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Case Report

Clostridial Sacroiliitis in a Patient with Fecal Incontinence: A Case Report and Review of the Literature

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Introduction: Image-guided sacroiliac joint injections are frequently employed for both diagnostic and therapeutic relief of low back pain.

Case Report: An 83-year-old male with chronic lumbrosacral pain previously responsive to right sacroliac joint injections presented for repeat injection. His medical history included Parkinsonism and stool incontinence. Forty-two hours after the injection, he developed fever, dyspnea, and crepitus on the right buttock and thigh. Surgical debridement was recommended, but the family wished for comfort care only. The patient died hours later. The autopsy revealed Gram positive bacilli consistent with *Clostridial* myonecrosis.

Discussion: Pyogenic sacroiliitis is rare and usually occurs in the setting of trauma, drug abuse, or extraspinal infections. Joint infections with *Clostridium* have been reported after traumatic events including puncture, surgery, and abrasions. *Clostridium* spores are resistant to chemical preparations used for skin sterilization and require high heat for destruction. Possible practice guidelines with patients that are stool incontinent include mechanical wash prior to sterile preparation and placement of an occlusive sterile dressing after injection to prevent stool contamination of the needle puncture site. As with all rare complications, large scale studies are needed to better identify risk factors to formulate practice management strategies.

Key words: Sacroiliac joint, sacroiliac joint injection, pyogenic sacroilitis, fecal incontinence, clostridium

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Spinal injections are increasingly performed procedures in the United States, with a 370% increase in epidural steroid injections and 150% increase in facet injections billed to Medicare from 1993 to 1999 (1). Recently, Manchikanti and Hirsch examined Medicare data from 1998 to 2005 demonstrating a greater than 180% increase with interventional pain techniques excluding epidurals and intraarticular injections (2). Examination of data during the same time period suggests a 448% increase in facet and sacroiliac (SI) joint injections (2). Despite the increase in the number of these injections, the incidence of infectious complications occurring after spinal injections is unknown. Large studies of these

infectious complications have yet to be published. We report the occurrence of *Clostridial* sacroiliitis following an injection of the SI joint for treatment of chronic lumbar back pain.

Case Report

An 83-year-old male nursing home resident was referred for consideration of repeat SI and posterior superior iliac spine injection. He had longstanding lumbosacral pain that was previously responsive to therapeutic fluoroscopically guided right SI joint injections. Previous injections had provided him with significant analgesia and reported improved mobility. The usual duration of effect from these injections was approximately 3 to 4 months. Earlier, trials of oral analgesics had resulted in intolerable cognitive side effects and lack of efficacy. Similarly, physical therapy had been ineffective. Past medical history was significant for severe Parkinsonism and stool incontinence. His examination was similar to previous evaluations. He had limited mobility secondary to his Parkinsonism. Examination of his low back was consistent with right SI pain with a positive FABER maneuver on the right and tenderness over the SI joint. At time of the injection, he did not exhibit constitutional symptoms suggestive of a pre-existing infection. The injection site was clean without the presence of stool, and there was no evidence of skin break down or decubitus ulcerations. The injection was performed under our standard aseptic conditions which included skin preparation using 2 ChloraPrep swabs (2% Chlorhexidine Gluconate/70% Isopropyl Alcohol, Medi-Flex, Leawood KS), sterile drapes, sterile gloves, and face masks. The skin was anesthetized with 1% lidocaine using a 30-gauge needle. Under fluoroscopic guidance, a 22-gauge Quincke spinal needle with a stylette was used to enter the SI joint. Position was confirmed with the injection of 0.25 mL of Omnipaque 180 (Nycomed Amersham, Princeton, NJ) which demonstrated an appropriate arthrogram. Next, 20 mg of triamcinolone and 3.0 mL of 0.25% bupivacaine was injected slowly into the joint for a total volume of 3.5 mL. A tender area medial to the posterior superior iliac spine was then infiltrated for a trigger point injection with a 2-inch 25 gauge needle in a fan like fashion with 4.5 mL of 0.25% bupivacaine and 20 mg of triamcinolone.

