A unique presentation of a distal lateral thigh cyst

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Study design A case of a distal lateral thigh cyst diagnosed by MRI and ultrasound.

Objective To present a unique case of a thigh cyst.

Summary of background data Cysts within the region of the knee are common conditions for which computed tomography (CT), sonography (US), and magnetic resonance imaging (MRI) are important in establishing the diagnosis. However, cysts within the distal lateral thigh have not been commonly reported.

Methods A 37-year-old male with no past medical history presented with a left thigh mass which he claimed to have had for approximately 18 months. He stated his pain was a 2/10 and localized around the mass. MRI, US, and radiographs were taken to help determine the mass which revealed several lobulated and partially septated cystic structures within the subcutaneous tissues along the lateral aspect of the left distal thigh abutting on the lateral cortical surface of the distal femur (Figs. 1, 2).

Results The patient has refused a biopsy or any surgical intervention. The left thigh cyst has remained stable and he continues to follow-up in our Clinic. His pain is well controlled with prescribed Voltaren topical gel and oral NSAIDs.

A case of an intracranial hemorrhage mimicking trigeminal neuralgia following resection of an acoustic neuroma: clinical pearl

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Introduction Acoustic neuromas are intracranial, extra-axial tumors that arise from the Schwann cell sheath of either the vestibular or cochlear nerve, accounting for approximately 80% of cerebellopontine angle tumors. Trigeminal neuralgia is a pain syndrome described as episodic, unilateral, and lancinating facial pain with pain-free intervals. Hemorrhage into a cerebellopontine angle mass after resection can and does occur. Facial pain as a presenting feature of an intracranial hemorrhage has been reported. We present a case of a re-bleed following acoustic neuroma resection that initially mimicked trigeminal neuralgia.

Case report The patient is a 59-year-old Asian male that presented to our Acute Rehabilitation Unit in June 2009 secondary to debility from an acoustic neuroma resection. Originally, the patient had a resection of a pituitary tumor in 1999 and then a resection of a right acoustic neuroma in 2002. The patient had developed a 1.2-cm recurrence of the acoustic neuroma in 2007 where he was watched with periodic MRIs per Neurosurgery. However, in May 2009, the patient was at home and experienced what he said was a “severe headache”. He was brought to the ER and a CT head showed a large hemorrhage in the cerebellopontine angle on the right within the tumor along with hemorrhage into the subdural and subarachnoid space. MRA/MRI head showed no evidence of aneurysm or vascular pathology and he was immediately treated with a ventriculostomy.

The patient then went to the OR 5 days later for craniotomy, evacuation of the hematomas, and resection of the tumor. He remained stable and a head CT showed no new hemorrhage and was thus admitted to Rehab 2 weeks later. Two weeks later, the patient developed new severe and lancinating right-sided facial pain along with numbness and increased lethargy. He was presumed to have trigeminal neuralgia and was treated with Tegretol with no relief. The patient’s pain and facial numbness persisted and a CT head showed an acute hemorrhage within the cerebellopontine angle mass with worsening hydrocephalus. He was transferred to the Neurosurgery ICU and followed closely with repeat CTs which showed evolution of the hemorrhage.

Conclusion The importance in recognizing acute neurological changes in patients cannot be overemphasized. Pain from an intracranial hemorrhage can mimic trigeminal neuralgia, however, deteriorating mental status and numbness should alert the clinician of possible neurologic insult. Acknowledging the fact that intracranial hemorrhage can be a post-operative complication following acoustic neuroma resection can help prevent delays in the diagnosis.

Demographics and outcome of spinal cord injury after interventional thoracolumbar spine procedures: a case series from 2001 to 2008 at a model spinal cord center

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techniques to minimize the risk of spinal cord injury.

To our knowledge, there is not a study describing incidence of injury or neurologic recovery.

Study design Case series

Methods Retrospective chart review of 1343 spinal cord injured patients admitted to a model spinal cord injury center acute rehabilitation hospital from years 2001 to 2008 revealed 3 cases of spinal cord injury occurring after interventional thoracolumbar spine procedures; 2 lower thoracic and 1 lumbar spinal cord injury. Parameters analyzed included: age, sex, admission ASIA scores, FIM scores, mechanism of injury, presenting symptoms and time of onset, and risk factors. Exclusion criteria included: recent spinal surgery, intravenous drug abuse, or immunosuppression medications.

