

79 %. Median time to LR was 17 months (range= 1.5-24). First MRI analysis showed increased T1 and T2 GTV in 47 % of lesions. Of these, 47% ultimately developed LR. All patients with LR but one presented increased GTV at 3-6 months (median 28%, range= 1; 290%) associated with reduced T/S signal ratio (median -0.16, range= -0.04; -0.7). In patients with no LR at last follow up, 21% presented increased GTV (median 4%, range= 1; 57%) always associated with increased T/S ratio (median 0.7, range: 0.5; 1.34). Decreased GTV was observed in 79% of lesions with no LR (median -13%, range= -2; -55%). Conclusion: Early volume changes seem to correlate with subsequent local failure. Patients with what may be small increases in tumor volume on the first post-SBRT MRI should be followed more closely for LR. Early T2 signal changes do not appear to correlate with LC.

#### CP10

doi:10.1017/cjn.2014.89

#### Radiosurgery for recurrent glioblastoma multiforme: A single institution experience

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Purpose: Patients presenting with recurrent glioblastoma multiforme (GBM) are challenging cases in neuro-oncology. Radiosurgery (SRS) can be considered as a treatment option at recurrence. Methods: Eighteen patients with recurrent GBM were treated with SRS at our institution between 2006 and 2013. Two-thirds of patients were male, median age at diagnosis was 52 years old. All patients had been treated previously with surgery followed by adjuvant radiation therapy of 60 Gy with concurrent temozolomide (TMZ) as first-line therapy. The majority (72%) presented with a local recurrent lesion in the same area as their presenting tumor. Median treatment volume was 7.3 cc, median marginal dose was 18 Gy prescribed at the 50% isodose line. Twelve patients received concurrent chemotherapy, mostly rescue TMZ (9). Results: Survival at 6 months was 82%. Median time to progression, local or distant, was 3 months. The local recurrence rate was 50% at 3 months, and 76% at 6 months. Only one patient developed significant toxicity with surgically resected radiation necrosis following SRS. Interestingly, this patient has now been free of recurrence for more than 3 years. Conclusions: As most second-line therapies, this series suggests that SRS, alone or in combination with temozolomide, is associated with brief rates of local disease control. However, since it is a well-tolerated procedure, its combination with other chemotherapy agents could be explored in the future for recurrent GBM.

#### CP11

doi:10.1017/cjn.2014.90

#### The factors associated with pituitary adenoma (PA) growth rate remain unclear

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Objective: To establish whether the preoperative growth and extension pattern of PA can predict postoperative growth rate and recurrence in addition to whether PA growth rate correlates with proliferation and growth factor expression. Patients: 153 consecutive patients who underwent surgery for pituitary adenoma from 1999-2011 at Toronto Western Hospital were identified. Main Outcome measures: PA growth rate was measured both pre- and postoperatively and its association to patient demographics, MRI and histopathological parameters was determined. Results: The preoperative growth rate was associated with age (p=0.0001), suprasellar growth (p=0.003), the presence of a cyst/hemorrhage (p=0.004), the MIB-1 (p=0.005), FGFR4 positivity (p=0.047), and p27 negativity (p=0.007). Following surgery, there were 34.6% residual volumes, which were associated with older age (p=0.038) and also with growth patterns including anterior, posterior, suprasellar, and CS extension (p=.001). 41.6% of these residual grew and postoperative growth rate was calculated. Pre- and postoperative growth rates were correlated (r= 0.497, p=0.026). Postoperative growth rate was associated with age (p=0.015) and gender (p=0.017). Conclusions: Our data suggest that the growth rate of PAs are influenced by various patient and tumor-specific characteristics including the age and sex of the patient, the specific subtype of PA, its hormonal activity, its immunohistochemical profile including the MIB-1 LI status, and its preponderance for different growth directions relative to the pituitary fossa. Furthermore, the pre- and postoperative PA growth rates were correlated suggesting that postoperative PA growth rates can be predicted, in part, by preoperative growth rates thus better informing postoperative outcome.

#### CP12

doi:10.1017/cjn.2014.91

#### Radiologic and histopathologic characteristics and their predictive role in clinical outcome of patients underwent resection of intracranial meningiomas

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Introduction: Meningiomas are common intracranial neoplasms with a great variability in clinical and biological behavior.

