Juxtafacet cyst infection

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Abstract

Purpose In the realm of spinal surgery, infections have multiple etiologies and sites of origin. In this case series, we describe a juxtafacet cyst spinal infection that can often be missed or attributed to common symptomology of benign processes despite florid infection.

Methods In rare instances, the juxtafacet cyst may become infected and require direct intervention. This case report attempts to describe the prodrome leading to such a diagnosis and two different ways to manage an infected facet cyst.

Results Management of spinal infections varies due to the multiplicity of causes and location of infections. The juxtafacet cyst infection should remain a part of the differential diagnosis for low back pain as their presentation often mimics more common presenting complaints.

Conclusions In our two patient presentations, both were diabetics and had remote histories of cancer that necessitated chemotherapy or radiation therapy. They also seemingly had de novo onset of infected juxtafacet cyst. The variety of causes and presentations of spinal infections should heighten the astute surgeon to be suspicious of these entities and thus intervene early with appropriate management.

Keywords Facet · Juxtafacet · Cyst · Infection

Introduction

In the realm of spinal surgery, infections have multiple etiologies and sites of origin extending from the deep intradural region to the superficial skin. The cost of managing these infections, whether de novo or post-operative, extends beyond the initial medical and surgical intervention. They often lead to extended length of hospital stays and long-term antibiotics. There are also societal costs associated with the loss of productivity. In this case series, we describe a type of spinal infection that can often be missed or attributed to common symptomology of benign processes despite florid infection. In the degenerative spine, the prevalence of juxtafacet cyst is a known entity and often associated with trauma and rheumatoid arthritis [1–3]. The term “juxtafacet cysts” encompasses both synovial cyst, which has a synovial lining membrane and the ganglion cysts having no synovial type lining [3, 4]. The process is thought to be related to joint degeneration, escape of synovial fluid and granulation tissue into an extra-articular space. The first reported instance of intra-spinal ganglion cysts was by von Gruker in 1880. Most frequently, they are found at the L4–5 facet joint the most mobile segment of the lumbar spine [3–5]. The facet cyst can lead to a mass effect and cause neural compression leading to radiculopathy, neurogenic claudication, and myelopathy or they can extrude into the surrounding soft tissue and seemingly be less consequential [3]. In rare instances, the facet cyst may become infected and require direct intervention. Failure to identify this process could lead to delay in diagnosis, more invasive intervention, and a longer time to the resolution of disease. This case report attempts to describe the prodrome leading to such a diagnosis and two different ways to manage an infected facet cyst.

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Fig. 1 a T2 weighted axial image showing left facet cyst with pyomyositis. b T2 sagittal showing cyst with surrounding muscle edema

There is little in the literature dealing specifically with infected facet cysts. Grantham et al. [6] describe the presence of struvite in an aspirated facet cyst as an indication of previous infection. In that case report, the patient was immunocompromised secondary to recent chemotherapy treatments for lymphoma and was also on prophylactic antibiotics. No organism was obtained from the cultures but a prior infection of the facet joint with urease producing bacteria was suspected. Freedman et al. [7] described the presence of bilateral facet cyst in a diabetic who had recently received radiation therapy for prostate cancer. The two patients described in this report were diabetics and had remote histories of cancer that necessitated chemotherapy or radiation therapy.

Case presentations

Case 1

Our first patient is an 85-year-old female who presented with severe low back pain worsening over a period of approximately 5 weeks. At the initial onset of back pain, she was diagnosed with a urinary tract infection based

Fig. 2 CT of L2/3 with degenerative changes but no lytic changes seen

on urinalysis and was treated with Levaquin. Urine cultures were negative. Her medical history is significant for type II diabetes, breast cancer treated with lumpectomy

Fig. 3 Follow up MRI with resolution seen 2 months post aspiration and radiation 4 years prior without recurrence, uterine malignancy treated with hysterectomy, and coronary artery disease status post coronary bypass. Upon

examination, her motor and sensory exam showed full strength and intact, symmetric sensation, though she did have some generalized tenderness to palpation in her lumbar spine. Her hematology results at the time of presentation were WBC 4.53, ESR 66, and CRP < 5; however, her CRP increased to 6.1 approximately 2 days after initial laboratory work. An MRI without contrast was performed at the time of admission due to debilitating back pain and showed multiple small paraspinal muscle abscesses and a fluid collection at the L2/L3 facet on the left side (Fig. 1). CT imaging showed severe facet arthropathy at L2/L3 but no significant bony erosions noted (Fig. 2). Infectious disease was consulted as was interventional radiology. An aspirate was obtained of the facet cyst and cultures subsequently grew methicillin sensitive *Staphylococcus aureus* (MSSA). She was placed on Nafcillin based on culture sensitivities and continued this regimen for 4 weeks total. Her back pain resolved and subsequent MRI (Fig. 3) with and without contrast revealed improvement of the paraspinal edema and no evidence of residual abscess.