Results All three of the injuries were incomplete lesions. The mechanism of injury included: epidural abscess (2), and unknown (1). Presenting symptoms included: worsening back pain; lower limb numbness, paraesthesias, weakness; and fever. Symptom onset ranged from several hours to 3 months. FIM score comparisons revealed a mean improvement of >23 points (range 10-41) upon discharge.

Conclusion Utilization of interventional spine procedures to treat pain has increased. We report catastrophic complication requiring acute inpatient SCI rehabilitation is rare without increasing incidence of thoracolumbar spinal cord injury from 2001 to 2008. This may be attributed to formal fellowship training and utilization of fluoroscopy. With 13 reported cases of thoracolumbar spinal cord injury from 1990 to 2006, we describe an additional 3 cases to describe this patient population. Additional research is needed to advocate reporting of catastrophic spinal cord injuries as complication. To our knowledge, this is the first reported case series to demonstrate a correlation between heavy white coats and somatic dysfunctions. Clinicians should be aware of this cause of pain symptoms in the healthcare setting.

The other white coat syndrome: somatic dysfunctions in medical students wearing white coats (a case series)

Authors: Maryum Rafique DO, MA, Anjuli Desai, MD, Gilbert Siu, DO, PhD, David Mason, DO, and Michael Weinik, DO

Most people usually disregard the physical demands a white coat has on the physician’s body, but instead associate the white coat with “white coat syndrome”: anxiety and hypertension. We report five-third-year medical students, three males and two females, with a median age of 27 years (range 25-30 years) who presented with headaches, neck, upper back and shoulder pain after wearing their white coats during their first month of clinical rotations. The medical student white coats were examined and weighed with average weight being 2.0 kg (1.5 to 3.3 kg). All students were examined with an osteopathic palpatory diagnosis documenting specific somatic dysfunctions by finding palpable tissue texture changes, asymmetry to motion, range of motion deficits and areas of tenderness. The students presented with a cluster of symptoms and somatic dysfunctions revealing first rib somatic dysfunction, cervical paraspinous and trapezius muscle spasms, and cervical and upper thoracic somatic dysfunctions. The student with the highest white coat weight had the most somatic dysfunctions, while the student with lowest weight had the fewest somatic dysfunctions. The students subsequently underwent osteopathic manipulative treatment, consisting of myofascial release and muscle energy with or without high velocity low amplitude manipulation. Post-osteopathic manipulative treatment the students were reexamined and found to have decreased tissue texture changes, less restriction of motion and improved range of motion accompanied by a decrease in symptoms and decreased tenderness to palpation. White coats are not commonly considered physically demanding on physicians. This is the first reported case series to demonstrate a correlation between heavy white coats and somatic dysfunctions. Clinicians should be aware of this cause of pain symptoms in the healthcare setting.

Syphilitic myelitis as a rare manifestation of syphilis: a case report

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With the introduction of penicillin, the progression of syphilis to neurosyphilis has been relatively rare. We describe a case of a 41-year-old HIV-positive African-American male with history of cocaine abuse and treated syphilis, who presented with left-sided numbness, paresthesias, weakness, and tingling of his left upper and lower limbs. He had a history of syphilis and was known to be non-compliant with treatment. He presented with left upper and lower limb weakness with decreased sensation to light touch and pinprick below the C5 level. Left-sided areflexia and decreased left lower limb proprioception were also noted. Head computed tomography showed no acute intracranial pathology; however, the MRI of the spine demonstrated spinal cord edema at C3 through T1 levels with focal spinal cord enhancement at C6. Blood and CSF tests revealed a reactive RPR/TPHA and a CSF VDRL of 1:1. The patient was diagnosed with syphilitic myelitis, a relatively uncommon cause of atraumatic spinal cord injury and a rare manifestation of syphilis. With 2 million units of intravenous penicillin G for 14 days along with rehabilitation, the patient progressed functionally to an independent level and was discharged home. Response to treatment was subsequently monitored by measuring RPR titers. Since syphilitic myelitis represents approximately 3% of all neurosyphilitic cases, diagnosing it is problematic as it mimics other causes of paresis, weakness, and parasthesias, such as stroke, acute demyelinating diseases, CNS infections, acute transverse myelitis, and spinal cord infarction. However, if syphilitic myelitis is suspected from known risk factors, then appropriate imaging and laboratory tests should be performed (treponemal tests, CSF, and MRI). Although rarely reported, this case report highlights that syphilis may lead to atraumatic spinal cord injury, and therefore this potentially treatable disease should not be overlooked.

