

P.121**Bridging the evidence gap: RAG-enabled LLMs in neuroimaging decision support***N Dietrich (Toronto)* B Stubbett (London)*

doi: 10.1017/cjn.2025.10274

Background: Large language models (LLMs) offer potential for clinical decision support but may not fully adhere to current guidelines. Retrieval-augmented generation (RAG) may address this gap by dynamically incorporating external knowledge. This study evaluated LLM adherence with and without RAG to Canadian neuroimaging guidelines. **Methods:** A novel RAG framework was developed that integrated Canadian Association of Radiologists (CAR) Diagnostic Imaging Referral Guidelines with GPT-4o and o1 models. Clinical scenarios were curated to represent various central nervous system conditions, such as acute stroke, subarachnoid hemorrhage, and multiple sclerosis. Models were prompted with the clinical scenarios, and responses were scored for adherence to the CAR imaging recommendations. **Results:** Overall, 300 clinical scenarios were used to prompt each model. Adherence rates were 83.8% for GPT-4o, 94.0% for GPT-4o+RAG, 85.5% for o1, and 93.2% for o1+RAG. A Kruskal-Wallis test ($H(3)=44.1$, $p<0.001$) identified significant differences among models. Post-hoc comparisons showed RAG-enabled LLMs significantly outperformed standalone models ($p<0.001$). No significant differences were observed between GPT-4o and o1 without RAG ($p=0.531$), or between GPT-4o+RAG and o1+RAG ($p=0.532$). **Conclusions:** RAG integration significantly improved LLM adherence to Canadian neuroimaging guidelines, even when baseline models demonstrated moderate performance. Future work should validate and explore broader applications of RAG-enabled tools to advance evidence-based care.

P.122**Radiologico-pathologic heterogeneity and complexity of polymicrobial brain abscesses***AS Al Hatmi (Hamilton)* C Fong (Hamilton) L Jing (Hamilton) F Frances-Claire Eichorn (Hamilton)*

doi: 10.1017/cjn.2025.10275

Background: Polymicrobial brain abscess (PBA) is a complex infection caused by two or more pathogens and a life-threatening condition with diagnostic and therapeutic challenges. **Methods:** We retrospectively identified PBAs in 31 patients (a median of 58 years; 24 male, and 7 female) then examined their clinical, radiological and pathological characteristics. These characteristics of PBAs were compared with those of monomicrobial BAs (MBAs) in the previously reported 113 patients. **Results:** PBAs and MBAs had a few similarities such as nonspecific clinical presentations and overall similar prognosis following surgical intervention with broad-spectrum antimicrobial therapy. However, PBAs were highly heterogeneous with more complexity on MRI/CT imaging and histopathology. While PBAs were typically rim-enhancing lesions at late-stages, 30/31 (97%) of PBAs showed the lobulation of enhancing rims/walls; on MRI, 14/26

(54%) of cases demonstrated marked difference in the thickness of enhancing rim, marked difference in the degree of DWI signal, and/or marked variation in intra-lesional MRI signal. PBA histopathology was characterized by alternating early-stage and late-stage features with a combinations of 2-4 pathogens. **Conclusions:** PBAs share some features with MBAs, but they are more heterogeneous with greater complexity on imaging and histopathology. Their diagnosis and disease staging require a clinico-radiologico-pathological approach.

P.123**Decoding the brachial plexus : from fundamentals to advances - anatomy, imaging and pathologies***K Singh (Ottawa)**

doi: 10.1017/cjn.2025.10276

Background: The brachial plexus provides motor and somato-sensory innervation to the upper limb and upper chest. Evaluation of brachial plexus disease is based on history, physical examination etc but imaging plays an important role for lesion localization, characterization and its classification. Effective reporting of imaging findings requires that neuroradiologist should be familiar with the brachial plexus anatomy, relevant landmarks, the spectrum and categories of brachial plexopathies. All above objectives will be discussed in this oral presentation. **Methods:** Normal brachial plexus anatomy is assumed for five anatomic landmarks: neural foramen, interscalene triangle, lateral border of the first rib, medial border of the coracoid process, and lateral border of the pectoralis minor corresponding to level of roots, trunks, divisions, cords and terminal branches. Conventional radiography has role in evaluating bony injuries. CT has limited role. MR used for comprehensive evaluation of the brachial plexus. Causes of brachial plexopathy are divided into traumatic and nontraumatic with specific features of each. **Results:** Imaging of brachial plexus is important part of treatment planning and rehabilitation of brachial plexopathies. Confident reporting can be done by knowing basics and injury patterns. **Conclusions:** Neuroradiologist should have sound knowledge of brachial plexus imaging in order to better contribute to patient care.