Thirty-six hours after the injection, the nursing home staff noted that the patient had become febrile and confused. This was initially treated with oral acetaminophen and ibuprofen. Six hours later he became tachypneic and developed an audible wheeze. He was transferred to the emergency department where he was immediately intubated for respiratory support. Physical evaluation demonstrated a 30 cm diameter area of erythema, ecchymosis and subcutaneous emphysema centered over the right SI joint. Laboratory evaluation revealed an elevated leukocyte count of $19.8*10^9$/L (normal 3.5 – 10.5 * 10^9/L). Surgical debridement was recommended but his family wished for comfort care only and he died 57 hours post-injection (Fig. 1).

Post mortem examination revealed a large area (38 x 27 cm) of myonecrosis of the right buttock with induration, gas formation, and skin bulla formation. Histiologic examination demonstrated Gram positive bacillus bacterial myonecrosis consistent with *Clostridial* myonecrosis (Fig. 2).

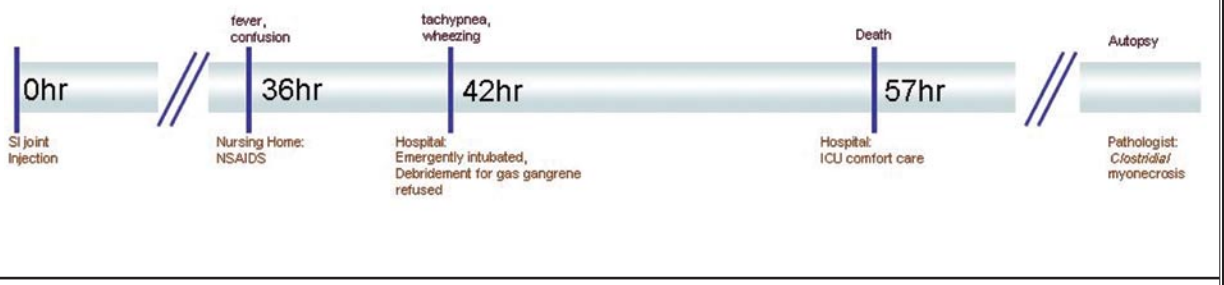

Fig.1. *Timeline from initial injection to patient's autopsy.*

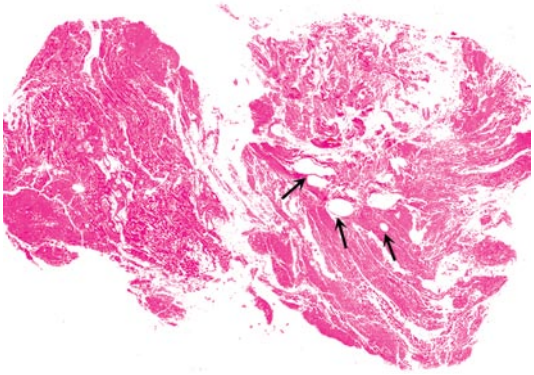

Fig. 2. *Low power photomicrograph (20X) of a gluteal muscle sample examined at autopsy demonstrating gluteal myonecrosis with gas formation. Hematoxylin and eosin stained. Arrows point to rounded deformations within the muscle due to gas bubbles.*

Methods

Literature Review

A MEDLINE (1966 – 2007) and EMBASE (1988 – 2007) literature search was conducted using the Ovid software program. Pertinent key words were sacroiliac, injection, complication, *clostridium*, and infection. The final search results were reviewed. The bibliography of each identified manuscript was searched for additional references.

Results

As our literature search did not find any previous reports of this complication, this report is the first known case of Clostridial sacroiliitis after SI joint pain injection. However, *Clostridial* infections are well established in the orthopedic literature. These *Clostridial* joint infections usually resulted from traumatic events including puncture, abrasions, and surgery (3-12). Review of Orthopedic and Rheumatology literature demonstrated 2 cases of *Clostridial* joint infection after acupuncture and injection in the knee and shoulder respectively (3,12). Only one case report of Clostridium infection following intraarticular injection was found (3). The patient's medical history included diabetes and liver failure but no history of stool incontinence. He received an intraarticular shoulder steroid injection with subsequent fatal gas gangrene. The literature search produced one known potential infectious complication following SI joint injection. The patient developed worsening pain 10 days post injection. Medical evaluation post injection did not reveal an underlying infection. CT scan 3 days later identified an abscess in the piriformis muscle region (13). The clinical picture was not consistent with gas gangrene (13).