Structural asymmetry and its relation to sports injury

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Hypothesis There is a statistical correlation between an adolescent athlete’s preseason posture and subsequent occurrence of injury. Methods/materials Adolescent athletes (N = 256) were recruited; all signed an institutionally approved informed consent form (Midwestern University IRB). At their preseason physical examination, each participant was administered an osteopathic structural examination and an orthopedic evaluation of the knee. Asymmetry measures included levelness of mastoid processes (MP), acromion (ACR), inferior angle of scapula (IASCAP), iliac crest (IC), greater trochanter (TRO), medial malleolus (MM), arch of the foot (ARFT) including flat feet (individually or bilaterally), pelvic side shift (PSS), posterior/superior iliac spine (PSIS), standing flexion test (SFT), seated flexion test (SeatFT), lateral curves present (LC) and location of their convexity (LCCNVEX). Orthopedic tests included: Trendelenburg, Lachman’s, posterior drawer, varus and valgus stress, McMurray’s. Asymmetry was recorded as (higher on the) right, left, or equal; and positive, positive and equal, or negative. The incidence of all injuries incurred by athletes was then recorded.

Results Examination revealed distinct left-positive findings for MP, ACR, TRO, ARFT, SFT, SeatFT; right-positive findings for IC and LC convexity. Measures IASCAP, MM, PSS, and PSIS were left–right equal. For the orthopedic tests, right-positive findings were 5% greater than left-positive for the Trendelenburg test; the other orthopedic tests were equal. Statistical significance was found for ACR (P < .034), MM (P < .022), and PSIS (P < .090). There were no correlations for any of the orthopedic tests with injury.

Conclusions Adolescent injuries occurring during the athletic season correlate with postural asymmetry present at the beginning of the athletic training season. If positive, these screening tests can identify high-risk subjects for sports injury, and allow appropriate measures to be taken before injury occurs. The incidence of injury as it correlates with clinically defined injury type will also continue to be followed, and is an ongoing part of this study.

Neuromuscular responses to somatic dysfunction in amputees: a pilot study

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Objective To evaluate the neuromuscular response of somatic dysfunction in amputees.

Design Cross-sectional.

Setting Urban rehabilitation hospital.

Rationale Somatic dysfunction is broadly defined as impaired structure and function of body framework components. It is diagnosed using TART criteria (Tissue texture change, Asymmetry of motion, Restriction of motion and Tenderness). Somatic dysfunction in the limb causes interneuron sensitization at spinal cord levels of the limb’s sympathetic effluent flow. Sym pathetic effluent signals originate at T5-T7 for the upper extremity (UE) and at T10-L2/3 for the lower extremity (LE). Sustained interneuron sensitization results in localized vertebral somatic dysfunction, referred to as facilitation. Central nervous system remodeling that follows amputation may affect these expected neuromuscular responses at vertebrae. No studies have yet investigated the functional abnormalities in this cohort.

Participants Amputation site distribution included: 5 right LE, 3 left LE, 2 bilateral LE, 2 quadrilateral extremity, and 1 right UE. Seven subjects were male and six subjects were female. Average subject age was 50.46 years. Average time since amputation was 3.36 years. All participants reported phantom limb pain.

Measures Somatic dysfunction was diagnosed in the upper extremity, lower extremity, spine, and pelvis using TART criteria & 39 validated standardized orthopedic screening tests. Somatic dysfunction was recorded as either present or not present and TART components were described qualitatively. The relationship between residual limb somatic dysfunction and somatic dysfunction in vertebrae was analyzed using two-tailed Pearson correlations.

