

## Fixed cutaneous sporotrichosis in a diabetic patient-a case report from Southern India

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### Abstract

Sporotrichosis is a chronic pyogranulomatous fungal infection of cutaneous and subcutaneous tissues which remain localised or may occasionally disseminate to other parts of the body. The causative agent is a thermally dimorphic environmental saprotrophic fungus, *Sporothrix schenckii* which enters the body through scratches or cuts in the skin. Diabetes, alcoholism, AIDS, leukemia, patients on corticosteroids, chemotherapeutic agents and patients with pre-existing lung disease are important predisposing factors. Here, we report a 65 year old female patient with history of diabetes mellitus for the past 12 years, presented with a leg ulcer and pus discharge for the past 2 years, which did not respond to antibiotic therapy. On examination, a single ulcer of 4x3 cm size was present over the plantar aspect of left foot with pus discharge. Pus was sent for bacteriological and fungal culture identification which revealed growth of *Staphylococcus aureus* and *Sporothrix schenckii* respectively. Slide culture and histopathological examination confirmed *Sporothrix schenckii*. Patient was treated with saturated solution of potassium iodide(SSKI) oral drops and itraconazole and followed up for the regression of lesions.

**Keywords:** Sporotrichosis, Diabetes Mellitus, Slide Culture, SSKI.

### Introduction

Sporotrichosis, a subacute or chronic infection caused by *Sporothrix schenckii* was originally described in 1898 by a medical student, Benjamin Schenck, at John's Hopkins Hospital in Baltimore, USA.<sup>(1)</sup> The disease is more prevalent in tropical and subtropical areas in climatic condition of high humidity and moderate temperature of 25-28°C. It is predominantly a disease of young male population due to their frequent contact with natural sources of infection because of their outdoor occupation. No transmission from man to man has been reported so far. In India, Sporotrichosis is prevalent in the northern states in the sub-Himalayan hilly areas with only few cases reported from southern states.<sup>(2)</sup> The endemic zones in India are the north eastern, northern and southern states of the country. Immunocompromised states like diabetes, HIV infection and alcoholism are the important predisposing factors. The disease is acquired through minor skin trauma. Zoonotic transmission of sporotrichosis has also been observed from pet animals like domestic cats, armadillos, camel, cattle, dog, pig, donkey, horse and birds.

Clinically, sporotrichosis manifests as lymphocutaneous, fixed cutaneous, mucocutaneous, extracutaneous and disseminated forms, all resulting from traumatic inoculation and primary pulmonary from inhalation of conidia. Lymphocutaneous form is more common (80%) followed by fixed cutaneous (20%) and in a lesser proportion, disseminated and extracutaneous forms. The extent of the disease varies according to immune status; T cell-mediated immunity limits its extent.

Culture is the reliable method for diagnosis. Aspirates from cutaneous nodules, pus, exudates and

material from curettage or swabbings from open lesions can be inoculated on Sabouraud's Dextrose Agar and incubated at 25°C and 37°C. Growth occurs within 3 to 5 days. Cultures should be held for at least four weeks before being discarded as negative. Demonstration of dimorphism is important for specific identification of *Sporothrix schenckii*. Slide culture reveals the undisturbed morphology. Culture of biopsy material and histopathological confirmation is extremely important whenever the diagnosis of sporotrichosis is considered. The various treatment modalities include saturated solution of potassium iodide, itraconazole, terbinafine, fluconazole and amphotericin b.

### Case Report

A 65 year old female, known diabetic for the past 12 years presented with complaints of ulcer over plantar aspect of left foot with pus discharge for the past 2 years which did not respond to antibiotic therapy. The lesion started with a swelling and gradually progressed to an ulcer. Patient denied history of trauma. History of loss of sensation of left foot was present. She did not have any constitutional or systemic symptoms. On examination, a 4x3cm oval, non-tender punched out ulcer was seen on the plantar aspect of left foot just below the big toe with induration. Pus discharge was present. Touch sensation was impaired. Systemic examination was normal. As the ulcer was not responding to antibiotic therapy, pus from the ulcer was sent for both bacteriological and fungal culture identification. Touch smear for AFB was negative. Baseline investigation of blood and urine revealed poor glycaemic control. Serology for retroviral status was non-reactive. Bacterial culture identification revealed growth of *Staphylococcus aureus*. For fungal culture

identification, the specimen was inoculated into two sets of SDA, at 25°C and 37°C.<sup>(3)</sup> By the 2<sup>nd</sup> day, at 37°C on SDA, white to yellow coloured smooth, pasty and yeast like colony morphology was observed. Microscopic examination showed spherical and ovate blastoconidia. By the 7<sup>th</sup> day, at 25°C on SDA, growth of brown, wrinkled and folded colonies was observed. Lacto phenol cotton blue mount of colonies showed thin, septate branching hyphae intertwined giving 'twisted ropes' appearance and the conidia were arranged sympodially over the slender conidiophores which were arranged perpendicular from the hyphae giving a flower like appearance. Slide culture was also put up to confirm the morphology of *Sporothrix schenckii*. Culture of biopsy material and histopathological examination also confirmed the growth of *Sporothrix schenckii*. Repeated cultures from the lesion revealed the same results.

