



## Candidiasis Mimicking Soft Tissue Lesion In Immunocompetent Patients: A Report Of Two Rare Cases

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### Abstract

Primary cutaneous and subcutaneous fungal infections are rarely found in immunocompetent individuals. Usually, it is seen in immunocompromised patients with underlying diabetes, or in patients on immunosuppressive drugs, chemotherapy, etc. We report two rare cases of candidial infection mimicking soft tissue mass in immunocompetent individuals. Our first case was of a 48-year-old woman, who presented with swelling in left temporal region. The second patient was a 10-year-old male child who had a soft and cystic swelling in right lower neck region. In both cases, initial diagnosis of soft tissue mass was made. Cytological evaluation along with special stains and culture confirmed the presence of Candida infection. A prompt diagnosis helped in initiating appropriate antifungal treatment in both cases and prevented any unwanted complications.

**Keywords:** FNAC, culture, fungal infection, immunocompetent, soft tissue lesion

### Introduction

Primary cutaneous mycosis is a rare entity. It is usually seen in immunocompromised individuals, for e.g., in HIV positive individuals, patients on oral steroids or immunosuppressive drugs and renal transplant patients.<sup>[1-4]</sup> But it becomes a diagnostic challenge in immunocompetent individuals due to the rarity of the infection and masquerading the clinical picture.<sup>[2-4]</sup> However, a simple investigative modality, i.e., Fine needle aspiration cytology plays an important role in diagnosis of such fungal infection and in early intervention and management of the patient. Here in we present 2 cases of cutaneous candidiasis at two unusual sites in immunocompetent individuals.

### Case Report:

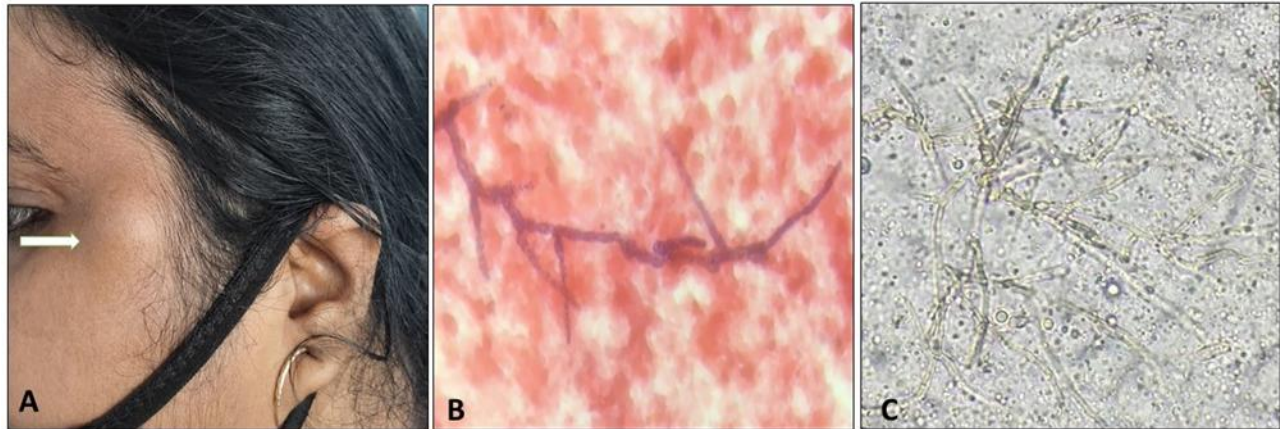
#### Case 1:

A 48-year-old female presented to hospital with swelling in the left lower temporal region for the past 2 months. The swelling was slowly progressive and not associated with pain. There was no history of diabetes, hypertension, tuberculosis, or any significant medical illness or surgical intervention. On examination, the swelling measured 1x1 cm and was firm, mobile and non-tender [Figure 1A]. A clinical diagnosis of a soft tissue mass (?) neurofibroma/schwannoma was made. The patient was advised for routine blood investigations, fine needle aspiration cytology (FNAC) followed by excision.

Complete blood counts were within normal limits. Her biochemical parameters, i.e., blood sugar levels, liver function test, kidney function test, thyroid profile etc were within normal limit.

Fine needle aspiration was done and yielded blood mixed aspirate. Smears were prepared and stained with Giemsa and Papanicolaou stain. On cytological examination, extensive necrosis was seen. Also noted were numerous pseudo-hyphae, spores, and budding yeast, suggestive of fungal infection, i.e., *Candida*

species [Figure 1B]. Per-iodic stain (PAS) and Gram stain was done which also showed similar fungal elements. A repeat aspiration was done, and KOH mount was prepared which showed *Candida* species [Figure 1C]. These were confirmed on culture on Blood agar.



