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Original Research Article

Subcutaneous Basidiobolomycosis Masquerading as A Recurrent Soft-Tissue Sarcoma

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Abstract: ***Introduction***: Basidiobolomycosis is a rare subcutaneous fungal infection caused by Basidiobolus ranarum and is endemic in tropical regions. The disease often mimics soft-tissue sarcoma because it presents as a firm, painless, slowly progressive mass, creating diagnostic challenges and potentially leading to inappropriate management. ***Case***: A 37-year-old woman presented with a recurrent soft-tissue mass that had previously been excised and was suspected to be a recurrent sarcoma. The patient underwent wide excision with inguinal lymph node dissection after intraoperative frozen-section evaluation suggested a malignant mesenchymal tumor. However, final histopathological examination revealed basidiobolomycosis. The patient was subsequently treated with itraconazole 200 mg twice daily for 12 weeks and showed improvement without recurrence. ***Discussion***: Basidiobolomycosis frequently mimics soft-tissue malignancy due to its infiltrative mass appearance and nonspecific clinical features. Diagnosis relies on histopathology demonstrating granulomas, eosinophilia, and the Splendore–Hoeppli phenomenon. Special fungal staining is required to confirm the presence of sparsely septate hyphae. Itraconazole is the first-line therapy. Aggressive surgical intervention should be avoided, as it may increase morbidity without offering significant benefit. ***Conclusion***: Basidiobolomycosis should be considered in the differential diagnosis of soft-tissue masses resembling sarcoma, and early histopathological evaluation is essential to prevent unnecessary invasive procedures.

Keywords: Basidiobolomycosis, Basidiobolus ranarum, Sarcoma, Itraconazole.

INTRODUCTION

Basidiobolomycosis is a rare granulomatous fungal infection caused by *Basidiobolus ranarum*, a member of the order *Entomophthorales*. The disease predominantly affects immunocompetent individuals living in tropical and subtropical regions (Sethy and Sahu, 2021; Kiruthiga *et al.*, 2023; Mirmoosavi *et al.*, 2023). The most common clinical form is subcutaneous basidiobolomycosis, which typically presents as a slowly progressive, firm, painless mass with well-defined borders. Due to its nonspecific presentation, the disease is frequently misdiagnosed as chronic bacterial infection or soft-tissue neoplasm, resulting in delayed diagnosis and inappropriate treatment (Hung *et al.*, 2020; Fransiska *et al.*, 2023). In recent years, increasing reports of gastrointestinal basidiobolomycosis have emerged, often mimicking abdominal malignancy, tuberculosis, or inflammatory bowel disease (Aljehani *et al.*, 2022; Dhayhi *et al.*, 2025). Definitive diagnosis relies on histopathological findings of eosinophilic granulomas with broad, sparsely septate hyphae exhibiting the Splendore–Hoeppli phenomenon, supported by fungal culture or special staining techniques (Welagedara *et al.*, 2024). Management generally consists of systemic azole antifungal therapy, including itraconazole or voriconazole, while surgical intervention is reserved for cases with deep tissue extension or gastrointestinal involvement (Abduh *et al.*, 2022).

This case report aims to highlight the clinical significance of basidiobolomycosis in a 37-year-old woman who was initially misdiagnosed with recurrent soft-tissue sarcoma with suspected left inguinal lymph node involvement, but was ultimately confirmed to have basidiobolomycosis based on histopathological findings

and special fungal staining. This report also emphasizes the diagnostic challenges, therapeutic considerations, and the importance of including this rare fungal infection in the differential diagnosis of subcutaneous masses or lesions mimicking malignancy.

CASE REPORT

A 37-year-old woman presented with a mass in her left thigh that had been present since 2023. Initially, she noticed ill-defined swelling of the thigh musculature, within which she perceived a deep-seated enlarging mass measuring approximately 2×1 cm that exerted a pressure-like sensation on the leg. In 2024, the patient underwent surgical excision at Local Hospital, and the lesion was reported as benign. However, several months after surgery, the mass rapidly enlarged, raising suspicion of malignancy, and the patient was subsequently referred to Government Hospital. Fine-needle aspiration biopsy performed and suggested a malignant adipocytic tumor. The patient also reported pain in the affected leg during prolonged ambulation. Physical examination revealed a postoperative scar over the posterolateral aspect of the left thigh, with a poorly defined mass that was firm, irregular in surface, measuring approximately 15 × 10 cm, located intramuscularly and fixed to the surrounding tissues (Figure 1). Histopathological examination conducted on June 7th , 2024, revealed a xanthogranuloma, while subsequent immunohistochemical analysis on October 22, 2024, demonstrated chronic inflammation with foreign-body granuloma formation.

