

A rare case of emphysematous osteomyelitis of spine presenting with air in the inferior venacave

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Abstract: Emphysematous osteomyelitis is a rare condition causing significant morbidity and mortality if not aggressively treated. An early diagnosis and prompt intervention is warranted in such patients. We emphasize the role of Computed Tomography (C.T.) and Magnetic Resonance Imaging (M.R.I.) which is must in early diagnosis and prompt management.

Keywords: osteomyelitis, Computed Tomography (C.T.) , Magnetic Resonance Imaging (M.R.I.).

INTRODUCTION

Emphysematous osteomyelitis is rare but critical condition which requires early diagnosis and treatment as it is associated with significant mortality and morbidity [1]. PC Ram *et al.* [2] in 1981 reported the presence of intraosseous gas as a sign of osteomyelitis. The presence of intravertebral gas, bone oedema and adjacent collection like psoas abscess usually makes the diagnosis of emphysematous osteomyelitis [1].

Emphysematous osteomyelitis is mostly monomicrobial and hematogenous spread is the most common portal of spread of infection. Most of the organisms causing emphysematous osteomyelitis are either an anaerobe or a member of the enterobacteriaceae [1]. The present case is an example of the monomicrobial infection as both her blood and pus from the abscess grew the same organism- klebsiella pneumoniae.

CASE REPORT

71 year old female, presented with fever with chills, decreased urine output, low back ache. There was no history of vomiting, neck stiffness, abdominal pain, Lower urinary tract symptoms (LUTS), or vertebral injuries. She was diagnosed to have type 2 Diabetic Mellitus four years back and she was on Insulin. She was diagnosed to have right sided perinephric abscess about 3 months back for which she underwent percutaneous drainage (PCD). Repeat scan which was done after 7 days showed complete resolution of the abscess and then PCD was removed. On admission she was febrile (38.1 °C). Laboratory investigations showed Random Blood sugar of 441mg/dl, total counts were 17,400/mm³ with predominant Neutrophils (83%), glycated hemoglobin (HbA1c – 8.7%), Serum creatinine was 1mg/ dl. She was admitted at intensive care unit (ICU) and was started on empirical antibiotics and ionotropes. Her blood and urine were sent for culture and sensitivity which grew klebsiella pneumoniae. She underwent ultrasound of abdomen to look for any focus of infection, which did not show any source of infection. Non enhanced Contrast tomography (NECT) scan of the abdomen and pelvis was done which showed emphysematous

osteomyelitis, bilateral psoas abscess, epidural and prevertebral abscess with air pockets. After which she underwent MRI of the spine to rule out compression of cord/ nerve roots.

Sagittal CT image (Legend 1) showing compression fracture of 2nd Lumbar vertebral body with posteriorly displaced fractured fragment causing mild compression of the cauda equine nerve roots , in additional to that there are multiple air pockets in the vertebral body, intervertebral disc, prevertebral and epidural space. Axial CT image (legend 2) showing bilateral psoas abscess with air pockets and air in the IVC.

Sagittal MRI STIR sequence image (Legend 3) showing hyper intense partially collapsed L2 vertebral body with retro pulsed fractured fragment and small epidural collection causing significant compression of cauda equine nerve roots, small prevertebral soft tissue (abscess/collection) also seen. Mild hyperintense signal changes seen in L1-L2 disc level.

Axial (Legend 4) MRI images showing bilateral psoas abscess with absence of complete flow void in IVC likely suggestive of extension of abscess.

Her general condition did not permit any major surgical interventions and hence was planned for CT guided drainage of bilateral psoas abscess/ pigtail drainage catheter insertion. She underwent CT guided

drainage of the left sided psoas abscess which drained about 20 cc pus. Pig tail was placed on the right psoas abscess. Pus was sent for Culture and sensitivity which grew klebsiella pneumonia. She continued to deteriorate inspite of the parenteral antibiotics, Insulin infusion, drainage of the abscess, ionic supports. She died seven days after the admission.



Fig-1: Sagittal CT image (the white arrow showing compression fracture of 2nd Lumbar vertebral body with posteriorly displaced fractured fragment causing mild compression of the cauda equine nerve roots , in additional to that there are multiple air pockets in the vertebral body, intervertebral disc, prevertebral and epidural space)



Fig-2: Axial CT image (the black arrow showing psoas abscess with air pockets and the white arrow showing air in the IVC)



Fig-3: Sagittal MRI image (the white arrow showing hyperintense partially collapsed L2 vertebral body with retro pulsed fractured fragment and small epidural collection causing significant compression of cauda equine nerve roots, small prevertebral soft tissue (abscess/collection) also seen. Mild hyperintense signal changes seen in L1-L2 disc level)

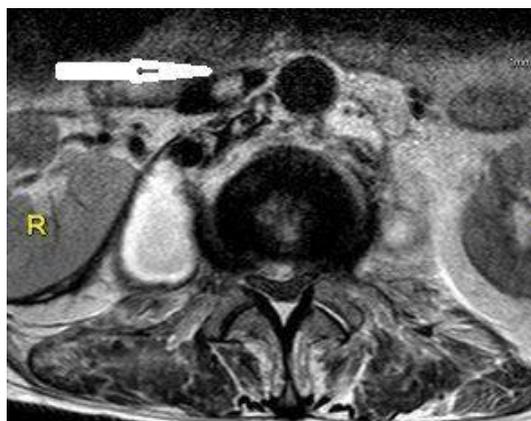


Fig-4: Axial MRI image (the white arrow images showing psoas abscess with absence of complete flow void in IVC likely suggestive abscess)

DISCUSSION

Klebsiella species are important cause of nosocomial infection. Klebsiella pneumoniae is the most common strain responsible for the invasive infections [3]. The index case had klebsiella pneumoniae as the sole organism. It was found by Lin *et al.* that common underlying diseases associated with Klebsiella bacteraemia were diabetes mellitus, hepatobiliary diseases or neoplastic diseases [3]. The present case was a poorly controlled diabetic lady with previous history of percutaneous drainage for perinephric abscess.

Blood cultures are positive in only about one-third of patients with spinal infections [4]. Hence

imaging is must for the diagnosis. The patient in our case was diagnosed using NECT of the abdomen and pelvis. Air in IVC and intraosseous air was better picked up on CT scan [1]. However, MRI was done to look for involvement of the adjacent vertebral disc, vertebral body, and compression of cord and cauda equina nerve roots. MRI is the investigation of choice for the evaluation of bony pathology with sensitivity and specificity of 96% and 93% respectively [5].

CONCLUSION

This case once again highlights the grave prognosis of patients with emphysematous osteomyelitis. Emphysematous osteomyelitis of spine should be kept as one of the differential if source of

infection is not clear in diabetic patients. Imaging with CT and MRI is plays the key role in early diagnosis and treatment of such patient. Any delay in diagnosis and treatment can be associated with poor outcome [4,6].

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