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Paraplegia Following an Intrathecal Hydromorphone and Bupivacaine Pump Removal

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Paraplegia Following an Intrathecal Hydromorphone and Bupivacaine Pump Removal

Abstract
NA

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Blood and CSF cultures became positive for Pasteurella multocida. Parents reported a dog and cat in the home but denied direct contact with the neonate. However, the mother reported she sustained cat scratches and bites throughout her pregnancy, including the days up to delivery. Therefore, it is possible that the infection was incurred via vertical transmission. Given the potential for suppurative complications of neonatal bacterial meningitis, a brain MRI was obtained and was normal. The patient completed 21 days of amoxicillin and had a complete recovery. Consent was obtained to use this case for educational purposes.

**Conclusion:** Care should be taken with neonates exposed to household animals, as they are at risk for more serious and invasive Pasteurella infections. Notably, caution should also be taken with expecting mothers who are exposed to animals that are more likely to scratch or bite, as vertical transmission of Pasteurella is possible.

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### #105. Plantar Grasp Sign as a Screening Tool for Orthostatic Tremor (OT)

**Vekash Raja**, Rebecca Thompson, Danial Bhatti, Kalyan Maligreddy, Venkata Sunil Bendi, John M. Bertoni, Diego Torres-Russotto

**Program:** Neurological Sciences – Movement Disorders

**Type:** Original Research

**Background:** Orthostatic tremor (OT) is a rare neurological disorder characterized by a sensation of instability while standing. Very few clinical signs have been described for OT to date. Finding other symptoms and signs could prove valuable for this hard-to-recognize disease.

**Methods:** This protocol is part of the University of Nebraska Medical Center Orthostatic Tremor longitudinal study. It was noted that OT patients flex their toes and sometimes the foot arch while standing (Plantar Grasp). They reported doing this to “grab” the floor and improve stability. This paper analyses the diagnostic test characteristics of the patient’s self-reported Plantar Grasp, a new sign in OT.

**Results:** There were 34 OT patients (88% females) and 20 control patients (65% females). Eighty-eight percent of patients with OT reported the plantar grasp sign and none of the controls. The Plantar Grasp Sign was found to be very sensitive (88%) and extremely specific (100%) in our cohort. Non-weighted Negative Likelihood Ratio (NLR) was 0.12. And the 3% prevalence weighted NLR was so low that the negative post-test probability was close to zero (Table 1).

**Conclusion:** Due to its high sensitivity, specificity, and ideal likelihood ratio, we propose that the Plantar Grasp sign could be considered to screen patients with possible OT. Further studies are needed to determine the specificity of this sign in OT versus other balance disorders.

**Table 1. Plantar Grasp Test Characteristics**

<table>
<thead>
<tr>
<th>Plantar Grasp Sign</th>
<th>EMG Positive (OT)</th>
<th>EMG Negative (No OT)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Plantar Grasp Sign</td>
<td>TP (30)</td>
<td>FP (0)</td>
<td>30 PPV (100%)</td>
</tr>
<tr>
<td>Negative Plantar Grasp Sign</td>
<td>FN (04)</td>
<td>TN (20)</td>
<td>24 NPV (83%)</td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
<td>20</td>
<td>54</td>
</tr>
</tbody>
</table>

**Sensitivity (88%)**

**Specificity (100%)**

**PLR: to infinity**

**Accuracy (92%)**

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### #106. Application of the Karnofsky Performance Scale (KPS) in Inpatient Cancer Rehabilitation

**Justin Comer**, Samuel Bierner, Celeste Newstrom

**Program:** Physical Medicine & Rehabilitation

**Type:** Original Research

**Background:** The Karnofsky Performance Scale (KPS) is an assessment tool used in oncology to measure functional status. Functional outcome measures used in inpatient rehabilitation include functional independence measure (FIM) and GG score. Using KPS in acute inpatient rehabilitation may provide a consistent method of communication between the oncology and acute rehabilitation teams.

**Methods:** Ninety-three patients were selected randomly from a database of cancer patients admitted to Madonna Rehabilitation Hospital between 7/1/2019 and 6/30/2021. Two independent observers determined the admission/discharge KPS score for each patient. Admission/discharge GG score was calculated in 63 patients and admission/discharge FIM score was calculated in 30 patients.

