

Uncommon fungal infection in a renal transplant recipient: A case report from Northern India

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ABSTRACT

Although fungal infections can occur, their reported incidence in India is significantly lower than that of other infections, making them uncommon findings in renal transplant patients. Here, we present an unusual case of a fungal infection that developed in a 32-year-old Indian male renal transplant recipient. After correlating clinical, microbiological, and histopathological findings, a final diagnosis of fungal infection was established. The patient responded well to anti-fungal medications. This case report highlights that though tuberculosis is the most commonly observed infection in the Indian scenario, the occurrence of a fungal infection is an unusual finding in post-renal transplant cases, thus posing a massive diagnostic and therapeutic challenge. Their prompt diagnosis is imperative for the patient's survival.

Key words: Fungus, Immunosuppression, Infection, Renal transplant, Tuberculosis

One of the life-saving procedures for end-stage renal disease patients is a kidney transplant. Although on one side, it improves the quality of life, on the downside, it predisposes them to the risk of infections that can prove to be lethal [1]. There is a reported incidence of about 50–70% of infections in kidney transplant recipients from tropical countries, where a slightly different chronology occurs. According to a study, bacterial infections are the most common (40.50%), followed by viral (35.20%), mycobacterial (11%), and fungal (8.10%) [2]. According to another study, urinary tract infection is the most common, whereas Hepatitis B and C viral infection, cytomegalovirus, and pneumocystis are other common infections in the post-transplant period [3]. In the Indian scenario, tuberculosis is more common in comparison to the reported occurrence of fungal infections in post-transplant cases.

Renal transplant patients become the most opportunistic target for the acquired fungal infections due to their underlying immunosuppressive state [4]. As these infections present with no specific symptoms, they remain undiagnosed and are associated with a higher risk of mortality. Thus, a high index of suspicion of fungal infections in renal transplant patients can aid in their early detection.

Here, we report a case of fungal infection developing in a young adult from India, post-renal transplant, observed

1 year post-surgery, diagnosed, and treated successfully. As studies on unusual infections occurring in renal transplant patients from India are scarce [5], this case presentation aims to raise awareness amongst physicians about the occurrence of these unusual infections that may manifest themselves despite the higher reported cases of tuberculosis in post-renal transplant cases from India.

CASE REPORT

A 32-year-old Indian male presented with a history of chronic glomerulonephritis for 3 years and hypertension for 5 years. The patient was admitted to the emergency department and advised of a renal transplant. He underwent all investigations before surgery.

Physical examination revealed no cyanosis, edema, or icterus, but the presence of a low-grade pallor. Vital signs were as follows: pulse rate – 102 bpm, blood pressure – 210/110 mm Hg, respiratory rate – 22/min, and temperature – 98.0°F. The chest was clear bilaterally, whereas the abdomen was soft with a mild bilateral swelling.

With the mother as the donor, the renal transplant was done on October 30, 2023, with triple-drug immunosuppression (prednisone, tacrolimus, and mycophenolate mofetil) and injection A GT 100 mg, three doses as induction immunosuppression. Postoperatively, the patient went into the diuretic phase immediately, showing a gradual decline. He responded

Access this article online

Received - 18 October 2025
Initial Review - 04 November 2025
Accepted - 13 December 2025

DOI: 10.32677/ijcr.v12i1.7910

Quick Response code



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well to supportive therapy that included IV antibiotics and anti-hypertensives. He was discharged in satisfactory condition, and a regular follow-up was advised.

A year after the graft placement, the patient presented to the hospital with a low-grade fever and body aches for 10 days. He developed a swelling over his left posterior arm around the same time (Fig. 1). History revealed that it started as a boil that progressed to a pustule over a few days. Inspection of the site exhibited a reddish brown, irregular lesion of size 3 cm × 2 cm. On examination, it was soft, tender, and fluctuant, with a slight temperature rise. A provisional diagnosis of an infection post-renal transplant and a differential diagnosis of tuberculosis, fungal abscess, and bacterial abscess was made.

Fine needle aspiration cytology was performed, and approximately 0.5 mL of fluid containing pus was sent for examination. The cytological smears showed mainly neutrophilic infiltrate with few branched septate fungal hyphae, giving an impression of fungal abscess (Fig. 2).

The remaining sample was sent for culture. Medications, cefatoxime, Vitamin C, pantoprazole, Ultracet, and voriconazole (an antifungal) were prescribed. An excision was done after 2 days, and sutures were placed (Fig. 3a). The patient was discharged, and the biopsied specimen was sent for histopathology.

The culture examination came out sterile, which could be due to antibiotic therapy. A gross examination revealed multiple grayish-to-brownish tissues measuring approximately 6 cm × 4.5 cm × 2 cm. The cut section revealed multiple pus pockets. Hematoxylin and Eosin-stained sections showed an acute dense inflammatory infiltrate along with multiple granulomas comprising epithelioid cells and Langhans' giant cells. Areas of chronic inflammation with fibrosis in the periphery were observed. These findings were suggestive of granulomatous inflammation with fungal hyphae. Based on the clinicopathological correlation, a final diagnosis of fungal infection post-renal transplant was made. The patient was found to be healing well at follow-up (Fig. 3b).

