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Lumbar facet rhizotomy gone wrong: A case report and literature review

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ABSTRACT: Septic arthritis of a lumbar facet joint (SALFJ) although undisputedly rare among all cases of septic arthritis reported in literature, is being diagnosedmore often due to advances and availability ofradio-imaging modalities, literature and index of suspicion. Lumbar facet rhizotomyhas been employed in the treatment of low back pain and is considered to be relatively safe with few known complications.We present a case of septic arthritis of the left L4-L5 lumbar facet joint with collection in the left erector spinae muscle in a 49 year old Malaysian woman likely attributed to lumbar facet rhizotomy.
Plain radiographs were unremarkable. She was diagnosed from MRI and positive blood cultures, which yielded Methicillin-Resistant Staphylococcus aureus (MRSA). She was treated successfully with parenteral antibiotics alone.

KEYWORDS: Septic arthritis of a lumbar facet joint, SAFJ, facet rhizotomy, spine infection.

I. INTRODUCTION

In the 1980s, septic arthritis of a facet joint (SAFJ) was considered an extremely rare condition. Since Halpinet al.reported the first case in 1987, there has only been 62 reported cases till date[1-6].The exact incidence of this condition among spinal infections is not known yet thus far. It was reported to be 0.2% from a case series of 491 spinal infection cases by David-Chaussé in 1981[7]. Muffoletto et al. reported it to be 4% among 140 pyogenic spinal infections in 2001[3].Recent case series attributed SAFJ to 4-20% of spinal infections[3,4]. The scarcity of reported cases in the past was as a result of unfamiliarity with this entity, hence its underdiagnosis.There is a slightly higher prevalence of this condition among males, with an average age group of 60 year old[3,5,7-10].

Lumbar facet interventions are commonly employed in the treatment of low back pain. Septic arthritis after a lumbar facet intervention is exceedingly rare. KornickC. et al. reported no infectious complications from 116 cases of lumbar facet rhizotomy over a 5-year period[11]. As lumbar facet interventions are gaining popularity over time, practitioners caring for patients treated with lumbar facet intervention should become cognizant of the potential devastating complication of these procedures[12]. We present a case of septic arthritis of the left L4-L5 lumbar facet joint with collection in the left erector spinae muscle in a 49 year old Malaysian lady likely attributed to lumbar facet rhizotomy.

II. CASE REPORT

A 49 year old woman with underlying non-insulin dependent Diabetes Mellitus presented with low back pain for 2 months. Her pain worsened over time and was associated with radiculopathy to bilateral lower limbs. She did not experience any lower limb weakness although her symptoms have significantly affected her activities of daily living. She denied constitutional symptoms of infection. Radiographs were unremarkable (**Figure 1 & 2**).She did not respond satisfactorily tooptimized pharmacological and physical therapy. She was offered lumbar facet rhizotomyto which she agreed.

5 days after lumbar facet rhizotomy, she complained of severe back pain to the extent that she could not ambulate. She also had associated pyrexia.Neurological examination of her bilateral lower limbs revealed some motor deficit which was more pronounced over the left side at L4 and L5 distribution of myotomes. Her Total White Blood Cell Count (TWBC) was 6.3 x 1000/UL, C-Reactive Protein (CRP) 51.7 mg/L and Erythrocyte Sedimentation Rate (ESR) 37 mm/hr. Blood culture yielded Methicillin-Resistant Staphylococcus aureus (MRSA). A Lumbosacral MRI was done and revealed Left L4-L5 facet joint septic arthritis with collection in the left erector spinae muscle(**Figure 3 & 4**).

After 17 days of parenteral high dose Cloxacillin, her clinical condition improved with full neurological recovery and was discharged with oral antibiotics to complete for 6 weeks. During

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subsequent follow-ups, other than lingering low back pain she wasdevoid of any neurological deficit and radiculopathy.

Figure 1 Lumbosacral X-ray AP view.

Figure 2 Lumbosacral X-ray Lateral view.

Figure 3T2 weighted axial view at L4/L5 level showing erosion of left facet joint at this level with hyper-intense signal in the left paravertebral muscles.

Figure 4 T2 weighted sagittal view of the Lumbosacral spine. Circled region delineates affected area with soft tissue involvement.

