

## NEURO-ONCOLOGY

## P.140

**Radiological characteristics of brain metastases in non-small cell lung cancer relative to EGFR mutation status***O Hashmi (Norwich)\* H Younus (Norwich), L Bolton (Norwich)*

doi: 10.1017/cjn.2021.416

**Background:** Approximately 20-40% of patients with non-small cell lung cancer (NSCLC) will develop brain metastases (BM). The aim of this study was to investigate if Epidermal Growth Factor Receptor (EGFR) status of NSCLC alters the radiological appearances of BM. Also to compare differences in imaging features of BM occurring from EGFR-mutated NSCLC during treatment with Tyrosine Kinase Inhibitors (TKI) versus prior to treatment.

**Methods:** A retrospective study was performed over a 5 year period of all patients with histologically proven NSCLC with BM and known EGFR status. 72 patients met the inclusion criteria. Radiological features were reviewed as well as number, size and location of BM. **Results:** 18/72 patients had EGFR-mutated NSCLC and of these 9 presented with BM while on TKI treatment. Patients with EGFR-mutated NSCLC had statistically significant higher occurrence of multiple BM ( $p=0.029$ ) and BM in a central location ( $p=0.027$ ). BM that occurred during TKI treatment appeared smaller and with minimal surrounding oedema. **Conclusions:** Given the propensity for multiple BM in EGFR-mutated NSCLC, vigilant imaging follow up would need to be considered. BM presenting while on TKI were more subtle, especially on Computed Tomography (CT), therefore careful follow up with Magnetic Resonance Imaging (MRI) may be required.

## P.141

**Does BRAF mutation status or being on systemic therapy alter the radiological appearance of brain metastases in metastatic melanoma?***O Hashmi (Norwich)\*, H Younus (Norwich)*

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**Background:** The aim of this study is to investigate the differences in the radiological appearances of brain metastases (BM) in metastatic melanoma (MM) relative to BRAF mutation status. As well as to compare imaging differences in BM that occur prior to starting and during systemic therapy. **Methods:** A retrospective study was done over a 5 year period. Patients with MM with BM and known BRAF status were identified. 38 met the inclusion criteria. Imaging features on both Computed Tomography (CT) and Magnetic Resonance Imaging (MRI) were reviewed. **Results:** Irrespective of BRAF mutation status, BM in MM tended to have a peripheral location with 30/38 cases having BM in the cerebral cortex. BRAF positive MM had a higher frequency of irregularly enhancing BM on CT and higher occurrence of BM showing high T1 signal on MRI. BM found during systemic treatment, regardless of BRAF status, showed less surrounding oedema, were smaller and harder to spot on CT. **Conclusions:** Understanding imaging features based on genetics

could inform future management. The subtle features of BM on CT during systemic therapy means careful follow up with MRI may be indicated to confirm the diagnosis and to more accurately assess the burden of brain disease.

## NEUROIMAGING

## P.142

**Safety and Efficacy of Vascular Closure Devices in Interventional Radiological Procedures***E Kim (Winnipeg)\* B Sebastio-Goncalves (Winnipeg) A Lee (Winnipeg) S Sudarshan (Winnipeg), J Shankar (Winnipeg)*

doi: 10.1017/cjn.2021.418

**Background:** Vascular closure devices (VCDs) are routinely used in both neurovascular and vascular interventional procedures. The purpose of our study was to assess the safety and efficacy of the VCDs for diagnostic and therapeutic neurovascular and vascular procedures. **Methods:** The study was approved by the University of Manitoba research ethics board. A retrospective review was conducted of the database between January 2017 and December 2019. The data was collected from the Picture Archiving and Communication System (PACS) and collected in an excel spreadsheet. Patient demographics and clinical information was collected. Descriptive statistics and chi-squared tests were performed using STATA 13 software. A  $p<0.05$  was considered significant. **Results:** VCD was used in a total of 2072 patients. VCDs were successfully deployed in 94% with 6% failure. Immediate perioperative complications were seen in 6.2% patients. The complication rates were significantly ( $p=0.025$ ) associated with the type of procedure. Complications were seen significantly ( $p=0.044$ ) higher in outpatients compared to inpatients and those from emergency room. **Conclusions:** VCDs were successfully deployed in 96VCDs were successfully deployed in 94% of the patient with 6% perioperative complications. Most of the complications were minor and complications were more commonly associated with outpatients procedures and with diagnostic vascular procedures.