Additionally, our review of the literature demonstrated a variety of infectious complications following facet and paraspinal injections. One hospital identified 8 meningitis cases following facet, paravertebral, spinal, and epidural injections (14). In addition, we found 6 case reports of lumbar facet injection complications to include 2 cases of septic arthritis of lumbar facet (15,16), 3 cases of paraspinal abscess (17-19), one epidural abscess (20). One of the reports of paraspinal abscess was also complicated by infective endocarditis (19). Among all case reports, the average age was 54.8 years among 8 males and 5 females. The interval between the procedure and the initial symptom onset varied from 5 to 35 days with a mean of 15 days. Initial symptoms were described as pain and tenderness (100%) and constitutional symptoms (20%). Neurologic symptoms were not present. Symptoms were not described in the meningitis series. Cultures demonstrated 5 Staphylococcus aureus, 3 Staphylococcus epidermidis, 3 sterile abscesses, and 2 negative cultures after antibiotics were given.

Discussion

To our knowledge, this is the first known case of the development of gas gangrene following a spinal injection. Review of case reports and case series of infectious complications following spinal injections demonstrates that symptoms were often slow to develop, neurologic symptoms were not reliable, and cultures demonstrated skin flora as infectious etiologies. Our case report differs when compared to previous reports of infectious complications following spinal injections. The patient presented within hours of the injection along with constitutional symptoms and a microbe of intestinal flora. The clinical course of this *Clostridium perfringens* infection is much more rapid compared to neuraxial infections secondary to skin flora.

The responsible organism in this case, *Clostridium perfringens*, is an anaerobic spore forming gram positive rod which inhabits soil and intestines of humans and animals. *Clostridium perfringens* is the most common clinical isolate, especially of soft tissue infections involving gas gangrene (21). The incubation period is usually 24 – 48 hours but can be as early as 6 hours. Treatment usually requires surgical exploration and debridement supplemented with intravenous antibiotics. Spores have been known to be resistant to chemical skin

preparations. Known methods to inactivate such spores are either through temperatures greater than 100°C for duration of 10 minutes or KOH 10% solution (21).

Although the evidence supporting the practice of corticosteroid injections to the SI joint are limited, our patient had received benefit from this procedure previously (23). He also found other therapies ineffective or intolerable. Prior to the procedure he did not display constitutional signs suggestive of a pre-existing infection nor was the injection site soiled or have evidence of skin breakdown. As with all case reports, it is impossible to identify the exact causative mechanism responsible for this complication. However, existing orthopedic literature suggests that such infections are secondary to traumatic disruption of the skin (3-12,22). We hypothesize that *Clostridium* spores were present from previous soiling from stool, and that these were introduced directly into the soft tissue by needle trauma. We also believe that the contents of the injection were incidental. The total volume used in this injection was also slightly greater than the known total volume of the SI, but was of a similar volume to our previous injections of his joint. Undoubtedly, some of the contents of the injection were deposited outside the joint capsule. Again, we believe that this also is incidental and that the causative mechanism was introduction of *Clostridium* spores into the soft tissue. If this was indeed the mechanism, then mechanical wash of the injection site prior to standard sterile preparation of patients incontinent of stool could displace spores and reduce the risk of this complication. Also placement of an occlusive sterile dressing after injection could prevent stool contamination of the needle puncture site. It should be noted that these recommendations are of the authors and that no literature is available to support these practice guidelines. It is also unknown if patients incontinent of stool that undergo low spinal injections are at increased risk of developing *Clostridium perfringens* infections. As with all rare complications, large scale studies are needed to better identify risk factors to formulate practice management strategies.

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