III. DISCUSSION

Septic arthritis of the Facet Joint (SAFJ) commonly affects patients in the 6th decade of life and has a slight male preponderance[3,5,7-10]. However, our patient is a 49 year old female which falls out of the usual epidemiology of the presenting patient. Our patient is also a diabetic which is also one of the associated conditions with SAFJ[2,5]. It can also occur from facet joint interventions, although rare like it occurred in our patient. The common presenting complaint is low back pain even at rest which was present in our

patient[2,5,13,14]. Fever is present in half of presenting patients[14,15]. Our patient is also one of the 40% of cases to experience radiculopathy and neurological deficits[4,15]. Classically, facet joint pain is exacerbated by extension of the spine due to pressure on the facet joints[16].

The facet joint is a synovial joint with limited space. Therefore, any increased collection within this space will tend to decompress itself to structures in its vicinity[1]. The infection can spread along the erector spinae and psoas muscle and mimic urological or intra-abdominal pathologies, leading to misdiagnosis or delayed diagnosis[9]. The location of our patient's facet infection followed the most preferred region reported in literature (Lumbar – 90%, followed by cervical – 9%) and was unilateral[3-5,8,10].

Our patient's blood parameters were typical of most patients who presented with SAFJ. There was elevated ESR and CRPwith no leucocytosis. Except for two patients, all patients presented with raised ESR and CRP[2,3,6]. However, only about 50% of cases show leucocytosis[2,3]. Therefore, inflammatory markers cannot be used to exclude SAFJ or it could lead to delayed diagnosis. Blood culture yielded positive in 50-80% of cases, with Staphylococcus aureus being the most common organism (70%) followed by Streptococcus sp. (16%)[4,10,16]. Our patient's blood culture yielded MRSA. Some authors suggested aspiration to be done only if blood cultures failed to yield any growth and SAFJ is still in doubt[8,17]. 75% of cases show positive tissue culture[3].

It has been known that plain radiographs are the least sensitive among imaging modalities to diagnose SAFJ. It may remain normal even over a month from onset of symptoms[4,5,8,13,18,19]. Computed Tomography (CT) is known to be more sensitive and shows changes 2 weeks earlier than plain radiographs. However, it lacks specificity[4,10,13]. The best diagnostic tool in SAFJ is still MRI for its unparalleled sensitivity and specificity[10]. It could show changes as early as merely 2 days from onset of symptoms[4,10,18,20]. We did not proceed with CT due to our high index of suspicion for SAFJ and availability of MRI readily in our centre. Affected area portrays low signal in T1-weighted images and high signal in T2-weighted images[10]. MRI ranks high in the detection of abscess formation and delineating soft tissue involvement[3,8,17,21-24]. As in **Figure 3 & 4**, it clearly shows high signal intensity over the L4/L5 facet joint and left erector spinae in T2-weighted images. It is also useful to rule out other pathologies presenting similarly, e.g. spondylodiscitis[24].

Lumbar facet interventions are commonly employed in the treatment of low back pain. Septic arthritis after a lumbar facet intervention is exceedingly rare. Kornick C. et al reported no infectious complications from 116 cases of lumbar facet rhizolysis over a 5-year period[11]. Toby N.W. reported the 5th case of infectious complication after a facet joint injection with corticosteroids[25]. As lumbar facet interventions are gaining popularity over time, practitioners caring for patients treated with lumbar facet intervention should become cognizant of the potential devastating complication of these procedures[12].

Most patients with SAFJ have been successfully treated with medical therapy alone, i.e. combined parenteral and oral targeted antibiotics for at least 6 weeks[1,3,15]. Bed rest and orthosis are useful adjuncts for pain management[4]. Surgical intervention is usually reserved for patients with infection refractory to antibiotics and those with neurological deficits[3,9]. Our patient was probably a surgical candidate due to presence of neurological deficits. However, she experienced full neurological recovery with medical therapy alone which is remarkable. She was thrilled to have been spared the possible risks and morbidities associated with surgical intervention.

IV. CONCLUSION

SAFJ is no longer a rare entity as it was believed to be due to advances in imaging modalities. However, it remains a diagnostic challenge. We must recognize facet joint intervention to be one of the causes of SAFJ, although rare especially when facet joint intervention is gaining popularity over time. Inflammatory markers should not be used to exclude SAFJ. MRI remains the gold standard for diagnosis. Most patients attain complete recovery with medical therapy alone with surgery offered only to a certain few individuals.

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