DISCUSSION

One of the life-saving procedures for end-stage renal disease patients is a kidney transplant. Although on one side, it increases longevity of the patients, on the downside, it predisposes them to the risk of infections that can prove lethal [1]. A difference in the spectrum of infections is seen between developing and developed countries. Bacterial infections are the most common, with a high incidence of *Mycobacterium tuberculosis* infecting renal transplant recipients from India. Fungal infections are unusual infections in post-transplant cases [3]. The tropical climate, low socioeconomic status, poor oral hygiene, higher incidence of endemic conditions, advanced presentation, and a lack of diagnostic techniques may be the related risk factors [6].

Fungi are a usual component of cutaneous tissue that are ubiquitous in nature. Renal transplant patients



Figure 1: Photograph showing swelling over left posterior arm

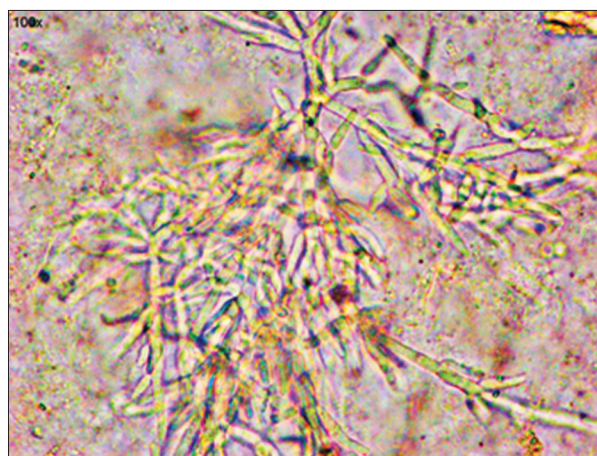


Figure 2: Photomicrograph of cytological smear showing fungal hyphae

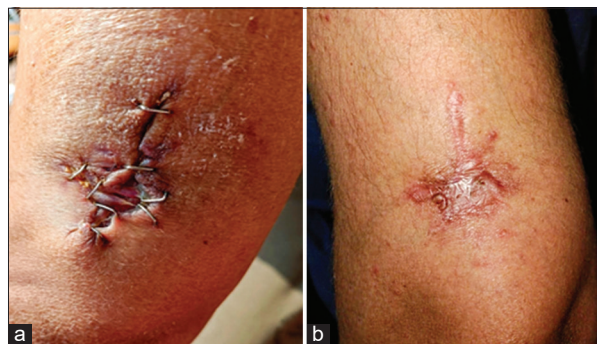


Figure 3: (a) Photograph post excision of swelling and placement of suture, (b) Photograph of healed area post suture removal

become the most opportunistic target for these acquired fungal infections due to their underlying immunosuppressive state [4]. Both invasive and non-invasive fungal infections can occur in such patients, the former occurring in about 20% of patients receiving renal transplants [7]. *Candida*, *Cryptococcus*, *Aspergillus*, non-*Aspergillus* species, and dermatophytes are the most commonly reported infections [8]. The time duration for infections to arise post-renal transplant can vary from the infections occurring within a few days, weeks, months, or even a year after the transplant. This period can be divided into the intermediate period, if infection occurs

within 1–6 months, and the late period, if it occurs after 6 months [7].

Miele *et al.* (2002) published a case series of four cases of primary cutaneous fungal infections with a non-specific presentation in cases of solid organ transplantation, out of which two were renal and one renal pancreatic transplants [9]. Eswarappa *et al.* (2015) reported three cases of fungal infections with atypical presentations in kidney transplant patients [10]. Although the incidence of fungal infections is lower than that of bacterial and viral infections, they are associated with a higher risk of complications and mortality [11]. Thus, a high index of suspicion of fungal infections in renal transplant patients can aid in their early detection [12].

The differential diagnosis for a localized cutaneous abscess in a post-renal transplant patient can include a wide range of infectious, bacterial (*Staphylococcus*, *Streptococcus*, and Gram-negative bacteria), fungal (*Candida*, *Aspergillus*, and *Cryptococcus*), other opportunistic, and atypical mycobacterial infections. Non-infectious conditions such as lipoma, inflammatory dermatoses, and malignancies, can also be considered.

As fungal infections are uncommon in India in post-transplant cases, they present an exorbitating diagnostic challenge. Lack of awareness in the clinicians may be another factor responsible for them to remain unnoticed. They may remain undiagnosed or misdiagnosed due to their non-specific presentation. Moreover, the scarcity of data on such cases reported from the Indian subcontinent has made these unusual cases oblivious to the literature [13].

In the present case, immediate investigations combined with clinicopathological correlation aided in the prompt diagnosis of this uncommon fungal infection in a 32-year-old Indian male post-renal transplant. Therefore, as these fungal infections can be one of the life-threatening infections in renal transplant recipients, it is crucial to diagnose them at the right time to institute appropriate therapy [14].

CONCLUSION

The present case report highlights the importance of proper diagnosis and treatment of unusual fungal infections occurring in renal transplant patients. The timely diagnosis and appropriate management can

significantly contribute to a reduction in the mortality rate.

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Funding: Nil; Conflicts of interest: Nil.

How to cite this article: Tyagi I, Choudhary A. Uncommon fungal infection in a renal transplant recipient: A case report from Northern India. *Indian J Case Reports*. 2026; 12(1):14-16.