Patient was treated with SSKI 5 drops thrice daily for 12 weeks and was followed up regularly. Diabetologist opinion was obtained for glycaemic control and evaluation of neuropathy and its management. Associated secondary bacterial infection with *S.aureus* was treated with antibiotics based on the sensitivity pattern. Proper foot care was advised.

## Discussion

Sporotrichosis is most commonly a chronic infection characterised by nodular lesions of the cutaneous or subcutaneous tissues and adjacent lymphatics that suppurate, ulcerate and drain. The etiologic agent *Sporothrix schenckii*, gains entrance by traumatic implantation to skin or rarely by inhalation into the lungs. But in this patient, there was no history of trauma, which could be attributed to the diabetic neuropathy because of which the patient failed to recognise the traumatic implantation.

In India, sporotrichosis has been reported sporadically from Punjab, Uttar Pradesh, Tripura, Meghalaya, Andhra Pradesh, Kerala, Karnataka, Delhi and Chennai<sup>(2)</sup> and recently in 2006, Manipur has been reported as an endemic area of sporotrichosis.<sup>(3)</sup> Though widely distributed in the north eastern and northern parts of India, only four cases have been reported from southern India to date.<sup>(4)</sup> So, this case has been reported for its rarity from southern part of India.

Sporotrichosis can affect all ages (Rippon 1988, Vismer and Hull 1997). Primary infections in children as young as ten days (following a rat bite) and in adults in their seventh and eighth decades have been recorded. Our patient is an elderly female indicating the predilection of sporotrichosis to affect the older age group also. The number of cases affecting men and women varies from region to region.<sup>(5,2,7)</sup> The apparent differences in distribution of the disease among the sexes is probably related to occupation and exposure. Female preponderance has been reported by Conti-Diaz et al,<sup>(9)</sup> similar to the presentation in our case.

De Beurmann and Gougerot<sup>(8)</sup> suggested that sporotrichosis could be considered an opportunistic infection and Mariat<sup>(9)</sup> has suggested that malnutrition is a significant factor in infection. Our patient is a known diabetic for 12 years, suggesting a strong predisposition to acquire the disease and it is also known that normal, healthy, well nourished adults seldom develop the disease unless they receive an overwhelming inoculum. Other predisposing factors are alcoholism, hematologic malignancies, chronic obstructive pulmonary disease, long term treatment with corticosteroids, chemotherapeutic drugs, transplant recipients and patients with AIDS.

Among the different types of sporotrichosis, lymphocutaneous presentation is the commonest clinical form followed by the fixed cutaneous type.<sup>(2)</sup> But Honbo et al<sup>(10)</sup> found the fixed type accounting for 51% of cases, lymphocutaneous for 48%, disseminated for 0.5% and gummatous for 0.1%. Our patient had fixed cutaneous type of sporotrichosis affecting the lower limb with large ulceration.

**Fixed Cutaneous Sporotrichosis:** In highly endemic areas, sensitization with *S.schenckii* occurs which restricts the infection in such people to the site of inoculation and sensitization can be demonstrated by reaction to sporotrichin skin test. The commonest sites of infection are the face, neck and trunk. But in an endemic area of Australia, lesions most often have occurred on the legs.<sup>(11)</sup> Similar presentation has been noted in our case. The lesion manifests as ulcerative, acneform, infiltrated or erythematoid plaques or as scaly, patchy, macular or popular rashes that do not involve lymphatics and remain fixed. Our patient presented with large ulcer of the foot without any lymphatic spread. More women than men had the disease and in children cheek and nose were the favoured spots. Fixed cutaneous type seldom disseminated into systemic disease. Since the lesions have varied morphologies like ulcers, crusts and weeping appearance, they must be differentiated from many cutaneous diseases like verrucous tuberculosis, atypical Mycobacterial infection, papular necrotic tuberculosis, chromoblastomycosis and cutaneous leishmaniasis.

Considering the various differential diagnoses for the non-healing ulcer, bacterial and fungal culture identification and histopathological examination was performed to reach the prompt diagnosis in this patient. Patient was treated with SSKI oral drops thrice daily and itraconazole 200 mg daily for a period of 3 months. Regular follow up of patient was done and the lesions regressed.

## Conclusion

- Sporotrichosis is uncommon in southern parts of India and this case is reported for its rarity.
- Not all the ulcers in diabetic patients are diabetic ulcers.

- Not only bacteria, but also fungi are the emerging pathogens in diabetic ulcers.
- Any chronic ulcer has to be evaluated for fungal causes also and should be confirmed by histopathology.
- Though the patient was a diabetic with a strong predisposition to have a disseminated form of sporotrichosis, the fixed cutaneous type has manifested atypically in this patient.
- Early, prompt diagnosis and appropriate treatment avoids dissemination of the condition.
- Good glycaemic control, early evaluation of neuropathy and treatment, with proper foot care can prevent traumatic implantation and ulceration of foot.

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