**Results:** Graphical analysis of length of stay (LOS) and delta KPS showed a positive correlation, but with significant scatter between 0 and 20 delta KPS score (Figure 1). Graphical analysis of LOS and delta GG score showed a positive correlation without significant scatter. For determination of initial KPS score, there was substantial agreement between each observer (kappa = 0.700). For the final KPS score at discharge, there was fair agreement (kappa = 0.304). For the difference between final and initial scores (delta KPS), there was slight agreement (kappa = 0.2).

Logistic regression showed that the only significant predictor of return to acute care was the average delta KPS with an odds ratio (95% confidence interval) of 0.845 (0.5764 - 0.934). Initial KPS score was not a significant predictor of return to acute care.

**Conclusion:** The KPS may not be the best tool for tracking functional status during inpatient rehabilitation.
**#107. Paraplegia Following an Intrathecal Hydromorphone and Bupivacaine Pump Removal**

**Joseph Fike¹, Eric Jonswold¹, Blake Farrar¹**

¹Department of Physical Medicine & Rehabilitation, College of Medicine, University of Nebraska Medical Center, Omaha, NE, USA

**Mentor:** Daniel Pierce

**Program:** Physical Medicine & Rehabilitation

**Type:** Case Report

**Background:** In addition to pain relief, intrathecal pain management improves function and quality of life, with significant patient satisfaction. This case emphasizes the significance of recognizing and managing the potential complications associated with intrathecal therapy for pain management.

**Case:** A 36-year-old female with history of T12-S1 interbody fusion and chronic back pain managed with intrathecal hydromorphone and bupivacaine had significantly reduced efficacy following a fall onto her back. Her pump was deemed fully functional and she underwent an extension of thoracolumbar fusion and pump replacement. Intraoperatively, the pump catheter was found to be broken with an underlying collection of clear fluid and fluoroscopy revealed that the pump catheter had migrated 6 cm cephalad.

Intraoperative electromyography revealed motor and sensory changes. Postoperative images confirmed catheter migration (Figure 1). Twelve days post-operation, the patient was classified as T12 AIS (American Spinal Injury Association Impairment Scale) B spinal cord injury. One-month post-operation patient was classified as L1 AIS C.

**Conclusion:** During the implantation and removal of intrathecal catheters, direct damage to the nerve roots or spinal cord itself can occur. Other mechanisms of neurological injury seen in intrathecal drug delivery systems include the development of a syrinx or even a granuloma. An injury in either of these manners, however, is unlikely in our patient given the chronicity of these complications versus the acute onset of her neurologic change. Given the growing prevalence of intrathecal pumps, physicians must understand and counsel patients on the risks associated with them regardless of the mechanism.

**Figure 1.** Pre-op vs. Post-op CT scans showing catheter migration

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**#108. Focal Cerebral Arteriopathy of Childhood and Trisomy 21**

**Salman Assad¹, Marco Gonzalez Castellon¹**

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**Mentor:** Marco Gonzalez Castellon

**Program:** Neurological Sciences - Vascular Neurology

**Type:** Case Report

**Background:** Focal cerebral arteriopathy (FCA) of childhood or adolescence is a rare disorder associated with up to one quarter of pediatric arterial ischemic stroke. Stroke recurrence in patients with FCA can occur in 25% of cases.

**Case:** We present a case of a 13-year-old girl with 21 trisomy, who developed sudden left arm and leg weakness with left facial weakness and mild dysarthria. She was not treated with recombinant tissue plasminogen activator (tPA) or a mechanical thrombectomy as she presented outside the treatment
window. Neuroimaging revealed right hemispheric embolic infarcts with focal stenosis of the right middle cerebral artery (MCA), right anterior cerebral artery (ACA) and right distal internal carotid artery (ICA) with eccentric enhancement (right-MCA) on vessel wall imaging (vWI) (Figure 1A-F). Patient had a normal transthoracic echocardiogram and hypercoagulable panel without further consideration of cerebrospinal fluid analysis. Follow up digital subtraction angiography (DSA) showed improvement of her right ACA and right distal ICA stenoses with residual focal right MCA stenosis further ruling out the possibility of unilateral moyamoya disease (UMD) (Figure 1G-H). Her left side weakness had improved without any residual disability over six months without any recurrent ischemic stroke on aspirin monotherapy.

