



BE BOLD TO TRACK THE MOLD: AN INTERDISCIPLINARY APPROACH. A CASE SERIES ON RARE PRIMARY DERMAL ASPERGILLOSIS

Pathology

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ABSTRACT

Introduction: Aspergillus is the most common ubiquitous opportunistic mould affecting the immuno-compromised host more frequently than immuno-competent host. Isolated primary cutaneous aspergillosis in an immunocompetent host is a rare entity and FNAC acts as a mainstay in primary morphological diagnosis of the same. **Aim:** To prove the role of FNAC as a simple and efficient diagnostic modality for cutaneous aspergillosis and to correlate the cytology findings with the results of microbiological work up to establish the causative agent. **Material And Methods:** FNAC was performed in 5 patients presented with dermal based lumpy-bumpy lesion. Smears were stained with H&E and PAS. Samples were sent to microbiology department confirmation of the species. **Results:** 5 Cases of cutaneous aspergillosis were diagnosed primarily through FNAC, which was later aspergillus species were confirmed on culture. Out of 5 cases, culture showed Aspergillus flavus (2 cases), Aspergillus fumigatus (1 case) and Aspergillus niger (1 case). One case was inconclusive. **Discussion** - Breach in primary cutaneous defence secondary to trauma is the root cause of Primary cutaneous Aspergillosis (PCA). Hence farmers are the easy victims. Interdisciplinary diagnostic approach in form of cytological examination (FNAC) and microbiological examination (Fungal culture, KOH mount, LPCB mount) is must to pin point causative agent. **Conclusion:** Aspergillus a rare cause of cutaneous mycosis, requiring high degree of suspicion as they can present with non-specific clinical features masquerading from non-neoplastic to aggressive neoplastic lesion. Interdisciplinary diagnostic approach is must for targeted medical and surgical management to reduce morbidity.

KEYWORDS

Primary Cutaneous Aspergillosis, Immunocompetent host, FNAC, fungal culture, Aspergillus flavus

INTRODUCTION

Cutaneous Mycoses are chronic localised infections of skin and subcutaneous tissue occurring as primary or secondary lesions. Primary cutaneous mycoses are caused by variety of tropical saprophytes, mostly through direct implantation of fungal elements from contaminated soil, thrones and wood splinters into skin and subcutaneous tissue. Most common primary dermal mycotic agents are dermatophytes and less common are non-dermatophytes like chromoblastomycosis, eumycetoma, sporotrichosis, phaeohyphomycosis.^[1] Primary Cutaneous Aspergillosis (PCA) rarely affects immunocompetent host accounting for < 5% cases of total aspergillus infection.^[2,3]

Here we present a case series on primary cutaneous aspergillosis, a rare cause of cutaneous mycosis diagnosed by FNAC. Further mycology works up microbiology department in the form of fungal culture, KOH mount and lactophenol cotton blue (LPCB) mount.

MATERIAL AND METHODS

It was a prospective observational study which was conducted at tertiary care hospital, Rural India over a period of 1 year. Informed consent was taken in each case prior to performing the FNAC. (Table 1)

Table 1: Summary Of Clinical Cases

Sr. no.	Age/sex	Site (duration) + lesions	Occupation
01	55 years/ Male	- Right forearm (4 months) - Measuring 4x3 cm, firm, mobile and non-tender. (Figure 01)	Farmer

02	45 years/ Female	- Left great toe (1 year) 4 x 4 cm, firm to cystic, tensed and tender. (Figure 02)	Farmer History of trauma +
03	45 years/ Male	- Left foot dorsum, near little toe (8 months) 3 x 3 cm, soft – cystic, tensed and tender	Farmer History of trauma +
04	65 years/ Male	- Anterior aspect of left leg (2 months) 1 x 1 cm, soft to firm, mobile and non-tender. (Figure 03)	Farmer
05	48 years/ Female	- Middle finger of right hand (1 year) 3 x 3 cm, soft, mobile and non-tender. (Figure 04)	Housewife, Chullha worker

FNAC was performed using a 23-gauge needle attached to a 10 ml disposable plastic syringe fitted onto an FNA handle. Alcohol-fixed smears were prepared from the aspirated material and stained with haematoxylin and eosin (H and E) stain and Periodic Acid Schiff (PAS) special stain for fungus. All the cases were diagnosed as dermal aspergillus infection considering the characteristic morphology of delicate filamentous septate hyphae with acute dichotomous branching against the background of dense pyogenic infiltrate n scattered multinucleated giant cells on FNA cytology. The aspirated material was also sent for mycological work up at microbiological department in all the 5 cases.

