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Case Report

A curious case of chest wall lump turning out to be isolated primary cutaneous aspergillosis in an immunocompetent female: a case report

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ABSTRACT

Aspergillosis is a fungal infection caused by certain types of mold. Although they are found commonly throughout nature, these molds normally don't cause problems. Aspergillosis is an uncommon fungal infection in which primary cutaneous sites are very rare. Most cases occur in immunodepressed patients and are disseminated in the blood. We report a 32 year old female with primary cutaneous aspergillosis in an otherwise immunocompetent female with no other systemic manifestation. 32 year old female presenting with left lower chest lump fixated to chest wall. It was thought of as neoplasm clinically and radiologically mostly soft tissue neoplasm and was planned for wide excision of lump with segmental excision of involved rib segment. On histopathological examination of the specimen, it showed aspergillus organisms. It is a case of primary cutaneous manifestation of aspergillosis as fixed chest wall lump with otherwise no Broncho-pulmonary or systemic involvement in an immunocompetent patient. Primary cutaneous aspergillosis presenting as isolated chest wall lump without any Broncho pulmonary or systemic involvement in an otherwise immunocompetent individual is an extremely rare manifestation.

Keywords: Invasive aspergillosis, Aspergilloma, Cutaneous aspergillosis

INTRODUCTION

Invasive aspergillosis is an opportunistic fungal infection caused by *Aspergillus* species in immunocompromised patients, usually after inhalation of spores.[1] It causes severe infections in immunocompromised patients resulting in high mortality, especially in neonates.

The usual sites of infections are the lungs, central nervous system, and sinuses; however, the rare cutaneous infection is usually associated with immunodeficiency. Primary cutaneous infection, especially in immunocompetent patients, is extremely rare. The predisposing factors noted in addition to immunodeficiency include, traumatic inoculation, occlusive dressing for an indwelling catheter, burns, aerosolization of fungi during the renovation of building, and prematurity in neonates.[2]

CASE REPORT

32 year old female homemaker by profession came walking in outpatient department with complaints of lump on lower left anterolateral chest since 6 months.

History of blunt trauma with no apparent break in skin integrity 6 months back after which she noticed swelling at same site which gradually increased in size over last 6 months. No history of pain / fever.

No history of respiratory complaints / headache / convulsion / bone pain / abdominal discomfort.

No history of weight loss/ decreased appetite or altered bowel and bladder habits.

Patient was evaluated for same and computerized tomography scan of chest with.

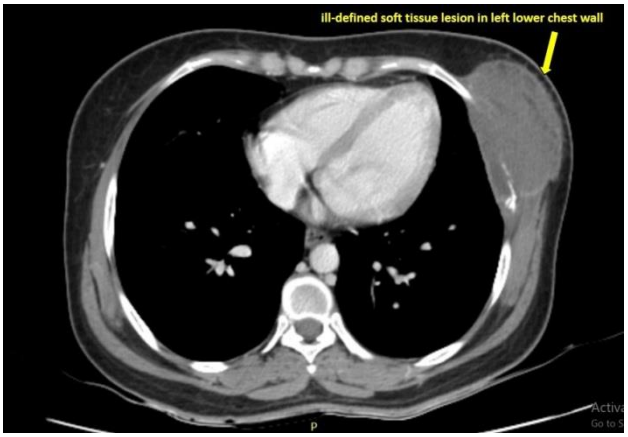

Figure 1: Soft tissue with variegated appearance adherent to the chest wall with no evidence of intrathoracic extension.

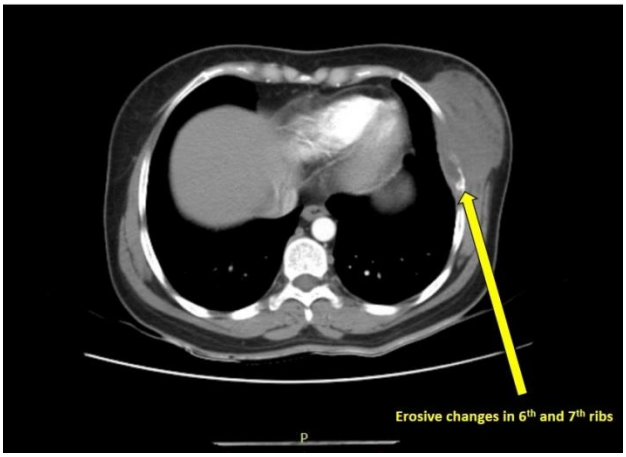

Figure 2: Soft tissue mass with erosive changes seen in 6th and 7th rib.