**Conclusion:** Our patient may very possibly have an FCA-dissection type of right MCA that led to the ischemic stroke in a Trisomy 21 patient. FCA-dissection is usually not progressive and has intramural eccentric enhancement on vWI compared to progressive clinical course and concentric enhancement in unilateral UMD or FCA-inflammatory type.


Ty Anderson¹, Aaron Barksdale¹, Chad Branecki², Michael Wadman³

¹Department of Emergency Medicine, College of Medicine, University of Nebraska Medical Center, Omaha, NE, USA

**Mentor:** Aaron Barksdale

**Program:** Emergency Medicine

**Type:** Original Research

**Background:** American College of Emergency Medicine (ACEP) reports 52% of EM residencies offer rural rotations, yet a recent study suggests only 8% of emergency physicians (EPs) work in rural communities. The EM program at UNMC requires rural rotations. This qualitative study investigates practice environments of UNMC EM graduates regarding rural rotations in residency.

**Methods:** UNMC is a program with 64,000 annual ED visits. Residents are required to complete two rural rotations. A 17-question survey was sent to alumni graduated between 2007-2022. Questions identified those in rural EDs, defined as populations <50,000 and/or annual ED census <10,000 visits. Questions addressed factors prompting current work locations including number of rural rotations, family, cost of living, compensation, and lifestyle.

**Results:** Survey response was 74.5% with 100% completing a rural rotation and 89% completing multiple. Majority of respondents were male (73%) with 7.97 median years of practice, and 52% growing up rural. Thirty two percent currently work in a rural
environment with 43% at some point in their career. Notably, 33% worked in ED's with <10,000 visits. Of those working rural, rural rotations positively influenced that choice, and overall, 42% preferred rural. Eighty percent had significant others, with 57% of their partners currently working, 73% have children. Compensation affected choice for 43% whereas cost of living influenced 34%.

**Conclusion:** There are discussions in EM regarding workforce, and concerns regarding declining competitiveness of the specialty. ACEP reports 8% of EPs work in rural environments, whereas we report 32% for our study group. We conclude that exposure to rural rotations impacted choice of practice location.

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**#112. Sometimes Belly Pain Isn’t as It Seems: An Unusual Presentation of SBP**

Kate Dusseault

"Department of Family Medicine, College of Medicine, University of Nebraska Medical Center, Omaha, NE, USA"

**Mentor:** James Watson

**Program:** Family Medicine

**Type:** Case Report

**Background:** Spontaneous bacterial peritonitis (SBP) occurs when bacteria normally found in the gastrointestinal tract infects ascitic fluid. SBP occurs almost exclusively in patients with cirrhosis and ascites without a surgically treatable source of infection. Symptoms are severe abdominal pain, fever, and ileus. SBP has a high mortality rate if untreated. We present a case of SBP with symptoms only in the left inguinal hernia of a 66-year-old male with no prior history of cirrhosis.

**Case:** A 66-year-old male presented for direct admission from his primary care clinic with a one week history of left inguinal hernia pain, constipation, and unintentional weight loss. Past medical history was significant for heart failure, pancreatic cyst, kidney disease, and hypertension. He was hypertensive and tachycardic with WBC 12.8 x 10^9/L, Cr 2.89 mg/dL, lipase 88 U/L, and all other lab normal. CT abdomen/pelvis showed acute on chronic pancreatitis, moderate ascites, and left inguinal hernia without bowel or fat. He was initially treated for pancreatitis, however symptoms worsened over the next 4 days. Diagnostic paracentesis was obtained, and ceftriaxone was started for SBP.

**Conclusion:** In this case, the diagnosis of SBP was made based on ascitic fluid, however his unusual presentation caused delay in treatment. Diffuse abdominal pain in the setting of cirrhosis should raise suspicion for SBP, however, 13% of patients with SBP have no signs or symptoms of infection at the time of diagnosis. Due to increased mortality, patients with ascites should have diagnostic paracentesis performed as soon as possible even in the absence of typical exam findings.