FIRST CASE REPORT OF CUTANEOUS ASPERGILLOSIS FROM TAMILNADU : DIAGNOSIS BY FINE NEEDLE ASPIRATION CYTOLOGY AND REVIEW OF THE LITERATURE

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ABSTRACT
Aspergillus are ubiquitous and more than 30 species have been reported to be involved in human infection. Most of the cases occur in immunocompromised patients and are disseminated in the blood. Primary cutaneous aspergillosis in immunocompetent hosts is rare. We report a unique case of primary cutaneous aspergillosis in an immunocompetent patient diagnosed by fine needle aspiration cytology. The characteristic ascocarp and ascospores of Aspergillus species were found in the aspirate and Aspergillus glaucus was isolated in pure culture. The case is presented to increase the awareness of the usefulness of fine needle aspiration cytology for diagnosing fungal infections.

INTRODUCTION
Cutaneous aspergillosis is a rare disease and may occur as either primary or secondary infection. In primary cutaneous aspergillosis, the lesion occurs as a result of direct inoculation of Aspergillus spores at the site of injury following intravenous catheter, trauma, occlusive dressings and tapes, burns or surgery. In secondary cutaneous aspergillosis, the lesions occur due to haematogenous dissemination from a primary focus such as the lungs or to contiguous spread to the skin from underlying infected structures (1-3). Primary cutaneous aspergillosis is commonly caused by Aspergillus flavus, Aspergillus fumigates, Aspergillus niger, Aspergillus terreus and Aspergillus ustus (4-8). Most cases occur in immunocompromised patients and reports in the literature of primary cutaneous aspergillosis in immunocompetent individuals are very rare. In this report, we describe a unique case of primary cutaneous aspergillosis due to Aspergillus glaucus in an immunocompetent patient diagnosed by fine needle aspiration cytology (FNAC) where the characteristic ascocarp and ascospores were found in the aspirate.

Case Report
A 26 -year -old laborer presented with an erythematous, nodular lesion on the left forearm which had appeared five months previously. There was no history of trauma or any invasive procedure. Examination revealed a fairly hard erythematous nodule 8 × 5 cm in size with a number of pustular lesions on the left forearm. The nodule was firm in consistency, tender and not fixed to the underlying structures. Routine laboratory investigations were within normal limits. The case was clinically diagnosed as subcutaneous abscess and fine needle aspiration cytology (FNAC) was performed.

Cytological Examination
Cytological examination of the aspirate revealed the presence of few pus cells and large fruiting bodies resembling the ascocarp and ascospores which characterize the fungal Ascomycetes.

Mycological Investigation:
Direct examination of the aspirate in 10% KOH showed the presence of few, hyaline, septate hyphae and large number of spores. Gram stain showed the absence of bacteria and Ziehl-Neelsen stain and Kinyoun acid-fast stain were negative for acid-fast bacilli.

Culture: The aspirate was inoculated on Sabouraud Dextrose agar with and without gentamycin and incubated at 26° C and 37° C. Pure growth of moderately fast growing, felt-like, green colonies turning yellowish brown were obtained at 26° C. The reverse was yellowish brown. Growth was poor at 37° C. Culture mount revealed large conidial heads; conidiophores uncolored and smooth; vesicles globose, fertile over entire surface; phialides uniseriate, radiate to very loosely columnar; conidia subglobose and echinulate. In addition a number of large, spherical, thin wall cleistothecia containing asci and ascospores were present. The isolate was identified as Aspergillus glaucus (Eurotium Species ).

Therapy: The patient was treated with ketoconazole 200 mg twice daily. After two months of treatment, there was considerable reduction in the size of the swelling and he was advised to continue the drug and report for follow up after two months. However, the patient failed to return and lost for follow up.
Discussion

Aspergillus species is the most ubiquitous fungi that exist in soil, water and decaying vegetables. Although there are over 350 species of Aspergillus, widely distributed in nature, only a few are pathogenic to man and often A. fumigatus and A. flavus are the offenders in systemic infections. Cutaneous aspergillosis is mostly caused by A. flavus and A. fumigatus and rarely by A. niger, A. terreus, A. ustus, and A. chevalieri (4-9). Clinically the lesion is characterized by the presence of violaceous macules, papules, plaques, subcutaneous nodules, haemorrhagic bullae, ulcerations with central necrosis and pustules or subcutaneous abscess. Most cases occur in immunocompromised patients and are disseminated in the blood. In the present report, the primary cutaneous aspergillosis occurred in an immunocompetent patient in whom laboratory tests ruled out any underlying disease.

Reports of primary cutaneous aspergillosis are rare. Nevertheless, an increase in the prevalence of the disease has been noticed since the 1970s as a result of the ever increasing spectrum of immunocompromised patients (3). Initially the disease is reported in neutropenic hosts, occurring mainly in neonates, burns cases, patients undergoing intensive chemotherapy, organ transplant recipients and HIV patients (3, 10-12). Immunocompetent patients can rarely develop cutaneous aspergillosis at the site of surgical wounds or by traumatic inoculation. This usually involves sites of skin injury eg., intravenous access catheter sites, traumatic or surgery wounds, occlusive dressings used in burns cases (3,11-13). In this situation, the disease has mostly a favorable outcome.

Diagnosis of cutaneous aspergillosis requires skin biopsy. Histopathological examination with routine hematoxylin-eosin and special fungal stains such as Gomori methanamine silver and periodic acid-Schiff stains would detect the presence of acute-angled branching, septate hyphae and at times fruiting structures namely heads and conidia of Aspergillus species (14). However, our case has been diagnosed by fine needle aspiration cytology (FNAC) and to our knowledge, this is the first report where the characteristic ascocarp and ascospores were demonstrated in the aspirate and A. glaucus was isolated in pure culture. Cheetham had reported a case of subcutaneous infection due to A. terreus where the pus from the lesion contained structures resembling spherules. However, culture of the spherules yielded no growth and no progressive lesions developed on animal inoculation. Hence, the spherules were reported to be not related to Aspergillus (15).

Treatment of cutaneous aspergillosis included a combination of surgical debridement and antifungal drugs. Potassium iodide, ketoconazole, Itraconazole and voriconazole have been tried and reported to give varying results. Prognosis of the disease depends entirely on the underlying illness. Primary cutaneous aspergillosis in immunocompetent individuals usually has a favorable outcome (16). In our patient, good improvement was obtained with ketoconazole therapy for two months. Though the patient was advised to continue the treatment and report for follow up, he failed to return and lost for further follow up.

The case is being presented to increase the awareness of the clinicians and pathologists that primary cutaneous aspergillosis could present as infected subcutaneous nodule and can be accurately diagnosed by FNAC which is a simple, inexpensive technique.

References

Figure 1: Erythematous nodular swelling with pustules on the flexor surface of the fore arm

Figure 2, a: Fine needle aspiration cytology showing the asccarps and ascospores. (Giemsa × 100)
Figure 2: Showing the ascocarp and ascospores (Giemsa × 400)

Figure 3: KOH mount of the aspirate showing branching septate hyphae and numerous spores (× 400)
Figure 4: Sabouraud Dextrose Agar media showing the colonies of Aspergillus glaucus. (26°C & 37°C)

Figure 5: Culture mount showing the Aspergillus conidial heads, conidiophores and ascocarps. LCB × 100
Figure 6. a, b: showing the vesicles, radiating uniseriate phialides, conidia & ascocarps with ascospores (LCB × 400)