Intravenous contrast was done in outside hospital which revealed 'ill-define ill-marginated soft tissue lesion measuring approximately 7.6×7.4 centimeters in left lower chest wall with minimal fat stranding and minimal sub-pleural extension. Erosive changes seen in 6^{th} and 7^{th} ribs. Feature suggest possibility of soft tissue sarcoma / calcific myonecrosis. Bilateral lungs/pleural spaces normal. No mediastinal/hilar/axillary lymphadenopathy'. (Figure 1 and 2).

On examination–patient was alert, conscious, oriented in time place and person.

Blood pressure–130/70 millimeters of mercury, pulse–70/min, respiratory rate–12/min. no generalized lymphadenopathy.

Local examination–8 × 8 centimeters lump fixed to lower left chest wall near infra-mammary fold. Round shape, smooth surface and hard consistency. Overlying skin fixed to the mass. Non-tender. Bilateral breast / axilla examination was normal.

Blood investigation-hemoglobin–11.7 milligram/deciliter, total leukocyte count–8850/microliter, platelets count–250000/microliters, liver function test–within normal range, serum creatinine–0.8.

Patient was planned for excisional biopsy with wide excision of mass with SOS segmental rib excision under general anesthesia.

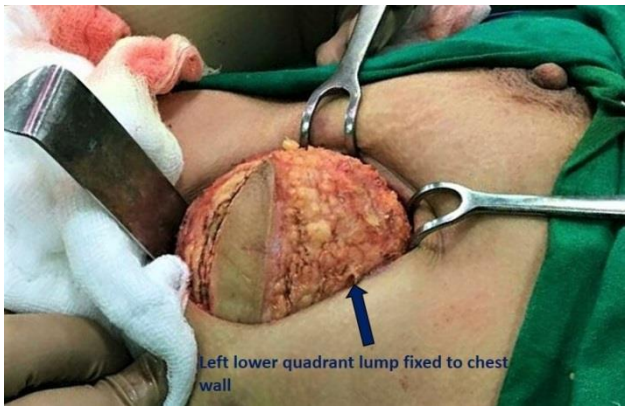

Figure 3: Intraoperative findings - left lower quadrant mass fixated to chest wall.

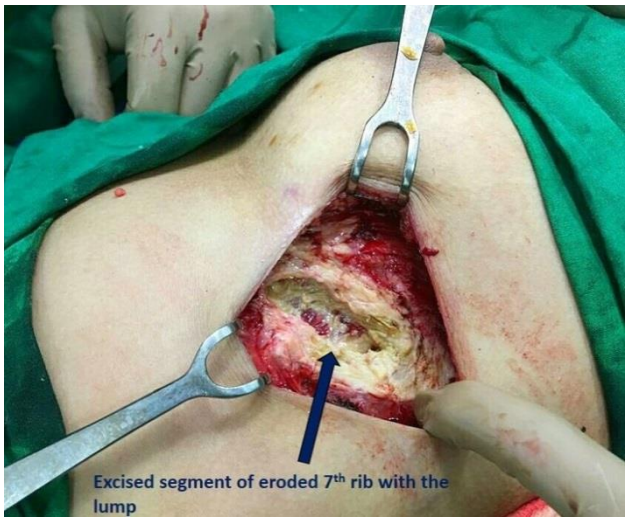

Figure 4: Segmental excision of 6th & 7th rib, erosive changes seen after excision of lump.

Intraoperative findings–elliptical skin incision was taken including the skin fixated to lump. Entire lump was excised with a segment of 7^{th} rib. A pus pocket of around 20 milliliters was identified in between ribs which was drained and sent for culture sensitivity, gene expert/acid fast bacilli smear and tuberculosis culture. The excised

lump was sent for histopathological examination (Figure 3 and 4).

Post operatively patient was vitally stable and was discharged on postoperative day 4 with all vital parameters within normal limits, wound healthy and healing.

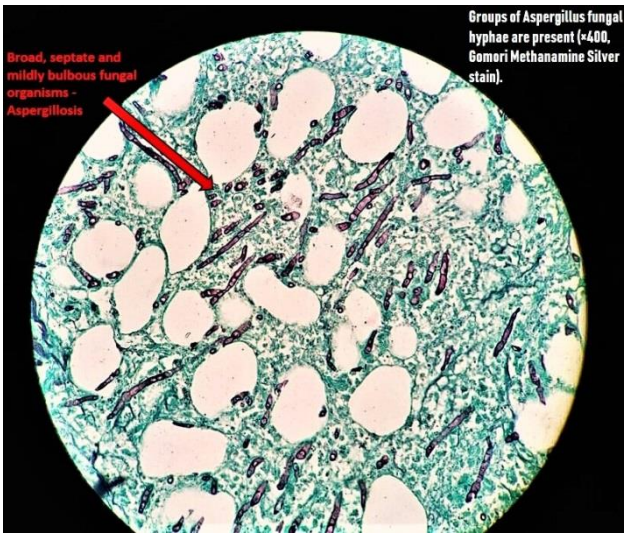

Figure 5: Histopathology of excised mass showed evidence of groups of aspergillus fungal hyphar on gomori methanamine silver stain.

