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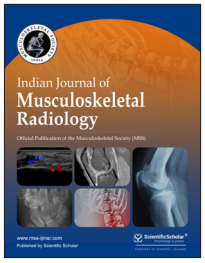

Case Report

Coexistent Emphysematous Osteomyelitis and Pyelonephritis – A Report of Two Cases

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ABSTRACT

Emphysematous osteomyelitis is defined as the presence of intraosseous gas associated with any infection which is a fatal condition if prompt diagnosis and treatment is not provided. It is commonly caused by anaerobes or the members of Enterobacteriaceae family. Here, we report two cases of emphysematous osteomyelitis with coexistent pyelonephritis.

Keywords: Intraosseous gas, Chronic kidney disease, Computed tomography, Pyelonephritis, Bone destruction

INTRODUCTION

Non-infectious causes such as degenerative disc changes can lead to intraosseous gas in the axial skeleton; however, when the gas is present in the extra-axial skeleton, it is pathognomonic of infectious etiology.[1] It is a very rare entity with very few cases reported in literature.

Here, we present two cases of this rare entity aged 55 years and 56 years diagnosed with emphysematous osteomyelitis of clavicle and vertebral bodies, respectively, with associated pyelonephritis.

CASE REPORT

Case 1

A 56-year-old woman with a history of Type 2 diabetes mellitus and hypertension presented with complaints of fever and flank pain for 7 days. The patient's examination revealed an elevated temperature of 38.3°C. General physical examination revealed a pulse rate of 126/min and blood pressure of 132/90 mmHg. Laboratory workup revealed an elevated white cell count 18,290/mm^3 with 77% neutrophils. Random blood sugar was 400 mg% and serum ketones were elevated. Serum hemoglobin A1c (HbA1c) was 14.9%. Urine analysis showed many bacteria. Contrast-enhanced computed tomography (CECT) abdomen was done which showed bony irregularity with air foci involving the L3-L5 vertebral bodies [Figure 1a] with ill-defined hypodense lesions and adjoining fat stranding and heterogeneity. The left pyelonephritis with abscess involving the left kidney [Figure 1b] was observed as well. Empirical antibiotic therapy with intravenous (IV) imipenem and azithromycin was given to the patient. The patient was given IV insulin and underwent percutaneous drainage of the left renal abscess with pigtail placement. The patient

was kept on IV antibiotics for 3 weeks following which she was discharged on aztreonam.

Case 2

A 55-year-old man with a history of Type 2 diabetes mellitus and acute on chronic kidney disease presented with fever, flank pain, and left chest wall swelling. On examination, he was febrile with body temperature of 39°C. Laboratory examination revealed leukocytosis (20,000/mm^3, 81% neutrophils). Random blood sugar was 250 mg% and HbA1c was 8%. CECT chest revealed heterogeneous mottled collection with air foci in the left anterior chest wall involving pectoralis major with extension in suprasternal and retrosternal region and to the left sternal head of clavicle. Air foci were seen in medial end of the left clavicle [Figure 2a]. CECT abdomen showed decreased nephrographic density and crescentic collection in subcapsular region consistent with bilateral pyelonephritis [Figure 2b]. There was associated thickening of bilateral renal fascia. Urine cultures were obtained before the start of empirical antibiotic – ciprofloxacin. IV insulin was started. No further complications on follow-up were seen.

DISCUSSION

Emphysematous osteomyelitis is rare with the presence of intraosseous gas pathognomonic of this condition. Commonly involved sites are vertebral bodies, pelvis, and lower limb bones.[1-5]

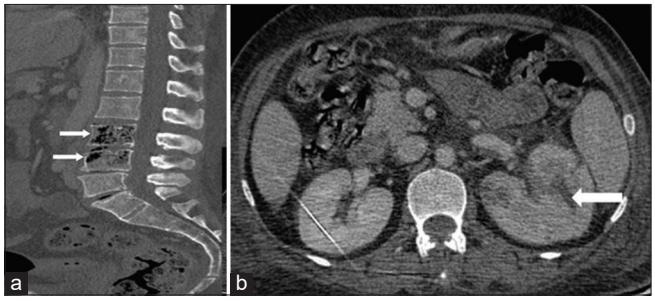

Figure 1: Computed tomography chest reveals air foci in the L3-L4 vertebral bodies (paired white arrows, a) with evidence of the left pyelonephritis and abscess formation (thick white arrow, b).

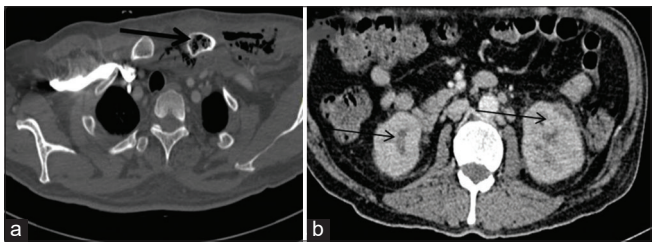

Figure 2: Air foci in the medial part of clavicle with adjacent collection (thick black arrow, a) with the presence of bilateral pyelonephritis (thin black arrows, b).

If the gas is seen in intravertebral space, it generally indicates disc degeneration. However, when this is associated with marrow edema and adjacent fluid collections, it suggests emphysematous osteomyelitis.[6] This was the scenario of our first case with air in vertebral bodies and associated hypodense lesions and fat stranding. Better statement would be : To the best of our knowledge and literarture review we are reporting the second case of emphysematous osteomyelitis involving clavicle. Other similar case has been reported by Lee *et al*.[1]

Hematogenous spread is the most common route of spread for emphysematous osteomyelitis; however, it can also occur as contagious spread from adjacent infected soft tissue, skin, or intra-abdominal focus.[4] Patients with malignancy or diabetes are more prone to emphysematous osteomyelitis.[1]

In our case, the source of infection was a urinary tract infection complicated by pyelonephritis and subsequent hematogenous dissemination.

Both of our patients had poorly controlled diabetes mellitus that was a risk factor for emphysematous osteomyelitis.

Escherichia coli, *Klebsiella*, *Enterobacter* species, clostridium, and other anaerobic organisms are the commonly implicated pathogens causing emphysematous osteomyelitis.[2,7-9]

Early diagnosis and treatment is the key in cases of emphysematous osteomyelitis as there is high mortality associated with the condition.[10]

CONCLUSION

We reported two rare cases of emphysematous osteomyelitis that had spread hematogenously from a urinary tract infection and subsequent pyelonephritis. This condition is associated with significant morbidity and mortality. Thus, radiologist has indispensible role in this fatal condition as it requires prompt treatment once detected.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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