## NEUROSCIENCE EDUCATION

## P.143

**How well can neuroradiologists localize clinical signs?***C Curtis (Calgary)\*, A Pauranik (Calgary)*

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**Background:** A basic understanding of localization for a given set of focal neurological deficits is essential for accurate acquisition and interpretation of neuroimaging. Relying on often-limited clinical information, neuroradiologists must choose the most appropriate imaging modality and tailor a study to best identify the culprit lesion to allow for accurate interpretation. **Methods:** A multiple-choice quiz was designed including clinical vignettes localizing to lesions within the central (CNS) and

peripheral nervous systems (PNS). The quiz was pilot-tested and refined before distribution as an electronic survey to practicing neuroradiologists and fellows within newsletters from the American Society for Neuroradiology and Canadian Neurological Sciences Federation. **Results:** The quiz was begun by 45 neuroradiologists and completed in its entirety by 22. Most respondents were working at urban academic/teaching hospitals(81%) in the USA(42%). The majority (90%) report no clinical neurology rotation during their training. Respondents identified a high proportion (88%) of correct answers in questions about brainstem localizations. Fewer correct answers were selected in questions describing seizure semiology (44%) or flaccid weakness (59%). **Conclusions:** The small size of our study limits interpretation and generalizability of the findings. Identification of a potential gap in neuroradiology education relating to localization of more complex CNS and PNS presentations merits further exploration.

## NEUROVASCULAR, STROKE AND NEUROINTERVENTIONAL

### P.144

#### Patient-relevant deficit dictates EVT decision-making in low NIHSS patients with medium vessel occlusion stroke

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**Background:** There are no recommendations regarding endovascular treatment (EVT) for patients with acute ischemic stroke (AIS) due to primary medium vessel occlusion (MeVO). The aim of this study was to examine the willingness to perform EVT among stroke physicians in patients with mild, yet personally-disabling deficits due to MeVO. **Methods:** In an international survey consisting of 4 cases of primary MeVOs, participants were asked whether the presence of personally-disabling deficits would influence their decision-making for EVT despite the patients having low NIHSS scores. Decision rates were calculated based on physician characteristics. Clustered univariable logistic regression was performed. **Results:** 366 participants from 44 countries provided 2562 answers. 56.9% opted to perform EVT in scenarios in which the deficit was relevant to the patient's profession versus 41.0% in which no information regarding patient profession was provided (RR1.39,  $p < 0.001$ ). The largest effect sizes were seen for female participants (RR1.68, 95%CI:1.35-2.09), participants >60 years (RR1.61, 95%CI:1.23-2.10), with more neurointervention experience (RR1.60, 95%CI:1.24-2.06), and who personally performed >100 EVTs per year (RR1.63, 95%CI:1.22-2.17). **Conclusions:** The presence of a patient-relevant deficit in low NIHSS AIS due to MeVO is an important factor for EVT decision-making. This may have relevance for the conduct and interpretation of low NIHSS EVT randomized trials.

### P.145

#### Perceived Limits of Endovascular Treatment for Secondary Medium Vessel Occlusion Stroke

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**Background:** Thrombus embolization during endovascular treatment (EVT) occurs in up to 9% of cases, making secondary medium-vessel occlusions (MeVOs) of particular interest to neurointerventionalists. We sought to gain insight into the current EVT approaches for secondary MeVO stroke in an international case-based survey as there are currently no clear recommendations for EVT in these patients. **Methods:** Participants were presented with three secondary MeVO cases, each consisting of three case-vignettes with changes in patient neurological status (improvement, no change, unable to assess). Clustered multivariable logistic regression analyses were used to assess factors influencing the decision to treat. **Results:** 366 physicians from 44 countries took part. The majority (54.1%) were in favor of EVT. Participants were more likely to treat occlusions in the anterior M2/3 (74.3%; risk ratio [RR]2.62, 95%CI:2.27-3.03) or A3 (59.7%; RR2.11, 95%CI:1.83-2.42) segment, compared to the M3/4 segment (28.3%;reference). Physicians were less likely to pursue EVT in patients with neurological improvement (49.9% versus 57.0%; RR0.88, 95%CI:0.83-0.92). Interventionalists and more experienced physicians were more likely to treat secondary MeVOs. **Conclusions:** Physician's willingness to treat secondary MeVOs endovascularly is limited and varies per occlusion location and change in neurological status. More evidence on the safety and efficacy of EVT for secondary MeVO stroke is needed.

### P.146

#### Non-contrast CT markers of intracerebral hemorrhage expansion: a predictive accuracy and reliability study

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**Background:** We evaluated (1) the predictive accuracy and (2) multi-observer reliability of non-contrast CT markers of hematoma expansion (HE). **Methods:** In 124 patients with spontaneous intracerebral hemorrhage, two investigators documented the presence of six density (Barras density, hypodensity, black hole, swirl, blend, fluid level) and three shape (Barras shape, island, satellite) expansion markers, with discrepancies resolved by a third rater. We defined HE