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Does Spondylodiscitis Follow All Its Parameters? - Report of Three Atypical Cases

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Abstract
Vertebral osteomyelitis or spondylodiscitis is 2-7% of osteomyelitis. Iatrogenic spondylodiscitis accounts for 1-11%. Common organism is Staphylococcus aureus and usually the mean time from onset of symptoms to diagnosis has been reported to range from 8 weeks to 3 months. Worsening back pain with reduced spinal ROM is sine qua non on iatrogenic spondylodiscitis. CRP and ESR are most important prognostic factors of treatment. In this report I present three cases one which started florid infections and its signs and symptoms much later than documented times after operation, one who developed post procedural discitis by an atypical bacteria without any definite cause of it to do it, one with indolent tunneling infection of the vertebral body after minimally invasive discectomy without any considerable alteration in clinical functioning but with alteration radiologically and biochemically.
Keywords: *Iatrogenic spondylodiscitis; Staphylococcus aureus; CRP; ESR; late infection; atypical bacteria; tunneling infection.*

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Introduction

The axial skeleton accounts for 2% to 7% of all cases of osteomyelitis [1-3]. The reported incidence of iatrogenic spondylodiscitis varies between 1% and 11% and is higher in patients who are treated without prophylactic antibiotics [4,5]. The common organisms Include Staphylococcus aureus and streptococcus species and in intravenous drug abusers gram negative bacilli. Organisms of low virulence such as coagulase-negative staphylo-cocci and Streptococcus viridians may cause indolent infections. In approximately one-third of patients the infective organisms cannot be identified.[6] Worsening pain 1 to 4 weeks after a spinal procedure is the most common symptom suggestive of infection.[7] The back pain is generally out of proportion to the physical findings[8]. Significant pain with reduced lumbar range of motion is theutmost diagnostic criteria for post procedural diskitis[8]. The incisionis usually unremarkable, and in fact, less than 10% ofsurgical incisions show signs of purulent infection with erythema, drainage, or dehiscence [7]. A rise in CRP values after the aforementioned timeframe correlates highly with the presence of an infection[9]. 3 cases would be reported here who developed post operative infection more than a year after surgery, had atypical organism but with floridinfection, had 1 and ½ years continuing sinus tract discharge after minimally invasive discectomy without biochemical marker changes or systemic signs and symptoms.

Report

Case 1

52 years male of middle class socioeconomic status had microlumbar discectomy L34 site in January 2012. He started withback pain, from March 2013, associated with lower abdomen pain, low grade fever and generalized weakness. Diagnosed locally as urinary tract infection, treated and failed, subsequently CRP tested 76mg/L, ESR 125mm, Hb 8.3Gm%., TLC 16000/mm3. USG abdomen showed left Psoas abscess. Percutaneous USG guided aspirate resulted heavy growth of Staph.Aureus. He was started intravenous antibiotics but was lost to follow up. He again returned in August 2014 when Xray showed gross destruction of end plates and body of L34. In the mean time different non spine surgeons treated him differently according to his mimicking signs and symptoms, viz. UTI, Acute abdomen, pneumonitis. According to CDC definition of SSI, Organ Space SSI-4.Standard operative protocol followed by intravenous antibiotics according to sensitivity report for 6 weeks and further 6 weeks of oral antibiotics from September 2014, and he recovered with reduced ESR 12mm, CRP 5.6mg/L, 11.2 Gm% Hb and improved clinical features, VAS(back) and VAS(leg) improved from 8/10(mean) to 4/10 (mean) after 1 year, 2/10(mean) after 2 and 3 years, ODI improved from 82% at diagnosis to 45% after 1 year, 32% after 2 years and 12% after 3 years of follow up. He started unsupported ambulation 3 days after operation. This case is pertinent in reporting that even after1 year 2 months after primary operation there can be episode of postoperative spine infection.