**Figure 1A-C: A- 2x2 cm, firm, mobile non-tender swelling noted in left temporal region; B- Smear showing pseudo-hyphae and budding yeast, suggestive of fungal infection, i.e., *Candida* spp [Giemsa, 40X]; C- KOH mount showing the fungal hyphae [40X].**

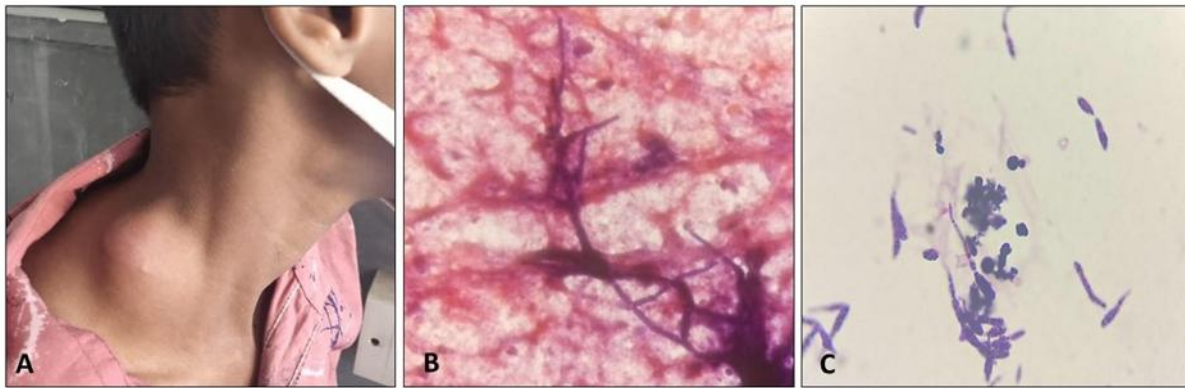
#### Case 2:

A 10-year-old male child presented with swelling in the right lower neck region for the last 6 months [Figure 2A]. There was a history of off and on fever. There was no history of cough, or any other respiratory illness in past. There was no history of any systemic illness or surgical intervention in the past.

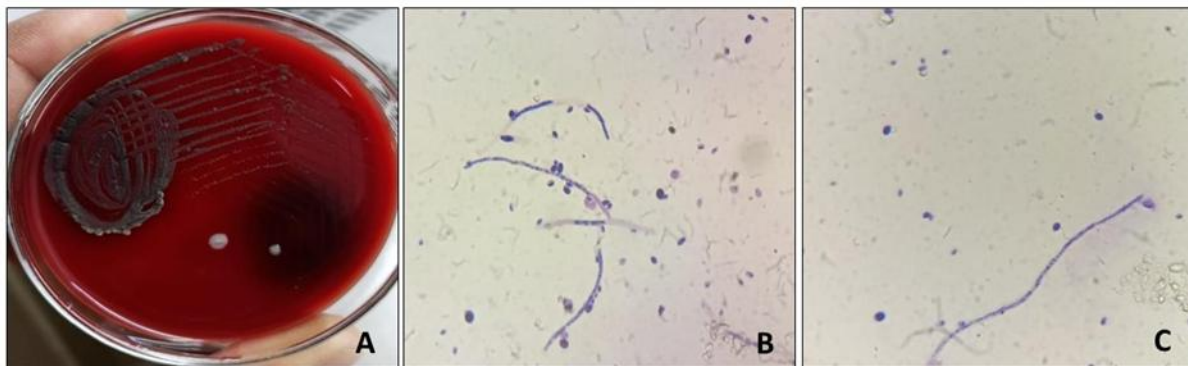
On examination, the swelling was soft & fluctuant with a stretched overlying skin and measured 3x3 cms in size. A clinical suspicion of tuberculosis was made, and the patient was advised routine investigations along with cytological evaluation of the swelling to rule out tuberculosis.

Complete blood counts and routine biochemical investigations were within normal limit. Fine needle aspiration was done using a 23-gauge needle and yielded blood mixed aspirate with tiny whitish flake like material. Smears were prepared and stained with Giemsa and Papanicolaou stain.

Smears showed numerous spores, fungal hyphae along with budding forms [Figure 2B]. KOH mount preparation, Grams' stain [Figure 2C] and PAS stain showed presence of *Candida* species. Culture on blood agar showed growth of round, pasty yellow colonies filamenting along their outer border and confirmed the presence of *Candida* [Figure 3A]. Smears prepared from the culture plate also showed budding yeast forms and spores, confirming the presence of *Candida* species [Figure 3B-C].