Results In UE amputees, there was no correlation between UE residual limb somatic dysfunction and somatic dysfunction at T5 (r = 0, n = 3) or at T6 (r = 0.5, n = 3). Somatic dysfunction at T7 in UE amputees showed a weak negative correlation with UE residual limb somatic dysfunction (r = -0.5, n = 3). Total somatic dysfunction at T5–T7 did not correlate with total UE residual limb somatic dysfunction (r = 0, n = 3). In LE amputees, there was no correlation between LE residual limb somatic dysfunction and somatic dysfunction at T10 (r = 0.16, n = 12), T11 (r = -0.14, n = 12), L1 (r = 0.28, n = 12), or L2 (r = 0, n = 12). Somatic dysfunction at L3 showed a weak positive correlation with LE residual limb somatic dysfunction (r = 0.49, n = 12). Somatic dysfunction at T12 showed weak positive correlation with LE residual limb somatic dysfunction (r = -0.35, n = 12). Total somatic dysfunction at T10-L3 showed no correlation with total LE residual limb somatic dysfunction (r = 0.21, n = 12).

Conclusion Somatic dysfunction in amputee residual limbs, diagnosed by TART criteria, was positively correlated with expected neuromuscular responses at only one of nine vertebrae. This preliminary study documents an unexpected vertebrae facilitation response to regional musculoskeletal dysfunction in amputees.

Ischemic cerebral infarct extension secondary to treatment of hypertension caused by aortic plaques

Authors: John M. Lavelle DO, Fang Wang MD

Setting: Acute university-based inpatient rehabilitation center

Patient: 85-year-old female with a right middle cerebral artery (MCA) ischemic infarct.

Case description An 84-year-old patient with a history of hypertension (HTN) presented with left hemiplegia and facial droop. Head CT revealed hyperdensity within the right distal MCA. Echocardiogram showed atherosclerosis in the distal aortic arch with large plaques protruding into the lumen. The patient maintained elevated systolic blood pressure (SBP) of 160–200 mmHg in the left arm. Therefore, the patient was treated with amlopidine 10 mg and labetolol 200 mg. After receiving antihypertensives, the patient’s SBP in the left arm decreased to 92 mmHg and she was briefly nonresponsive. Her BP was checked in the right arm with a SBP reading of 68 mmHg. A repeat CT scan revealed extension of the right frontoparietal ischemia.

Assessment/results The patient’s BP improved with intravenous fluids and was rechecked in the right arm, revealing SBP of 130–140 mmHg. However, her left arm SBP was consistently elevated in the 160–170 mmHg. Prior to surgery she was independent with all functions and activities of daily living. After 22 days of acute rehabilitation she was discharged home with 24 h supervision and a manual wheelchair.

Discussion HTN has been associated with aortic plaques. Due to the thickening of the intimal wall, aortic plaques can cause elevated SBP. Patients with high SBP have a three-fold risk for plaques in the major arteries compared to those with lower BP. Our patient had large distal aortic arch plaques which may have contributed to the increase in SBP in her left arm disproportionately to her systemic BP. The treatment of the elevated SBP, in her left arm, led to the development of hypotension, decreased cerebral blood flow and worsening of her ischemic stroke.

Conclusion Monitoring blood pressure in bilateral upper extremities (UE) is essential. Hypotension and extension of ischemia in a patient...
with a known cerebral ischemic stroke may develop secondary to treatment of unilateral UE elevated SBP caused by aortic plaques.

Keywords Rehabilitation, Cerebral Infarct, Aortic Plaques, Hypertension

**Idiopathic hypereosinophilic syndrome in a male with mononeuritis multiplex: a case report**

By Negin Salimi, D.O

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Discussion: none

Disclosure: none

Setting: city hospital

Case: 33 year-old Chinese male brought to ER with chief complaint of difficulty ambulating. On presentation, patient reported generalized weakness, fatigue, paresthesias to both hands, pruritic rash to bilateral lower extremities of four months duration. Physical exam findings revealed macular rash extending throughout bilateral lower extremities, right foot drop, decreased sensation to light touch on the right foot, absence of radial pulse and faint dorsal pedis pulse bilaterally. Patient transferred to acute inpatient rehabilitation unit for above complaints of unknown etiology.