Case 2

38 years house wife of middle class socioeconomic status had open discectomy at L5S1 site in October 2015. Admitted in November 2015 with acute back pain, loss of motion, fever, signs and symptoms of toxicosis, local inflammation and subcutaneous abscess. CRP 24mg/L, ESR 90mm, TLC 11200 mm3, MRI showed destruction of disc space and end plates of L5S1 with retrolisthesis of L5 over S1. Aspirated pus cultured and reported to be Klebsiella Pneumonae-it was corroborated from a second laboratory and the report was same. According to CDC Classification of SSI, Organ/Space SSI-4.Lavage, debridement, vac suction secondary closure was done on second operation. Intravenous antibiotics for 6 weeks and oral antibiotics for 6 weeks were started at diagnosis. Repeatedly Klebsiella Pneumonae was the offending organism but patient showed clinical and biochemical improvement. As the L5S1 levels were auto fused and she was not having any neurodeficit conservative treatment followed. Till September 2017 she was continuing household lifestyle without neuro deficit. In September 2017 ESR 23mm, CRP 4.8mg/L, TLC 8600mm3. VAS (leg) at diagnosis was 8/10, VAS(back) 8/10,ODI 92%, which in September 2017 was 3/10,5/10,and 32% respectively. The rationale of this case is an indolent organism Klebsella causes a florid infection that the bones are destroyed to lead to an retrolisthesis though there was no intestinal and/or genitourinary injury/concomitant infection/bacteremia for the organism to harbor at the site.

Case 3

39 years male had minimally invasive discectomy with left lateral recess decompression due to L45 central and left L45 foramen stenosis in 03/2016. From Nov, 2016 he complained of chronic low back pain with left leg root pain in L45 dermatome for last 3 months. CRP 73.5 mg/L, ESR 80mm, TLC 12500/mm3, Sagittal cut in MRI lumbosacral spine done in November 2016 showed localized destruction of upper end plate L5 and lower end plate of L4 extending along left transforamen. Though there was no pus discharge, percutaneous C-arm guided aspirate resulted in no result. According to CDC classification of SSI, Organ/Space SSI-3.He was started on 6 weeks intravenous antibiotics followed by 6 weeks oral antibiotics empirically. CRP and ESR fell down to 2.3 mg/L and 45mm respectively. VAS (leg) and

VAS (back) at diagnosis was 7/10 and 8/10, while ODI at diagnosis was78% which improved to 4/10,5/10, and 56% respectively, but continued such till date. The rationale of reporting this case was that despite minimally invasive discectomy, lead to considerable post operative surgical site infections without any alteration in clinical and/or daily functioning of the patient despite considerable damage radiologically and biochemically.

