

42 institutions have received Novalis Certification. A further 140 certification applications are pending. Two sites have been recertified, with 4 more in process this year. Analysis of review outcomes identified improved documentation of procedures as a frequent requirement, while frequent recommendations pertain to equipment/systems QA procedures and effective use of checklists/time outs. **Conclusions:** Novalis Certification is a unique, expanding peer review program assessing safety and quality in SRS and recognizing a high caliber of practice internationally. The standards-based approach highlights outstanding requirements and provides recommendations to enhance both new and established programs.

P.099

Integrating DNA methylation profiling in brain tumour diagnosis directly changes patient oncological care

JA Zuccato (Toronto)* S Karimi (Toronto) S Mansouri (Toronto) Y Mamajian (Toronto) S Suppiah (Toronto) P Diamandis (Toronto) KD Aldape (Bethesda) G Zadeh (Toronto)

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Background: Molecular signatures are being increasingly used to classify central nervous system (CNS) tumors with incorporation into World Health Organization (WHO) classifications. A recently published genome-wide DNA methylation-based CNS tumor classifier assisted in diagnostically challenging cases. However its impact on patient care has not been reported, limiting translation to other centres. **Methods:** All 55 challenging CNS tumour diagnoses over three years underwent DNA methylation profiling. Tumor classification along with copy number variant (CNV) plot results were integrated with histopathological findings to determine final diagnoses and corresponding clinical impact was assessed. **Results:** After methylation profiling 46/55 (84%) received clinically relevant diagnostic changes, 30 (55%) with a new diagnosis or resolved differential diagnosis and 16 (29%) with clinically important molecular diagnostic or subtyping changes. WHO grade changed in 15 (27%), with two-thirds upgraded. Nine new IDH mutations in gliomas, four new molecular subtypes in medulloblastomas/ependymomas, and three false positive 1p/19q codeletions were identified. Patient care was directly changed by methylation profiling in 7/47 (15%) followed-up cases to avoid unnecessary treatment in three, insufficient treatment in three, and medically assisted death in one. **Conclusions:** This real-world use of methylation-based CNS tumor classification substantially impacts patient care for diagnostically challenging tumors and also avoids misdiagnosis-related unnecessary resource use.

P.101

Conservative management of meningiomas with a moderate to high peritumoral brain edema index: a single-institution report

H Yan (Toronto)* B Karmur (Toronto) D Jeong (Toronto) M Bernstein (Toronto)

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Background: Meningiomas are the most commonly occurring benign intracranial tumors. When presenting with peritumoral brain edema (PTBE), surgical treatment can lead to patient morbidity. This retrospective case series aims to describe the conservative

medical management of moderate to large meningiomas with large PTBE. **Methods:** Patients with suspected meningiomas greater than 2.0cm and edema index greater than 2.0 were identified by screening 3345 MRI scans between 2012-2017. Imaging analysis included MR imaging features of suspected meningiomas and clinical data was gathered from the electronic patient record (patient age, sex, patient symptoms, follow-up duration, and follow-up symptoms). **Results:** We report on 31 patients who received conservative medical management. Presenting complaints included headache, seizure, weakness; many presented asymptotically. The average follow-up time was 3.96 years. At the final follow-up appointment, 19 (61%) patients were asymptomatic. Among symptomatic patients, seizures were the most common complaint. There was no mortality reported in our cohort and the average tumor progression was 7.04cm³/year. **Conclusions:** In this retrospective report of meningioma patients with high edema index, we found that most patients remained asymptomatic or had stable symptoms after at least 1-yr follow up after medical treatment. This study provides insight around the surgical decision-making for meningiomas with large spread of edema.

P.102

Expanded endoscopic endonasal approach for orbital apex decompression

K Yang (Hamilton)* Y Ellenbogen (Hamilton)* A Algird (Hamilton) D Sommer (Hamilton) K Reddy (Hamilton)

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Background: The Endoscopic endonasal approach (EEA) has been gaining popularity in the past decade as an alternative to traditional transcranial and transorbital approaches. We have performed orbital apex decompression for a variety of pathological entities. **Methods:** We performed a retrospective chart review on patients who underwent EEA orbital apex decompression between January 1st 2010 and December 1st 2018 at McMaster University. **Results:** Eight patients underwent endoscopic endonasal orbital decompression at our center, including five male patients and three female patients. The mean age of our patients was 50.1 years. The different pathologies we treated included nasopharyngeal carcinoma, hemangioma, fibrous dysplasia, IgG4 disease, inverted papilloma, angioleiomyoma, and neuroendocrine paraganglioma. Five patients presented with visual symptoms. Postoperatively, one of these five patients improved to baseline, three had stable vision, another one had progressive visual decline despite surgical intervention. **Conclusions:** Endoscopic endonasal approach can be used as an alternative to decompress orbital apex pathologies in selected patients.