During his rehabilitation course the patient had recurrent episodes of hand pain and shortness of breath which prompted extensive radiographic and lab testing. CT angiography revealed bilateral brachial artery thrombosis. ABI performed indicated severe right lower extremity arterial insufficiency. MRA of the lower extremity revealed complete occlusion of popliteal artery and tibioperoneal trunk. Hematology work-up revealed significant peripheral eosinophilia and elevated total IgE level at 1700. Bone marrow biopsy showed eosinophilic hyperplasia. Electrodiagnostic studies revealed the following: no obtainable right peroneal CMAP, low right ulnar CMAP amplitude, positive sharp waves in distribution of right peroneal and right ulnar muscles. These findings with clinical correlation were indicative of mononeuritis multiplex.

Discussion Once the medical diagnosis was established and corticosteroid treatment was rendered, the patient was able to participate in therapy sessions in a step-wise, progressive manner. From a functional standpoint, he was able to ambulate with AFO and perform ADL’s with modified independence.

Conclusion Peripheral neuropathy is one of the most common neurological manifestations of hypereosinophilic syndrome. Failure to make the diagnosis of hypereosinophilic syndrome in the setting of peripheral neuropathy in a timely fashion may negatively impact a patient’s functional recovery outcome.

**HR and VO₂ on-kinetic responses to short-term endurance training**

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Previous studies have observed faster oxygen consumption (VO₂) on-kinetics after short-term endurance training. However, no studies have studied heart rate (HR) kinetics as a marker of training adaptations. The purpose of this study was to investigate the effects of a short-term training program on HR and VO₂ on-kinetics. Seven inactive and untrained subjects participated in a cycling training program (age = 23.4 ± 1.5 year; weight = 73.9 ± 7.8 kg; VO₂max = 3.303 ± 0.618 L min⁻¹). Subjects exercised at 70% of their maximal HR for 30 min on alternating days for 14 days. On-kinetics were measured before and after the training period from a single 6 min bout at 50% of the power between the ventilatory threshold and maximal VO₂. Data were averaged into 10 s bins and the data modeled using non-linear regression. To maintain consistency with the length of the phases, phase II was modeled using data from 20 to 120 s. The slow components were estimated from the differences of values at minutes 6 and 3 (Δvo₂ 6-3). Data are reported as mean ± SE.

|          | Pre-training | Post-training |
|----------|--------------|---------------|
| Phase II HR tau (s) | 24.6 ± 9.5 | 16.6 ± 6.9* |
| ΔHR6–3 (bpm) | 10.8 ± 4.0 | 10.4 ± 4.1 |
| Phase II VO₂ tau (s) | 24.8 ± 2.1 | 21.5 ± 1.1 |
| ΔVO₂ 6–3 (L min⁻¹) | 0.344 ± 0.034 | 0.255 ± 0.029* |

* P < 0.05

Phase II HR time constant (tau) was faster after training, and although the post-exercise HR was lower, the ΔHR6–3 was unaffected. Conversely, the VO₂ time constants for phase II did not differ, but the ΔVO₂ 6–3 was smaller after training. This suggests that working fibers were becoming less fatigued. In conclusion, HR kinetics are a more sensitive marker of short-term endurance training adaptation than are VO₂ kinetics.

**Establishment of normal latency values for the median and ulnar nerves**

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Introduction Definitive diagnosis of ulnar neuropathy at the elbow is clinically and electrodiagnostically challenging. There are various electrodiagnostic techniques used to diagnose this, and it remains unclear whether one technique or a combination of multiple techniques can be used to improve electrodiagnostic sensitivity.

Hypothesis We will obtain normal, temperature controlled, nerve conduction values for relevant ulnar nerve conduction studies.

Study design Normative unmasked study.

Objectives To present normative, temperature controlled nerve conduction values for ulnar nerve motor studies to the first dorsal interosseous (FDI), abductor digiti mini (ADM), and mixed median ulnar nerve action potential (NAP) difference, each performed on every subject.

Methods After obtaining IRB approval through Michigan State University, normal data was gathered at a hospital based university electrodiagnostic laboratory for nerve conduction studies (NCS) of the three techniques described above. Each of the three NCS were performed on 30 arms from 15 volunteers age 26 to 59, none with symptoms of neuropathy or radiculopathy. Temperature was controlled at ≥33°C for each stimulation site.