Fig. 4 Plain radiographs, AP and Lateral, with no acute abnormality

Fig. 5 T2 MR at the L5/S1 facet and just below showing cyst and pyomyositis

Case 2

Our second patient is a 54-year-old female who presents with a 5-week history of severe low back pain, primarily in the right lumbosacral region with no associated radicular pain. Symptoms were exacerbated by activity. She was started on non-steroidal anti-inflammatory medications prior to presentation with no relief. Also significant is a history of chronic urinary tract infection that was found in preoperative testing and treated with Levaquin. Her past medical history is significant for breast cancer 18 years ago with no recurrence after mastectomy and chemotherapy. Physical exam shows pain with forward flexion at about 80°. Flexion, abduction, and external rotation (FABER test) of the hip are negative but she is tender to percussion at right lumbosacral region. Her motor and sensory exam showed full strength and intact, symmetric sensation. Plain films (Fig. 4) showed recent acute abnormality. An MRI (Fig. 5) revealed a right sided L5/S1 synovial cyst concerning for infection due to the surrounding edema and

Fig. 6 CT axial cut with paraspinal muscular changes

Fig. 7 Bone scan with increase signal at L5/S1 facet on right

anterior extension possibly impinging on the nerve root. There was also posterior extension present with pyomyositis/abscess of the paraspinal musculature. A CT (Fig. 6) performed, suggested turgid paraspinal musculature on the right side. A bone scan (Fig. 7) was performed and showed increase signal in the surrounding area. Laboratory results show WBC 11.2, ESR 116, and CRP 155. She was taken to the OR where upon dissection of the paraspinal musculature, a large abscess was found (Fig. 8a, b). Further

Fig. 8 **a** Intraoperative picture showing abscess. **b** Facet joint with Penfield in the joint itself showing erosive changes

dissection revealed that the facet capsule was compromised and the facet joint required debridement. The canal was not entered due to concern for possibly causing meningitis. Cultures were sent from the OR and showed MSSA. She was placed on Vancomycin and discharged to home with home health. She has since returned to clinic and states back pain is resolved and subsequent imaging also verifies that the muscular inflammation has decreased in intensity.

Discussion

Management of spinal infections varies due to the multiplicity of causes and location of infections. The juxtafacet cyst infection should remain a part of the differential diagnosis for low back pain as their presentation often mimics more common presenting complaints. In the face of a seemingly benign juxtafacet cyst, conservative management is an option but surgical decompression is the most definitive means of treatment [4, 6, 8, 9]. The use of varying amounts of rest, anti-inflammatory agents, and immobilization with a brace has also been described [1]. The next grade of

treatment intervention has consisted of steroid injections and aspirations [1, 6, 8, 9]. This algorithm can be helpful initially and when there is a failure of resolution, the aspiration with culture and fluid analysis can be most helpful. Surgical decompression has been the most often cited definitive means of managing symptomatic juxtafacet cyst. Described methods include laminotomy and simple decompression or extensive laminectomy. The latter can require the need for stabilization depending upon the extent of decompression and the presence of other pathology [8, 10, 11].

There is a dearth of information regarding the true prevalence of facet cyst infections, thus limiting information regarding treatment. In our two patient presentations, both women had diabetes which can be considered an immunocompromised state putting them at risk for a variety of disease processes, and they both had remote histories of cancer. They also seemingly had de novo onset of infected juxtafacet cyst. The first patient was managed at an earlier point of the disease process and was able to respond effectively to aspiration of the juxtafacet cyst and IV antibiotics. The second patient was having symptoms for at least 5 weeks, and thus formed an abscess in the juxtafacet region. This was appropriately treated with surgical exploration and debridement as an aspiration of this lesion would have most likely failed. The variety of causes and presentations of spinal infections should heighten the astute surgeon to be suspicious of these entities and thus intervene early with appropriate management. Today's medical management often necessitates a multi-disciplinary approach, but with timely intervention, effective medical care can be provided.

Conflict of interest None of the authors has any potential conflict of interest.

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