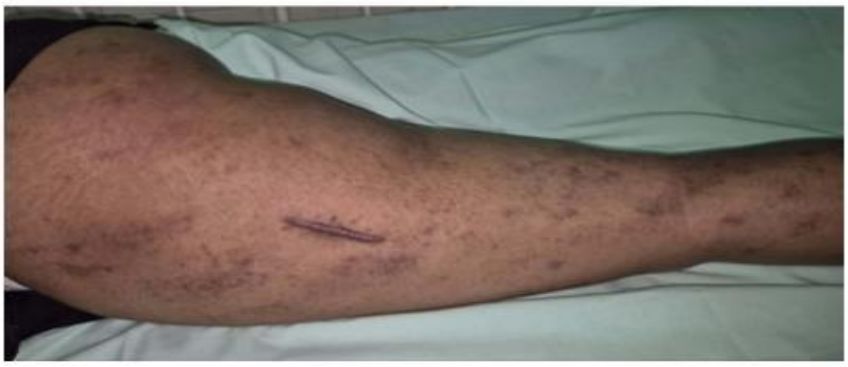

Figure 1. A bulging mass is observed in the lateroposterior region of the left thigh.

The patient subsequently underwent magnetic resonance imaging (MRI) on January 15th , 2025, which revealed a suspected malignant intramuscular mass in the left gluteus maximus muscle infiltrating the surrounding fascia and posterior subcutaneous fat. The mass was noted to encase the inferior gluteal artery, with associated perilesional subcutaneous edema. Bilateral inguinal lymphadenopathy was also observed, with the largest lymph nodes measuring approximately 1.9 cm on the right and 2.2 cm on the left (Figure 2).

