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Avascular necrosis of hip joint complicated with septic arthritis in a renal transplant patient: Case report

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Abstract---A 39-year-old male who is a renal transplant recipient on immunosuppressants presented with 2 month history of left hip pain, 2 weeks history of fever and painful movements. MRI and CT showed Septic arthritis with avascular necrosis of femur with osteomyelitis of acetabulum. He was taken up for surgery and underwent debridement and Left hip excision arthroplasty. Cultures were sent from the affected area and were found to be *Klebsiella* which was treated accordingly. The patient showed a drastic improvement in general condition after the procedure and was mobilized from post operative day 2. In the next 45 days, we could see almost complete resolution of the infection in hip.

Keywords---avascular necrosis, hip joint complicated, septic arthritis, renal transplant patient.

Introduction

Avascular osteonecrosis (AVN) is a bone complication that may occur after kidney transplantation. Corticosteroids play a big role in the genesis of AVN, and recent reports suggest that the use of steroid-sparing anti-calcieneurinagents has reduced incidence rates from 20% to less than 5%.¹ Avascular necrosis is not generally recognized as predisposing a joint to infection, but there are cases reported earlier which showed that avascular necrosis would have been an etiologic factor for septic arthritis.² Septic arthritis is an orthopaedic emergency which requires immediate treatment with joint lavage and debridement along with

antimicrobial therapy.³The occurrence of septic arthritis following renal transplantation is not unexpected as the transplant recipient is a compromised host due to effects of the immunosuppressive therapy. Bacterial and opportunistic fungal, viral and protozoan infections have been described in such patients.⁴

Reduction in the immunosuppressant therapy in recent times for rejection episodes has decreased the number of infectious complications. Even though septic arthritis is not so common, prompt recognition of this condition is mandatory so that morbidity of this potentially serious infectious complication can be reduced in kidney transplant recipients.⁴ We hereby present a case of a 39-year-old male who is a kidney transplant recipient presenting to us with Left hip septic arthritis.

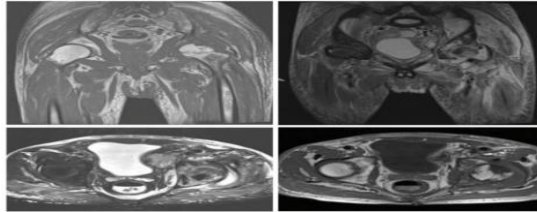
Case Report

A 39-year-old male presented with history of pain in the left hip since 2 months which was neglected by him, aggravated in the past 2 weeks, multiple episodes of fever with chills since 2 weeks and inability to bear weight in the left hip and walk since 2 weeks. (Date of Admission: 21/03/2022) The patient had h/o renal transplantation on 23/10/2000 when he was 18 years old. The patient was apparently asymptomatic since then and was on immunosuppressants and steroid. The patient was diagnosed to have chronic allograft injury(Chronic kidney disease Stage 5T) in 2019 and was initiated on maintenance hemodialysis thrice a week for 2 years in view of his uremic symptoms. The patient underwent live related ABO compatible renal transplant surgery on 29/10/2021 in our hospital. The patient was continued on immunosuppressants and steroids for the same.

On examination, the patient had tenderness in the left hip joint, redness, local rise of temperature and severe pain on movements of the hip. The patient on admission had a Total leukocyte count of 10,790cells/cumm, Hb – 8.9g/dl and platelet – 73,000cells/cumm. The patient had a drop in platelet value in the following days and multiple transfusions were done for the same. The patient was advised MRI of left hip which showed extensive muscle edema(*figure 1*) around the hip joint and hyperintensities noted in the acetabulum and femoral head caudally involving the femoral neck suggestive of septic arthritis and osteomyelitis of acetabulum. The patient also underwent CT scan of Left hip(*Figure 5-6*) which showed diffuse osteopenia with prominent trabeculations consistent with avascular necrosis of left femoral head.