**Purpose:** The aim of this study was to identify predictive factors of biological behaviour and patient outcome after surgical resection of meningiomas. **Methodology:** We retrospectively reviewed 192 cases of meningiomas who had undergone surgical resection in the Department of Neurosurgery at Toronto Western Hospital the last 5 years. Our cohort consisted of 64 males and 128 females. Clinical, radiological, and pathological records were review for data regarding: patientssex, age, tumor grade, tumor location, presence of peritumoral edema prior to surgical resection, and tumors largest diameter as a clinical measure of tumor size. All analyses were performed using IBM SPSS 20.0. **Results:** The incidence of peritumoral edema was significantly greater in males (45/64, 73%) than in females patients (64/128, 50.0%) ( $p=0.007$ ). Meningioma location was significantly associated with presence of edema ( $p<0.001$ ); olfactory meningiomas showed the greatest incidence of edema (71.4%) followed by convexity meningiomas (60.5%), abd sphenoid wing meningiomas (72.2%) ( $p<0.001$ ). Tumors with larger extrameatal diameters (4.3cm vs. 3.5cm) were more likely to have peritumoral edema ( $p=0.001$ ). The presence of residual tumor after surgical resection was more likely in meningiomas with higher grades  $p<0.001$ . Also, as expected, the grade of tumor was significantly correlated with the incidence of recurrence. Recurrence was also found to be more common in men (15.6%) than in women (4.7%) ( $p=0.01$ ). **Conclusion:** The present study demonstrates that specific radiologic and histopathologic characteristics are significant predictors of tumor recurrence and patient outcome.

### CP13

doi:10.1017/cjn.2014.92

#### **Hematological toxicities in patients with newly diagnosed glioblastoma on concurrent radiation and temozolamide-single institution experience**

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**Background and Method:** Concurrent daily Temozolamide (TMZ) with 60 Gy radiation for 6 weeks followed by adjuvant TMZ 6 cycles is standard therapy for newly diagnosed Glioblastoma multiforme. Recently we had 2 patients with prolonged pancytopenia which prompted us to conduct a retrospective chart review of patients treated at our institution between 2011 to 2013. We recorded demographics, tumor location, comorbidities, treatment details, medications, laboratory data, transfusion and growth factor use. **Results:** Total 33 patients identified, 20 males and 13 females. Age ranged 36-73 yrs. 5 females developed significant hematological toxicities at 4 to 5 weeks during concurrent phase of treatment. Median duration was 120 days (31-160). Thrombocytopenia Grade 3-4 (5), Anemia Grade 3 (3), Neutropenia grade 3(2) grade 4(2) One patient died at 122 days with sepsis. 13 patients did not start the adjuvant TMZ, 5 due to hematological toxicity, 8 from progression. 21 patients did receive adjuvant TMZ, only 9 completed all 6 cycles. No significant hematological toxicities were noted during the adjuvant phase. All

patients completed brain radiation. **Conclusions:** 15% of our patients developed severe hematological toxicities during the concurrent phase only. Other published studies including EORTC study report 15-20 % toxicities with some occurring during adjuvant phase. We were unable to identify any predisposing factors. Careful ongoing monitoring of blood counts during the entire course of the treatment is thus recommended.

### CP14

doi:10.1017/cjn.2014.93

#### **Meningeal hemangiopericytoma: Case report and literature review**

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We describe the only case of meningeal hemangiopericytoma (MHPC) treated at our centre. 73 year old male presented with 6 month history of left leg weakness, cramping, falls and headaches. MRI of head showed 4 cm parasagittal mass, possibly meningioma. Tumor eroded through dura with invasion into superior sagittal sinus causing significant bleeding. After subtotal debulking of 80% tumor in October 2008, neurological symptoms resolved. MRI in Oct 2009 showed recurrence of tumor at resection site. Subsequently he was referred to cancer center and received radiation (60Gy in 30 fractions). Patient remains well and last evaluation in November 2013 shows no tumor progression clinically or radiologically. MHPC account for less than 2% meningeal tumors. WHO classifies these as soft tissue sarcomas of central nervous system, arising from smooth muscle perivascular pericytes of dural capillaries. Radiological features include lobulated contour, invasion of skull, absence of calcification and hyperostosis, which distinguish MHPC from meningioma. Pathological features, unlike meningioma these tumors are immunonegative for Endothelial Antigen (EMA) and GFAP with abundant pericellular reticulin and CD34 low or negative. Main treatment is surgical resection followed by external beam radiation. Local and systemic recurrences are reported in about 26 percent cases, with metastasis to lung, bone and liver. Overall survival at 5, 10, 15 years is 85, 68, 43 percent. Recurrences can occur late in 5 years to more than 20 years. Long follow up is needed.

### CP15

doi:10.1017/cjn.2014.94

#### **Lung adenocarcinoma metastasis to skull and scalp: A case report**

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