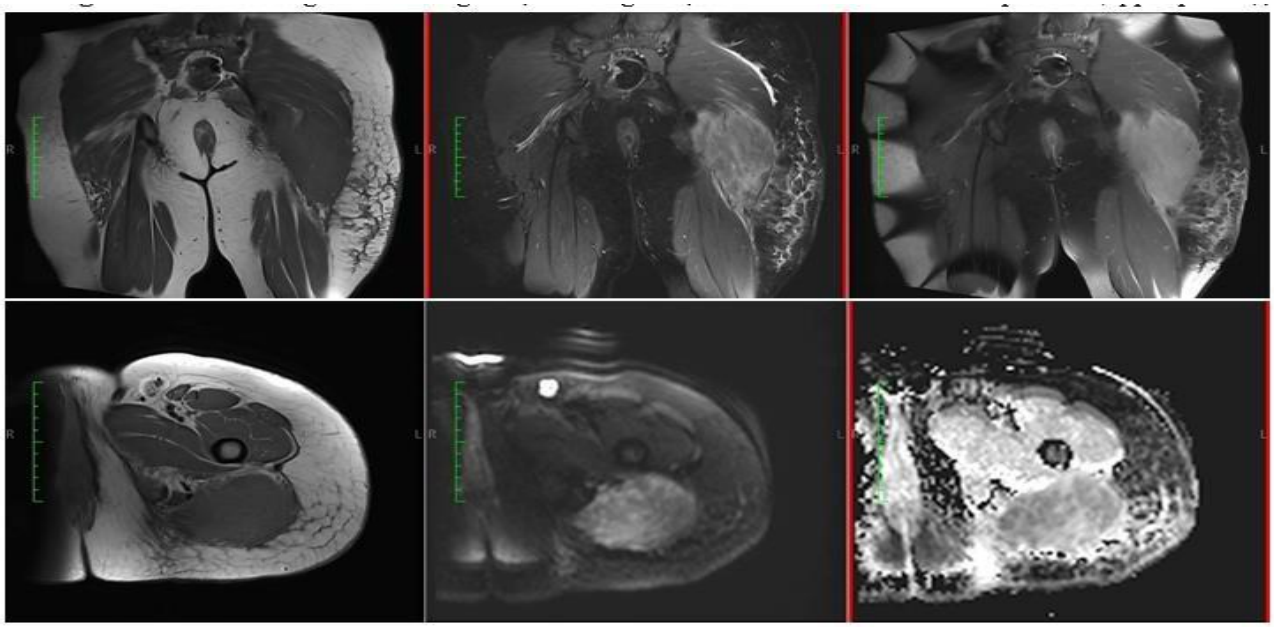

Figure 2. MRI findings on T1-weighted, T2-weighted, and contrast-enhanced sequences (upper panels), and MRI findings

on T1-weighted, diffusion-weighted imaging (DWI), and apparent diffusion coefficient (ADC) sequences (lower panels). The patient subsequently underwent wide excision with left inguinal lymph node dissection (Figure 3). Intraoperative frozen-section evaluation of the intramuscular mass and excised lymph nodes suggested a malignant spindle mesenchymal tumor and reactive lymphoid hyperplasia, respectively.

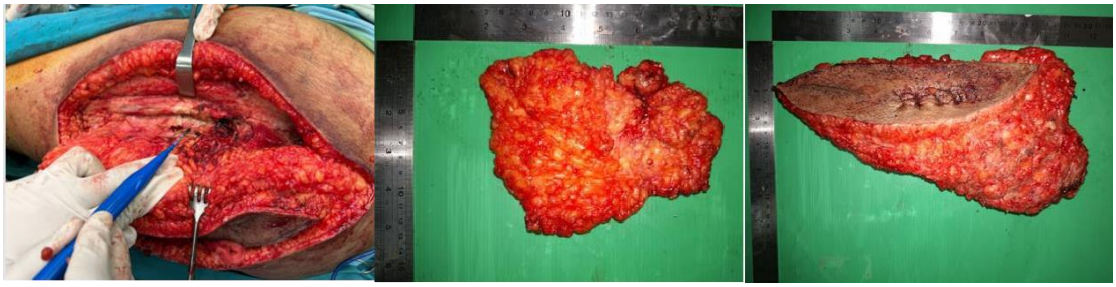

Figure 3. Intraoperative findings and gross specimen following wide excision (anterior and posterior views).

Histopathological examination revealed chronic granulomatous inflammation consistent with basidiobolomycosis, with the closest surgical margin measuring 1 mm from the lesion. Periodic acid–Schiff (PAS) and Grocott's methenamine silver (GMS) staining demonstrated fungal hyphae consistent with *Basidiobolus* species (Figure 4). Histopathological examination of the left inguinal lymph nodes revealed reactive lymphoid hyperplasia with no evidence of malignancy.