Results Normative data is reported as mean ± one standard deviation (mean ± SD). The mean difference between the mixed median ulnar NAP study was found to be 0.3 ± 0.2 ms. The mean conduction velocity across the elbow was 59.3 ± 6.5 m/s for the ulnar motor to FDI and 61.3 ± 5.2 m/s for the ulnar motor to ADM.

Conclusions We report normal values for these three temperature controlled tests administered on each arm of every subject. This normative data can be used in the future as reference values for the diagnosis of ulnar neuropathy at the elbow.
Comparison of three different hand-held dynamometry measurement techniques

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Context Hand-held dynamometry (HHD) is one device used to assess muscular strength. However, different techniques for HHD measurement have been reported. The ‘make’ test requires the patient to exert a maximal voluntary isometric contraction (MVIC) into a dynamometer that is held stationary by either an examiner’s hand (MTs) or using a strap (MTh) or other stable apparatus. The ‘break’ test (BT) requires the examiner to ‘break’ the MVIC produced by the patient, resulting in the measurement of eccentric force production. No study has specifically examined the differences in force production between these techniques. In addition, few studies have reported the coefficient of variation (CV) between trials using these techniques as a method to understand the reliability of data across trials. Objective To determine the reliability and differences in hip abductor muscle force production between three HHD methods. It was hypothesized that MTs would have the greatest reliability, BT would have the lowest reliability, and BT would produce the highest force, comparatively. Design Single group, repeated measures. Setting Clinical research laboratory. Patients or other participants Twelve subjects (5 males, 7 females: age: 25.2 ± 4.4 years; mass: 67.3 ± 9.9 kg) participated. All participants were injury-free and had not sustained a musculoskeletal injury within the past year. Interventions Measures of hip abductor muscle strength were made using a Lafayette HHD. For all the three techniques, patients were placed in a side-lying position and 30° of hip abduction. One strap was placed across the iliac crest and secured firmly to stabilize the pelvis. Patients grasped the edge of the treatment table to self-stabilize. The HHD was placed immediately proximal to the lateral malleolus. Testing order was counterbalanced and randomized. Five trials per technique were recorded. Each trial was measured over 4 s with 1 min of rest between trials. Main outcome measures MVIC values were normalized to subject mass (%BW). CV values were calculated between trials and expressed as percent differences. One-way, repeated-measures ANOVAs and post-hoc tests were used to determine differences, if any, between techniques (P = 0.05). Results Significant (P = 0.01) differences in force production were measured between techniques. Post-hoc analysis revealed MTh (11.92 ± 2.33% BW) and MTs (13.32 ± 1.65% BW) produced 44.12 and 37.52% less force compared to BT (21.33 ± 5.49% BW), respectively. No significant differences in force production (P = 0.55) were measured between MTs and MTh. No significant differences (P = 0.79) were measured for differences in CV between trials for any technique (MTh: CV = 7.61 ± 0.04%; MTs: CV = 7.74 ± 0.04%; BT: CV = 7.18 ± 0.05%). Conclusions Regardless of HHD technique, the CV across trials was less than 10%. BT produced, on average, 40% greater force compared to the MTs and MTh since an eccentric component of muscle contraction was involved as compared to the MVIC. The MTs and MTh methods were comparable with respect to MVIC force production. Word Count 448

Demographics and outcome of spinal cord injury after interventional cervical spine procedures: a case series from 2001 to 2008 at a model spinal cord center

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Objective Examine the incidence and characterize presentation and outcome of catastrophic spinal cord injury after cervical interventional spine procedures. Summary of background data Cervical Interventional spine procedures have increased use in recent years with few reported catastrophic spinal cord injuries as complication. To our knowledge, there is not a study describing incidence of injury or neurologic recovery. Study design Case series. Methods Retrospective chart review of 1343 spinal cord injured patients admitted to a model spinal cord injury center acute rehabilitation hospital from years 2001 to 2008 revealed 7 cases of spinal cord injury occurring after interventional cervical spine procedure. Parameters analyzed included: age, sex, admission ASIA scores, FIM scores, mechanism of injury, presenting symptoms and time of onset, and risk factors. Exclusion criteria included: recent spinal surgery, intravenous drug abuse, or immunosuppression medications. Results All seven of the injuries were incomplete lesions. Mechanism of spinal cord injury included anterior cord infarction (1), intraparenchymal injection (1), epidural abscess (2), contusion (1), epidural hematoma(1), and unknown (1). Presenting symptoms included: hypotension; respiratory distress; chest pain; upper limb numbness, paresthesias, weakness; and fever. Symptom onset ranged from minutes to 72 h after injection. FIM score comparisons revealed a mean improvement of 22 points (range 6–35) upon discharge. Conclusion Utilization of interventional spine procedures to treat pain has increased. We report catastrophic complication requiring acute inpatient SCI rehabilitation is rare without increasing incidence of cervical spinal cord injury from 2001–2008. This may be attributed to formal fellowship training and utilization of fluoroscopy. With 7 reported cases of cervical spinal cord injury from 1990–2006, we describe an additional 7 cases to describe this patient population. Additional research is needed to advocate reporting of complications and help identify patient characteristics and spine techniques to minimize the risk of spinal cord injury.