Microbiological Examination

1. Culture:

The aspirated material was inoculated on Sabouraud Dextrose Agar (SDA) with antibiotics and without cycloheximide at 25 °C and 37 °C respectively, produced velvety, yellow to green colonies. The reverse was grey-black.

Cutaneous Aspergillosis is a rare entity and may occur as either primary or secondary infection. Primary cutaneous aspergillosis occurs by mostly by accidental inoculation of spores at the site of injury through throne prick & wood splinters while working in the field bare footed or without any protective measures.^[4] Out of 5, 4 patients in our series were farmer by occupation with H/O trauma while working in the field and one patient was housewife used to cook on chullah using wooden splinter.^[5,6]

Cutaneous aspergillosis clinically can present as violaceous macules, papules, subcutaneous nodules to subcutaneous abscess masquerading as both non-neoplastic as well as neoplastic lesions.^[7] Classic clinical presentations with *Aspergillus flavus* is violaceous macules, papules, haemorrhagic bullae with central necrosis, pustules masquerading as microbial abscess. We also had similar clinical presentation in case 3 & 4 in our series.^[8]

PCA is commonly seen in immunocompromised conditions like diabetes, malignancies, long term use of steroids or seropositivity, and rare in immunocompetent host.^[9] Though all our patient were immunocompetent but they all were underweight, belonging to poor socioeconomic strata. Out of five, 4 were farmer by occupation while one was housewife used to cook on chullah using wood splinters. Avoiding working barefoot and wearing full body loose cotton clothes while working in the field can prevent accidental inoculation of fungal elements.

Cutaneous aspergillosis can clinically present as wide spectrum non-specific lesions ranging from non-neoplastic to aggressive neoplastic lesion.^[10,11,12]

FNAC is well established simple, fast and inexpensive OPD diagnostic technique to aid an early diagnosis of the lesion. Our study revealed presence of septate filamentous hyphae showing acute angle branching on H & E as well as PAS stain, cytomorphology consistent with aspergillus fungus in all five cases of cutaneous bumpy lumpy lesions. Later microbiological workup (10% KOH mount, SDA slope culture and LPCB mount) were done in 4 cases which revealed *A. flavus* (2 cases), *Aspergillus fumigatus* (1 case) & *A. niger* (1 case) while one case didn't show any growth. Primary cutaneous aspergillosis is commonly caused by *A. flavus*, *A. fumigatus* and rarely by *A. niger*.^[13,14,15]

Clinical presentation with *Aspergillus*. Thus, FNAC followed by mycology work up helped all the 5 cases to manage conservatively avoiding undue surgery, proving the phrase 'stitch in time saves the nine' fitting perfectly in our case series.

CONCLUSION:

Present case series give emphasis on increasing an awareness among the diagnostic physicians about the primary cutaneous aspergillosis, a rare entity as one of the differential diagnoses of cutaneous and subcutaneous mass lesions.

Be bold to track the mould, an inter-disciplinary diagnostic approach is important in avoiding undue surgery.



Figure: 01 – Clinical image of swelling over right forearm (Case 01)



Figure: 02 – Clinical Image Of Nodular Swelling Over Left Great Toe. (Case 02)



Figure: 03 – Clinical Image Of Swelling Over Anterior Aspect Of Left Leg (Case 04)



Figure: 04 – Clinical image of swelling over middle finger of right hand (Case 05)

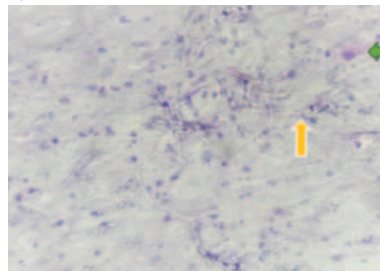


Figure 5 (40X): H/E stain: aspirate showing septate filamentous hyphae with acute angle branching (↑) against inflammatory background and giant cell reaction (←) Stain used H and E.



Figure 6 (40X): PAS stain showing PAS positive fungal hyphae



Figure 07:



Figure 08:

Figure 7 & 8: SDA slope showing yellowish-green mycelial colonies (↑) suggestive of *Aspergillus flavus*



Figure 9: Holy sprinkle appearance

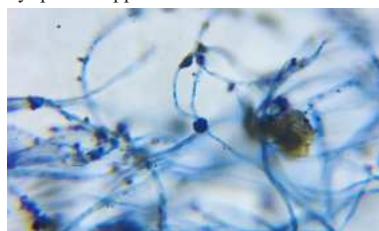


Figure 10: LPCB mount showing conidia (↑) suggestive of *Aspergillus flavus*.

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