Case 1

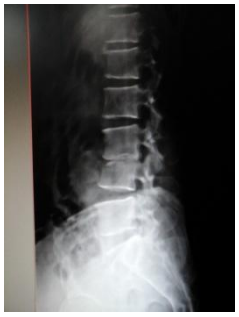

Fig 1-Xray on initial presentation

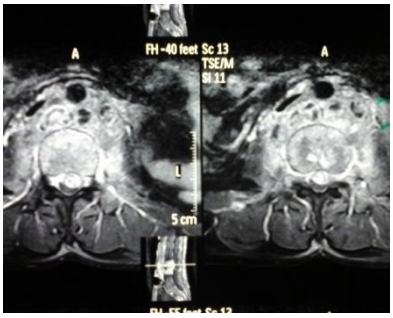

Fig 2-Preop T1 W MRI

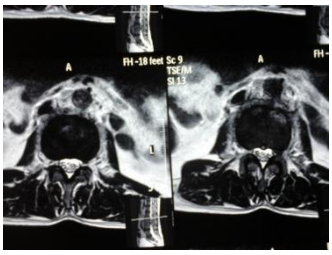

Fig 3-Preop T2 W MRI

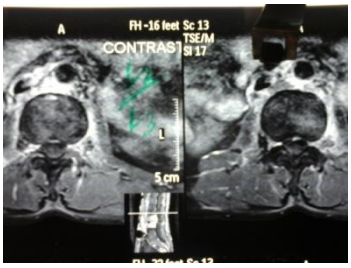

Fig 4- Preop CEMRI

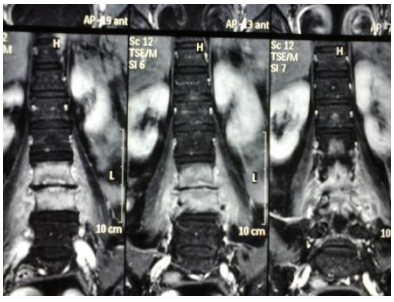

Fig 5-Coronal CEMRI

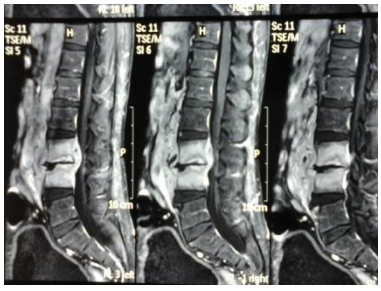

Fig 6-Sagittal CEMRI

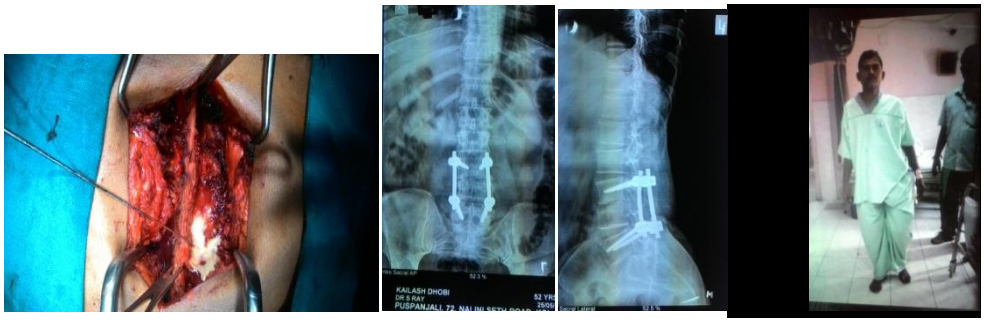

Fig 7-Peroperativepic **Fig 8**-Post operative Xay and Clinical Pictures

Case-2

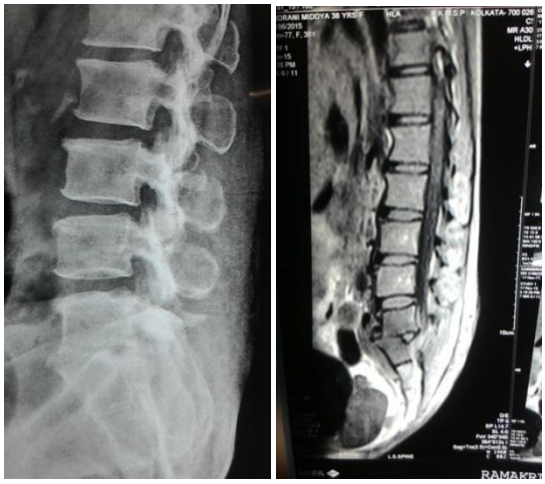

Fig 1- L5S1 discitis with anterolisthesis

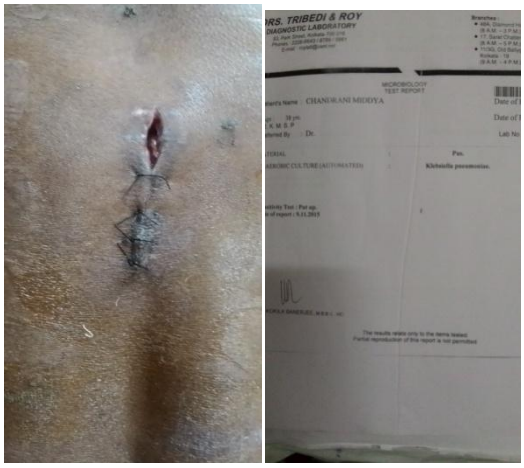

Fig 2- Peroperative wound and Culture report

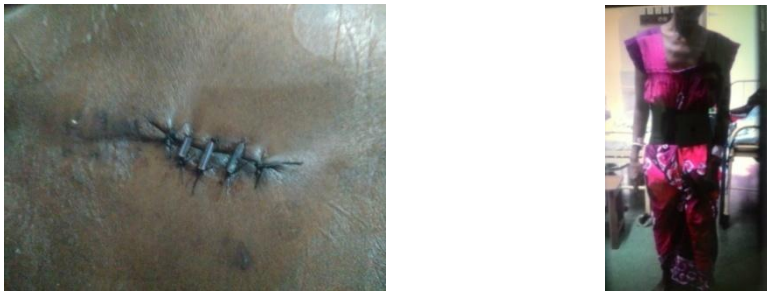

Fig 3- Postoperative secondary closure and post operative clinical picture.

Case 3

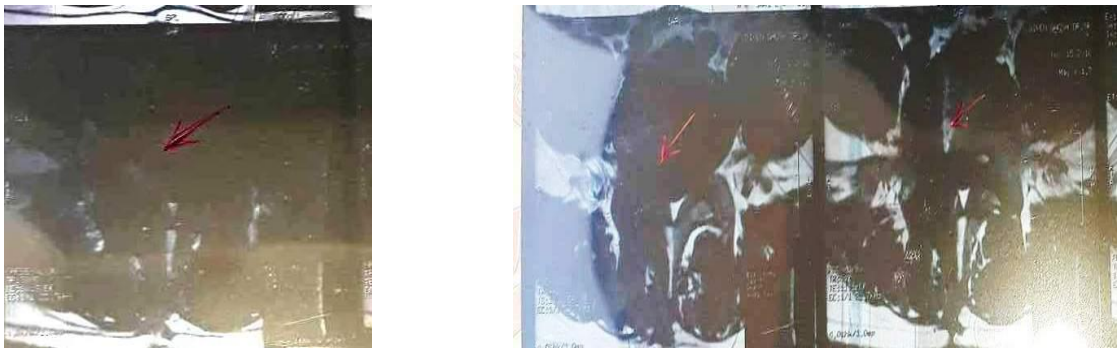

Fig 1- Arrow pointing to the end plate erosion tract made on superior end plate of L5.

Discussion

SSIs in spine surgery can lead to catastrophic complications and worsen clinical outcomes [10,11]. The reported rates of SSI in after open spine surgery vary from 0.7% to 16% [10-22].

Open spine surgeries are confronted with large incisions, extensive soft tissue dissection, and wider retraction. The resulting iatrogenic morbidity has been very well established [23]. Most of the studies reported have encountered infections within first 12 months of surgery except some isolated reports in scoliosis surgery[24,25]. In this reports one of the case following discectomy developed infection 1 year 2 months postoperatively but was effectively countered.

Most common organism encountered in postoperative spine infection was S. aureus. There was a report of accidental penetration of guide wire beyond anterior vertebral wall into the abdomen, which was retrieved successfully but caused a Klebsiella pneumoniae infection post operatively[26]. There was a report where after a

complex gastrointestinal surgery developed cervical epidural abscess.[27] 2.5% of CNS infections have been attributed to Klebsiella pnumoniae.[28] In this report series, Klebsiella pneumonia infection developed de novo post operative without gastrourinary trauma/associated infection per se thus was worth reporting. The infection rates after MISS the reported rates are 0.09% to 1% [29,30,31]. Concerns regarding the challenges a surgeon faces during initial experience with these systems. The longer operative duration and the steep learning curve in MI spinal surgery may amend the infection rates observed at different centres. [30,32].

Conclusion

These atypical case reports point towards problems which may arise if we adhere to strict rules of timeframe based Iatrogenic SSI diagnosis protocol, site-organism based Iatrogenic SSI diagnosis protocol, and technique based Iatrogenic SSI diagnosis protocol.

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