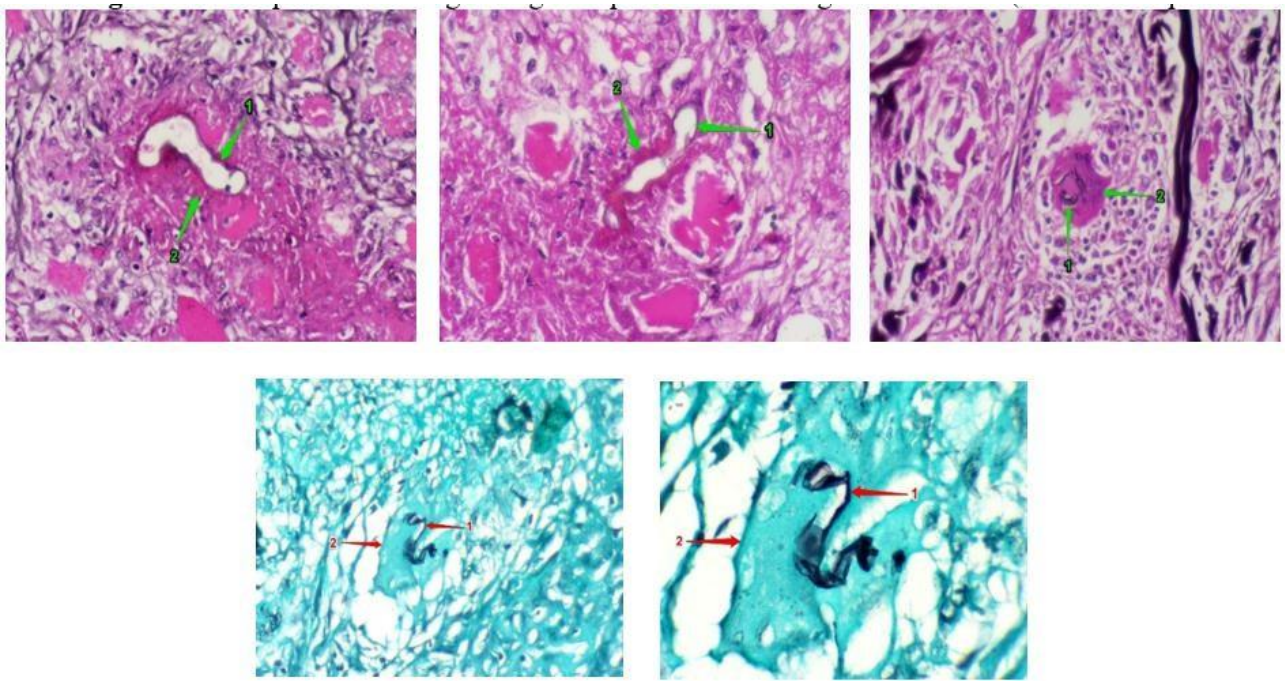

Figure 4. Histopathological findings of the surgical specimen with Periodic acid–Schiff (PAS) staining (upper panel) and Grocott's methenamine silver (GMS) staining (lower panel). Arrow 1 indicates fungal hyphae, while arrow 2 highlights the Splendore–Hoeppli phenomenon.

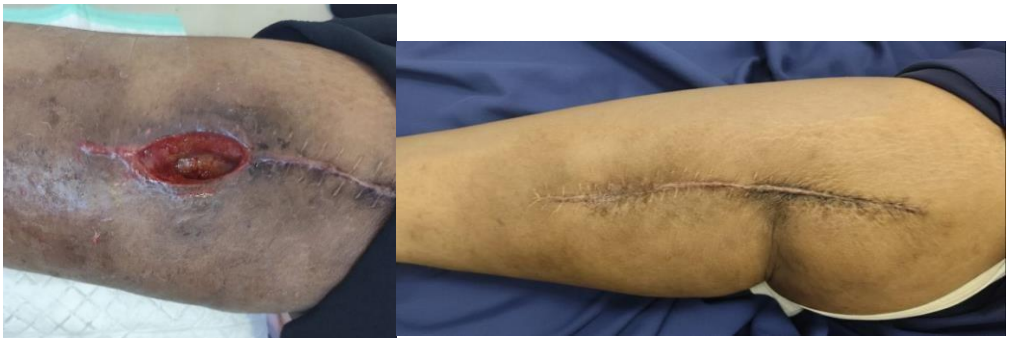

Figure 5. Clinical appearance of the patient after surgery showing partial wound dehiscence (left) and after three months

of treatment (right).

The patient subsequently received oral itraconazole at a dose of 200 mg twice daily for 12 weeks. The postoperative swelling and surgical wound, which had initially developed partial dehiscence, gradually improved and eventually healed completely (Figure 5)

DISCUSSION

Basidiobolomycosis is a rare subcutaneous fungal infection that frequently mimics neoplastic processes, particularly soft-tissue sarcoma. This subcutaneous mycosis most commonly affects children or young adult males (Nupur *et al.*, 2019; Choudhary *et al.*, 2024; Welagedara *et al.*, 2024). However, the present case occurred in a 37-year-old adult woman, making it clinically noteworthy due to its rarity, although cases in female children (Sackey, Ghartey and Gyasi, 2017; Rajkiran *et al.*, 2023) and a single case in a 41-year-old woman have also been reported (Welagedara *et al.*, 2024).