Carpal tunnel syndrome: ultrasound documentation with normal nerve conductions

By Benjamin M. Sucher, D.O

A 42-year-old male presented with upper extremity pain, numbness, and tingling, right greater than left, for the past year. Treatment with wrist braces provided some relief. Physical exam demonstrated normal findings, except for positive Tinel and Phalen tests bilaterally. Electrodagnostic study was completely normal, including supplemental testing of the median and ulnar D-4 sensory nerves, median and ulnar mixed nerves, and calculation of the combined sensory index (normal at .6 ms on the right and .5 ms on the left). Diagnostic ultrasound imaging of the wrists revealed abnormal increase in the cross-sectional area of the median nerves (12 mm2 right and 13 mm2 left; normal upper limit 11 mm2), at the level of the pisiform bone. In addition, dynamic imaging during wrist and digit extension revealed intrusion of the flexor digitorum sublimis muscle into the carpal canals with median nerve compression. This case demonstrates abnormal imaging findings with ultrasound that are typical of carpal tunnel syndrome (CTS) in light of completely normal nerve conduction studies (NCS). The cause was elucidated during dynamic studies that revealed muscle intrusion and compression of the median nerve.
CTS is typically identified by history and physical exam, and confirmed by NCS in most cases, with a very high sensitivity and specificity. However, NCS is not diagnostic in 100% of cases. This case demonstrates an unusual situation where CTS was strongly suspected but not confirmed with NCS. The diagnosis was substantiated with ultrasound, which should be considered a useful adjunct that provides median nerve imaging and may prove critical in confirming suspected nerve pathology.

Calciphylaxis disguised as phantom limb pain: a case report

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Setting Inpatient rehabilitation/hospital.

Patients 55 year-old female with left transtibial amputation with calciphylaxis confirmed by biopsy of her residual limb. 63 year-old female with left transfemoral amputation with clinical calciphylaxis of her residual limb.

Case description Calciphylaxis is a rare condition seen most commonly in patients with end-stage renal disease (ESRD), resulting in vascular calcifications, thrombosis, and soft tissue necrosis. Though ESRD is often a co-morbidity in vasculopathic amputation, calciphylaxis has not been reported in this population. We present two cases of calciphylaxis after lower extremity amputation from peripheral vascular disease. The patients presented with residual limb pain consistent with phantom limb pain. Both patients had normal lab values for calcium, phosphorous, and parathyroid hormone. Computed tomography imaging demonstrated non-specific soft tissue stranding. Collaboration with dermatology and nephrology was necessary for diagnosis and treatment. The calciphylaxis was appropriately managed and neither patient required amputation revision. The prosthetist played a key role in adjusting the prostheses to allow for wound healing yet maintain prosthetic use.

Assessment/results With a multi-disciplinary team approach, both patients completed an acute rehabilitation course and were able to continue using their prostheses despite open wounds and swelling from calciphylaxis in their residual limbs. Amputee patients have unique concerns when diagnosed with this disorder. We present a review of calciphylaxis, with our recommendations for management in an amputee.

Discussion Calciphylaxis carries a high morbidity and mortality rate. Prompt recognition of this disorder is critical to improve outcomes and quality of life for these patients.

Conclusion The differential of residual limb pain should be expanded to include calciphylaxis as this disorder is more common than previously reported. Careful observation and wound management is necessary to minimize morbidity and mortality.

Keywords Amputation; Calciphylaxis; Rehabilitation.