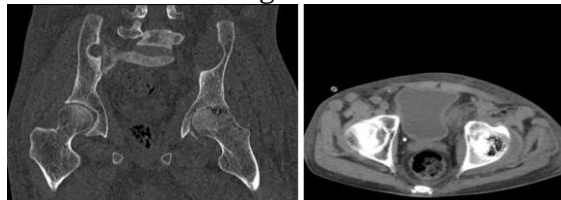
Preoperative MRI images of the patient

Figure 1



Preoperative CT images of the patient

Figure 2



After adequate optimization, the patient was taken up for surgery and underwent Left hip excision arthroplasty(Figure 3). Using postero-lateral approach, hip joint was approached, abscess collection was drained, neck and head of femur were removed and multiple drill holes were made in acetabulum for drainage. After thorough debridement, corrugated drain was applied, and the wound was closed. Tissue was sent for histopathology examination and tissue culture test which was reported as Multidrug resistant *Klebsiella pneumonia* which was sensitive to meropenem. The patient was given IV antibiotics(Inj. Meropenem and colistin) for 3 weeks followed by oral antibiotics for the next 3 weeks. The pus from the joint was let to drain through the corrugated drain. The patient was put on skin traction with 3kg weight for a period of 2 weeks. The patient's condition improved drastically and was mobilized from postoperative day 2. The corrugated drain was removed after 45 days and it continued to drain till then. The wound was let to close by itself. The patient was followed up regularly.

Postoperative xray of the patient

Figure 3



Later after 2 months, the patient developed intracranial abscess and underwent left occipital craniotomy and abscess excision on 23/05/2022, after which the patient developed septic encephalopathy with septic shock and meningoencephalitis and passed away due to the same.

Discussion

Septic arthritis and osteomyelitis in a avascular necrosis of hip in a renal transplant patient is a challenging condition. This patient had septic arthritis of hip superimposed on avascular necrosis which was not identified early as the patient neglected to consult. We should not hesitate to do investigations like CT scan and MRI scan for such patients as it plays a very vital role in the diagnosis and planning of treatment for the patient.

Kidney transplant recipients are an immunocompromised host as they frequently use corticosteroids and they are more prone to avascular necrosis. Corticosteroid therapy has a major role in the pathogenesis of avascular necrosis although the exact mechanism remains controversial. One of the hypotheses is that corticosteroids, enhances peripheral resistance of insulin, which elevate insulin levels in turn stimulating the synthesis of very-low density lipoproteins. This corticosteroid-induced hyperlipidaemia is thought to cause fatty infiltration of the liver followed by ischaemic necrosis of bone secondary to subchondral arteriolar fat embolisation. Thus, AVN caused due to embolisation of blood vessels in an immunocompromised host can further act as nidus for infection which may lead to septic arthritis.⁵ This pathogenesis of septic arthritis due to AVN or AVN due to septic arthritis is a question to introspect deeply and is a challenge, especially in cases where both are present.

For our patient, only one sitting of debridement was enough as the corrugated drain was actively discharging the infection inside the joint for nearly 45 days. Prompt recognition of septic arthritis eventhough not a common condition is mandatory in order to resolve the morbidity of this potentially serious infectious complication in kidney transplant recipients.

Conclusion

A variety of articular disorders occur following renal transplantation. Avascular bone necrosis, synovitis and arthralgias have been described in a significant number of transplant patients. Steroid therapy has been implicated in some of these disorders. Avascular necrosis should always be recognized in such patients by testing aggressively and should be managed aggressively to save the joint from going into further complications.⁴ Septic arthritis is an orthopaedic emergency with high morbidity and mortality. Patient outcomes are good when they are managed with early and aggressive joint lavage and debridement combined with appropriate antimicrobial therapy.⁶ To ensure patients are treated early, it is imperative to have a high index of suspicion for septic arthritis and to presume that sepsis is the cause of arthralgia until proven otherwise.

Competing interest

There are no competing interest.

Informed consent

Consent was taken from the patient and his wife for the publication of this case report

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