The clinical manifestations of basidiobolomycosis typically present as a firm, progressively enlarging, painless, and fixed mass, which may closely resemble malignant tumors both clinically and radiologically. Several publications in recent years have emphasized that misdiagnosis as malignancy remains a major diagnostic challenge, particularly in cases involving subcutaneous tissues of the extremities or intra-abdominal organs. A recent review reported that approximately 37–45% of basidiobolomycosis cases were initially misdiagnosed as malignant tumors due to infiltrative mass appearances on imaging studies (Yarmahmoodi, Sheikhfendereski and Razavinejad, 2025). The clinical findings in the present case, including a large intramuscular mass with surrounding tissue infiltration and associated inguinal lymphadenopathy, were highly consistent with features commonly reported in malignant soft-tissue tumors. MRI findings further supported the suspicion of soft-tissue malignancy, reinforced by the presence of multiple enlarged lymph nodes measuring up to 1.9 cm.

The diagnosis of basidiobolomycosis remains challenging due to the absence of specific clinical features, making histopathological evaluation crucial. Characteristic findings include eosinophil-rich granulomatous inflammation accompanied by the Splendore–Hoeppli phenomenon, consisting of broad, sparsely septate hyphae demonstrated by Periodic acid–Schiff (PAS) and Grocott's methenamine silver (GMS) staining. Recent studies have emphasized that identification of fungal hyphae using special staining is a key determinant for diagnostic confirmation, particularly when fungal culture is unavailable, and is considered a major diagnostic criterion, whereby fulfillment of a single major criterion is sufficient to establish the diagnosis of basidiobolomycosis (Pouladfar *et al.*, 2024). In the present case, histopathological examination and special staining revealed broad, sparsely septate hyphae surrounded by eosinophilic material consistent with the Splendore–Hoeppli phenomenon, confirming *Basidiobolus* species infection and correcting the initial diagnosis of a malignant spindle cell tumor.

Optimal management of basidiobolomycosis generally involves a combination of surgical intervention and systemic antifungal therapy. However, recent literature consistently supports itraconazole as the first-line treatment due to its high efficacy and favorable toxicity profile. Case series and systematic reviews have reported high treatment success rates with therapy durations ranging from 8 to 16 weeks for subcutaneous basidiobolomycosis without visceral involvement (Saeed *et al.*, 2019; Januar *et al.*, 2021; Sethy and Sahu, 2021; Chaudhari *et al.*, 2022). In this patient, administration of oral itraconazole at a dose of 200 mg twice daily for 12 weeks resulted in an excellent clinical response, consistent with current recommendations..

The role of aggressive surgical intervention in basidiobolomycosis remains controversial. Although limited excision may be beneficial for reducing disease burden and obtaining tissue for definitive histopathological diagnosis, several studies published within the past five years suggest that extensive surgery may increase the risk of wound dehiscence, delayed healing, and postoperative morbidity without significantly improving clinical outcomes when antifungal therapy is optimal (Hussein *et al.*, 2021; Mirmoosavi *et al.*, 2023). In the present case, wide excision was performed due to preoperative fine-needle aspiration biopsy findings that strongly suggested malignancy. Although postoperative wound dehiscence occurred and required a prolonged healing period, complete wound closure was ultimately achieved following initiation of antifungal therapy.

An additional notable aspect of this case was the presence of inguinal lymphadenopathy, which was initially suspected to represent metastatic disease. However, recent literature indicates that basidiobolomycosis rarely involves lymphatic spread; when lymphadenopathy is present, it is typically reactive rather than infectious or malignant. This observation aligns with reports demonstrating reactive lymphoid hyperplasia in the majority of patients, rather than fungal infiltration of lymph nodes (Mohammed *et al.*, 2020; Kadhirvelu *et al.*, 2023). Histopathological findings of reactive lymphoid hyperplasia in the present case further support this pattern.

CONCLUSION

In conclusion, this case reinforces the importance of considering basidiobolomycosis in the differential diagnosis of soft-tissue masses that mimic sarcoma, particularly in immunocompetent patients residing in tropical regions. Comprehensive histopathological evaluation and appropriate fungal staining should be performed before undertaking aggressive surgical interventions. With timely and appropriate antifungal therapy, the prognosis of subcutaneous

basidiobolomycosis is generally favorable, with a low risk of recurrence. This case serves as an important reminder that heightened diagnostic awareness is essential to prevent unnecessary invasive procedures and to ensure optimal patient management.

CONFLICT OF INTEREST

The authors stated that there is no conflict of interest.

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