Histopathological report –'ill-formed granuloma with multinucleated giant cells seen. Many broad, septate and mildly bulbous fungal organisms seen, morphologically resembling aspergillosis'(Figure 5).

Follow up visit after 10 days patient had no active complaint with wound healthy and healing. Patient was started on tab voriconazole 200 milligrams twice a day for 6 months in view of histopathology report and was advised repeat sonography chest after 3 months.

Patient is doing fine and has no active complaints at present.

DISCUSSION

Primary cutaneous aspergillosis usually involves sites of skin injury, namely, at or near intravenous access catheter sites, at sites of traumatic inoculation, and at sites associated with occlusive dressings, burns, or surgery. Secondary cutaneous lesions result either from contiguous extension to the skin from infected underlying structures or from widespread blood-borne seeding of the skin.[3]

We present a case of primary cutaneous aspergillosis in an immunocompetent patient. Aspergillus species are ubiquitous molds that can be isolated from the soil, air, dust, plants, skin, and nails. The previous study has shown that factors increasing the risk of aspergillosis include severe debilitating illnesses (e.g., cancer, burns, and chronic granulomatous diseases) and neutropenia (e.g., patients with leukemia, cytotoxic chemotherapy, corticosteroid therapy, broad-spectrum antibiotic therapy, and human immunodeficiency virus infection). However, no immunodeficient diseases or history of use of immunosuppressive agents was found in our patient.

The host defense mechanism against aspergillus species involves immunologic barriers and physical cutaneous barriers. Macrophages phagocytize aspergillus conidial, whereas polymorphonuclear leukocytes and monocytes damage aspergillus hyphae via oxidative and nonoxidative mechanism. Of great importance as well is the keratin and epidermal barriers of the skin that serve as an additional front line of mechanical host defence. It is important to note that our patient developed cutaneous Aspergillus infection despite his apparent immune-competent state.[4]

Mostly the long-term inhabitation of the patient in area with exposure to high spore counts, such as construction sites, farms, together with the traumatic injury which might lead to inoculation of aspergillosis spores—a portal of entry for the causative organism contributes to the infection over a period. Our patient had history of trauma 6months back after which the swelling developed gradually most probably secondary to skin inoculation of aspergillus spores leading to formation of aspergilloma.

The initial lesions of cutaneous aspergillosis may appear in different forms, including macules, papules, nodules, or plaques. The various clinical manifestations of cutaneous aspergillosis constitute a great diagnostic and therapeutic challenge, which in turn makes the repeated biopsy of a skin lesion for microbiology and pathology a prerequisite for a definitive diagnosis.[5]

Once the diagnosis of aspergillosis is established, the subsequent efforts should be directed at determining whether the infection has disseminated to or arisen from extra cutaneous site and the underlying impairment of patient immune system. Besides, the immune status of the infected patient should be evaluated as the host underlying immunity plays a critical role in the treatment of aspergillosis.[6]

Treatment for aspergillosis is systemic drug therapy with antifungal drugs like amphotericin B and voriconazole. Voriconazole is an extended-spectrum triazole that has now become the treatment of choice for invasive aspergillosis Voriconazole has a unique adverse effect profile compared with other azoles, but treatment is generally well tolerated.[7] Treatment of primary cutaneous fungal infection is controversial, both medical and surgical modalities have been undertaken. However, in the cutaneous disease, surgical excision alone and in some cases in combination with drug therapy has been found to be curative.[8-10] In our patient we did surgical wide excision of lump with a differential diagnosis of

neoplastic etiology which followed by medical treatment once diagnosis was confirmed on histopathology report.

Making an early diagnosis of primary cutaneous aspergillosis, especially in an immunocompetent patient is a clinical challenge, however, a combination of appropriate treatment with new antifungal drugs and careful considerations of adjunctive surgical therapy should improve the outcome in such patients.[10] Our patient was treated on similar line with a combination of surgical and medical treatment and responded quite well.

CONCLUSION

Invasive aspergillosis is seen mostly in an immunocompromised patients and its cutaneous manifestation through primary or secondary means is seen less frequently as compared to other systems.

Early diagnosis, a combination of surgical excision and systemic drug therapy with anti-fungal drugs will improve the outcome in patients with primary cutaneous aspergillosis, by reducing the chances of systemic dissemination and achieving a cure.

Isolated Primary cutaneous aspergillosis in an otherwise immunocompetent individual is an extremely rare presentation.

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