listed in the human Gene Mutation Database Cardiff, NCBI dbSNP, 1000 Genomes, Exome Variant Server or ClinVar and is a rare variant listed in gnomAD. **Conclusions:** In IMNEPD, nonsense mutations in PTRH2 appear to cause severe disease with postnatal microcephaly, neurodevelopmental regression, and ataxia with additional features of seizures, peripheral neuropathy, and pancreatic dysfunction, whereas missense mutations may produce a milder phenotype. The spectrum exhibited by our patients suggests variable expressivity with PTRH2 mutations.

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Autism-associated mutations in SHANK2 increase synaptic connectivity and dendrite complexity in human neurons

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doi: 10.1017/cjn.2018.237

Background: Heterozygous loss-of-function mutations in the synaptic scaffolding gene *SHANK2* are strongly associated with autism spectrum disorder (ASD). However, their impact on the function of human neurons is unknown. Derivation of induced pluripotent stem cells (iPSC) from affected individuals permits generation of live neurons to answer this question. **Methods:** We generated iPSCs by reprogramming dermal fibroblasts of neurotypic and ASD-affected donors. To isolate the effect of *SHANK2*, we used CRISPR/Cas9 to knock out *SHANK2* in control iPSCs and correct a heterozygous nonsense mutation in ASD-affected donor iPSCs. We then derived cortical neurons from SOX1+ neural precursor cells differentiated from these iPSCs. Using a novel assay that overcomes line-to-line variability, we compared neuronal morphology, total synapse number, and electrophysiological properties between SHANK2 mutants and controls. **Results:** Relative to controls, *SHANK2* mutant neurons have increased dendrite complexity, dendrite length, total synapse number (1.5-2-fold), and spontaneous excitatory postsynaptic current (sEPSC) frequency (3-7.6-fold). **Conclusions:** ASD-associated heterozygous loss-of-function mutations in *SHANK2* increase synaptic connectivity among human neurons by increasing synapse number and sEPSC frequency. This is partially supported by increased dendrite length and complexity, providing evidence that SHANK2 functions as a suppressor of dendrite branching during neurodevelopment.

Spine and Peripheral Nerve surgery

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Quantifying potential sources of delay in surgical management of cervical spondylotic myelopathy

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doi: 10.1017/cjn.2018.238

Background: Cervical spondylotic myelopathy is a degenerative condition with a variable clinical course. We aim to quantify the sources of potential delay in management and understand how the timing of these events may affect quality of life measures. **Methods:** The Canadian Spine Outcomes Research Network Registry was used to identify patients older than 18 years of age and have received cervical decompression surgery from January 1, 2013 to March 1, 2016. The primary outcome was the Short Form-12 Physical Component Score at 12-month follow-up. Four time groups were identified: 1) duration of symptoms, 2) time awaiting surgical consult, 3) time spent monitoring symptoms, and 4) time awaiting surgery. Multivariate regression was used for analysis. **Results:** A total of 208 patients were identified. The mean age was 59.5 years. 61.53% of patients had symptoms for >12 months at initial consult. Mean time awaiting surgical consult, monitoring symptoms, and awaiting surgery was 77.2, 60.9, and 46.9 days, respectively. Time awaiting surgery (β=-0.032, p=0.04) was a significant factor for change in Physical Component Score. **Conclusions:** We found time awaiting surgery to be a significant factor on PSC score at 12-month follow-up. Increased time awaiting surgery may result in negative impacts on quality of life outcomes.

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Use of intravenous fluorescein for intra-operative localization of an intramedullary spinal cord tumour; a technical note

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doi: 10.1017/cjn.2018.239

Background: Localization of intramedullary spine tumors can be difficult. Various intraoperative aids have previously been described, but have limited use due to expense, complexity, and time. Intravenous fluorescein is an inexpensive and safe drug that may be useful in the localization of such tumors. We describe a technical description of the intra-operative use of fluorescein as an aid in the localization of a intramedullary spine tumour. **Methods:** In this technical report, the authors present a case example of a 56 year old man presenting with a intramedullary tumor at the level of C5/6. Intraoperatively intravenous Fluorescein was administered and the Pentero microscope BLUE™ 400 feature was used to accurately identify the lesion. Multiple biopsies of the fluorescent tissue were taken. **Results:** After 10 cardiac cycles the fluorescent coloring was isolated to what was thought to be the intramedullary lesion. Our myelotomy was made based on the uptake of this fluorescent coloring and multiple biopsies were taken. Final pathology confirmed this tissue was consistent with a high grade glioma. **Conclusions:** The use of intravenous fluorescein was a valuable aid in localizing the lesion and minimizing the size of our myelotomy. The use of intravenous