular features in both systemic blood and subdural fluid from CSDH patients. We hypothesized that the cellular composition and features in the hematoma fluid may be; 1) different from that in the systemic blood; 2) different between patients with and without recurrence; 3) and different between the first and second operation in patients with recurrent CSDH.

Methods: Systemic blood and subdural hematoma fluid were collected from CSDH patients with and without recurrent CSDH at the time of primary and secondary surgery. Analyses of cells and cellular features included total number of white blood cells, erythroblasts, reticulocytes, platelets, neutrophilocytes, lymphocytes, monocytes, eosinophils, basophils, reticulocytes, immature granulocytes, mean corpuscular cell volume (MCV), mean corpuscular hemoglobin, mean corpuscular hemoglobin concentration, hemoglobin and hematocrit.

Results: Of the 85 included patients, 20 patients were operated for a recurrent