NEUROTRAUMA**P.125****Value of CTneck angiography and expanded Denver Criteria in assessing blunt cerebrovascular injury (BCVI) in blunt cervical trauma, assaults, and strangulation***I Ahmed (Ottawa) N Parsa (Ottawa)* H Mahdi (Ottawa) E Portela De Oliveira (Ottawa)*

doi: 10.1017/cjn.2025.10277

Background: This study evaluates the utility of CT angiography (CTA) and the Expanded Denver Criteria (EDC) in detecting blunt cerebrovascular injuries (BCVI) in blunt cervical trauma, assaults, and strangulation. **Methods:** A retrospective review of

748 patients undergoing CTA for blunt cervical trauma, assaults, and strangulation (2013–2023) was conducted. After exclusions, 344 CTA reports were analyzed. Inclusion criteria: patients ≥ 18 years with complete medical records who underwent CTA for trauma evaluation. Exclusions: penetrating injuries, preexisting cerebrovascular abnormalities, incomplete records, or CTA not performed. Results: BCVI was identified in 38/344 cases (11%), with 55% classified as Grade I (Biff). Posterior circulation (71%) and internal carotid arteries (36.8%) were most affected. Eight BCVI cases (21%) did not meet EDC; MVCs accounted for seven. MVCs (68%) and falls (29%) were the leading causes, while no BCVIs were observed in assaults or strangulations. Conclusions: MVCs and high-impact falls pose the highest BCVI risk, warranting CTA beyond EDC indications. In contrast, CTA may be less necessary for assaults and strangulations. Further studies across trauma centers are needed to confirm these findings.

NEUROVASCULAR AND NEUROINTERVENTIONAL

P.126

Isolated intraventricular hemorrhage presenting as reversible cerebral vasoconstriction syndrome

R Moshref (London) A Alvarado Bolanos (London)*

doi: 10.1017/cjn.2025.10278

Background: Reversible cerebral vasoconstriction syndrome (RCVS) is defined clinically by headaches associated sometimes with seizures and neurological deficits, and radiologically with intermittent spasms in cerebral arteries that would resolve in 3 months. It can present with multiple bleeding patterns. Intraventricular hemorrhage (IVH) is a rare presentation for RCVS as there are 4 reported cases. **Methods:** This is a case report and review of literature. **Results:** A 36-year-old patient sought medical attention due to the acute onset of thunderclap headache. A computed tomography (CT), and CT angiogram (CTA) of his head and neck were done. It showed large IVH associated with hydrocephalus and no underlying vascular abnormalities. An external ventricular drain was placed and he was on nimodipine. A CTA was done on day 17 because he had acute global aphasia, right hemibody weakness, and right homonymous hemianopia, which showed severe diffuse intracranial stenosis involving the circle of Willis. He was taken to the angiography suite for chemical spasmolysis with verapamil. There was radiographic improvement and clinical resolution. **Conclusions:** This case highlights the rarity of RCVS presentations and further signifies the utility of intraarterial spasmolytics as an adjunct in the

diagnosis of difficult cases. Further retrospective and prospective data are needed.

P.128

Evaluation of endovascular access complexity on stroke patient's initial imaging: an agreement study

Z Tsai (Ottawa) T Rock (Ottawa) G Walker (Ottawa) A Guenego (Brussels) G Zur (Ottawa) T Nguyen (Boston) P Comby (Dijon) R Blanc (Paris) D Volders (Halifax) F Diana (Barcelona) S Escalard (Paris) S Smajda (Paris) U Hanning (Eppendorf) M Abdalkader (Boston) A Ma (Sydney) C Hawkes (Toronto) W Boisseau (Paris) L Nico (Padua) C Weyland (Aachen) G Charbonnier (Besançon) M Moehlenbruch (Heidelberg) H Masoud (Syracuse) F Clarençon (Paris) MP dos Santos (Ottawa) R Fahed (Ottawa)*

doi: 10.1017/cjn.2025.10279

Background: Neck vessel imaging is often performed in hyperacute stroke to allow neurointerventionalists to estimate access complexity. This study aimed to assess clinician agreement on catheterization strategies based on imaging in these scenarios. **Methods:** An electronic portfolio of 60 patients with acute ischemic stroke was sent to 53 clinicians. Respondents were asked: (1) the difficulty of catheterization through femoral access with a regular Vertebral catheter, (2) whether to use a Simmons or reverse-curve catheter initially, and (3) whether to consider an alternative access site. Agreement was assessed using Fleiss' Kappa statistics. **Results:** Twenty-two respondents (7 neurologists, 15 neuroradiologists) completed the survey. Overall there was slight interrater agreement ($\kappa=0.17$, 95% CI: 0.10–0.25). Clinicians with >50 cases annually had better agreement ($\kappa=0.22$) for all questions than those with fewer cases ($\kappa=0.07$). Agreement did not significantly differ by imaging modality: CTA ($\kappa=0.18$) and MRA ($\kappa=0.14$). In 40/59 cases (67.80%), at least 25% of clinicians disagreed on whether to use a Simmons or reverse-curve catheter initially. **Conclusions:** Agreement on catheterization strategies remains fair at best. Our results suggest that visual assessment of pre-procedural vessels imaging is not reliable for the estimation of endovascular access complexity.

P.129

Carotid artery coil extrusion: a rare but potential complication of endovascular coiling in post radiated neck

MB Johari (Toronto) L Alshafai (Toronto)*

doi: 10.1017/cjn.2025.10280

Background: Endovascular coiling is a minimally invasive technique for managing carotid blowout in head and neck