**Figure 2A-C: A- Clinical image showing a 4x4 cm, soft & cystic swelling in the right lower neck region; B- Smears showing fungal hyphae along with budding forms [Giemsa, 40X], C- Grams' stain smear showing spores & fungal hyphae of *Candida* spp [40X].**



**Figure 3A-C: A- Culture on blood agar showed growth of round, pasty yellow colonies filamenting along their outer border, confirming the presence of *Candida* spp., B- Smears prepared from the culture plate also showed budding yeast forms and spores, confirming presence of *Candida* species [Figure 3B-C].**

These two cases confirmed the rare presentation of *Candida* species at two unusual subcutaneous sites.

### Discussion:

Human skin is usually colonized by diverse fungal species. *Candida albicans* do not only reside on skin surface as commensals but also cause infection by growing into the colonized tissue.<sup>[1-5]</sup> Moreover, skin is an effective barrier against such infections. Any breach in such barrier can provide a portal of entry for such infectious agents.

Primary cutaneous mycoses is an uncommon entity, usually noticed in immunocompromised individuals.<sup>[1-3]</sup> The presence of diabetes mellitus, HIV infection, immunosuppressive drugs provide an ideal bed for such cutaneous infections.<sup>[2-5]</sup> The mode of entry of the infectious agents is through direct inoculation of fungus into the skin or from trauma like from burns, intravenous cannulation, etc.<sup>[3-6]</sup> In our study, we noted two cases of candidial infections

occurring as a soft tissue lesion, which is a very rare presentation, especially in immunocompetent individuals.

*Candida* species usually causes infection in three ways, i.e, superficial, cutaneous & sub-cutaneous and deep systemic infections, k.a., invasive candidiasis.<sup>[2]</sup> Invasive candidiasis is seen in more than 25000 individuals every year with a high mortality of 40% making it a potential life-threatening condition.<sup>[2-3]</sup> This mandates an early diagnosis of such infection to initiate appropriate treatment.

Very few case reports of cutaneous candidiasis have been reported. In a study by Corti M et al<sup>[3]</sup>, authors have advocated the use of culture method from subcutaneous abscess for a precise diagnosis of such fungal agents.

Amita et al <sup>[2]</sup> (2017), Corti M et al <sup>[3]</sup> (2015) and Gochhait et al <sup>[4]</sup> (2015) reported cutaneous candidial infections in right forearm swelling, chest wall region and forehead, respectively. We report such two cases, one on left temporal region and other on the right lower neck region, both in immunocompetent individuals.

Fine needle aspiration cytology (FNAC) is an initial tool which is widely used for the diagnosis of such superficial & deep masses. The basic behind doing it is to categorize these masses into inflammatory, benign and malignant lesions. Hence, the role of FNAC becomes very much important in diagnosis of mycoses as delay can lead to serious consequences. Along with routine stains like H&E, and Papanicolaou; special stains like Per-iodic acid Schiff (PAS), KOH mount and culture were done in our cases which confirmed the diagnosis of infection by Candida species. At times, cytology is sufficient in making a final diagnosis even negating the requirement of excision and histopathological evaluation, as in our first case where an initial diagnosis of nerve sheath tumor was made.

Culture is considered as gold standard for the diagnosis of mycoses but it requires a lengthy period of approximately 2 weeks for growth and especially categorization. To add to it, serological reactions lack complete specificity and the positivity rate being only 50%. <sup>[2,4-6]</sup> Hence cytology with special stain plays a major role in being a simple, widely available, fast, easy and cost-effective investigative modality in its diagnosis. Apart from the fungal agent, smears from such subcutaneous masses would also show presence of polymorphs, eosinophils, foamy histiocytes, epithelioid cell granuloma, multinucleated giant cells and necrosis; but these all depend on the immune status and other factors.

Early diagnosis and appropriate treatment with antifungal drugs can be very much helpful to the patients, especially to prevent any complication. <sup>[5-7]</sup> In our both patient, complete resolution of the infection was noted with only antifungal drugs. No complications were noted in either of the patients. The patients were followed up for 3 months and no recurrence was found.

## Conclusion:

To conclude, all superficial, suppurative soft tissue lesions should be judiciously screened for presence of any such fungal/other infectious agents, if any. Primary mycoses though rare but is easily treatable. FNAC, in conjunction with special stains like PAS, KOH mount and serology can play a major role in early diagnosis of these cutaneous mycoses and prevent the unwanted dreaded complications of any invasive infection.

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