Section: General Surgery

Case Report

A RARE CASE PRESENTATION OF ACTINOMYCOSIS OF THE FOOT: A CASE REPORT

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ABSTRACT

Background: Actinomycosis is an uncommon chronic granulomatous bacterial infection caused by Actinomyces species. Foot involvement is extremely rare and often resembles chronic osteomyelitis, mycetoma, tuberculosis, or soft tissue malignancy, resulting in delayed diagnosis. **Case Presentation:** A 46-year-old male presented with a progressively enlarging swelling over the plantar aspect of the right foot for six months associated with pain and foul-smelling serosanguinous discharge. Clinical examination revealed a 10 × 8 cm firm swelling with multiple sinus openings. Radiological evaluation suggested chronic soft tissue involvement. Histopathological examination confirmed actinomycosis. The patient underwent wide local excision followed by split-thickness skin grafting and received prolonged antibiotic therapy. The postoperative period was uneventful with satisfactory wound healing.

INTRODUCTION

Actinomycosis is a chronic suppurative granulomatous infection caused by Gram-positive, filamentous, anaerobic bacteria belonging to the genus Actinomyces. These organisms are normal commensals of the oral cavity, gastrointestinal tract, and female genital tract but become pathogenic following disruption of mucosal barriers. The disease most commonly affects the cervicofacial region (50–60%), followed by the thoracic and abdominopelvic regions. Primary involvement of the foot is exceedingly rare.

The disease is characterized by chronic induration, abscess formation, fibrosis, and multiple draining sinuses that discharge characteristic sulfur granules. Because of its indolent progression and nonspecific clinical presentation, actinomycosis frequently mimics tuberculosis, chronic osteomyelitis, fungal mycetoma, diabetic foot infection, or soft tissue malignancy, making diagnosis difficult.

Diagnosis requires a high degree of clinical suspicion and is confirmed by histopathological examination and microbiological culture. The mainstay of treatment consists of prolonged antibiotic therapy combined with surgical debridement or excision whenever necessary. We present a rare case of plantar actinomycosis successfully managed with wide local excision and split-thickness skin grafting.

CASE REPORT

Patient Information: A 46-year-old male from Namakkal, Tamil Nadu, presented to the General Surgery outpatient department with complaints of swelling over the plantar aspect of the right foot for six months.

The swelling began as a small painless lesion and gradually increased in size. It was associated with pain and intermittent foul-smelling serosanguinous discharge. The patient had a history of walking barefoot but denied any history of trauma, thorn prick injury, fever, or difficulty in walking. He had no significant medical comorbidities or previous surgical history.

Local Examination: A solitary swelling measuring approximately 10 × 8 cm was present over the plantar aspect of the right foot.

Inspection: Spherical in shape

Extent:

- Superior border about 8 cm from base of the toe
- Inferior border about 6 cm from the heel
- Margins well defined
- Surface irregular with sinus and seroganguinous foul smelling discharge present
- Surrounding area normal
- No dilated veins / scar
- No fullness in inguinal region
- No pedal edema

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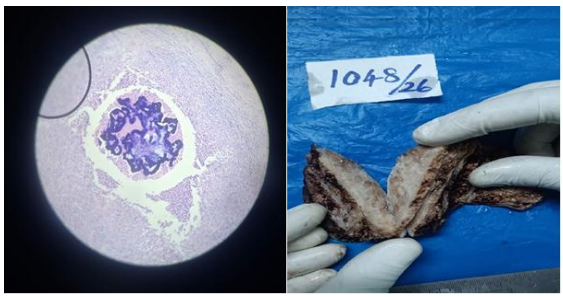
Palpation

- No warmth or tenderness
- All other inspector findings are confirmed on palpation
- Surface found to be irregular with sinus opening and serosanguinous discharge
- Consistency found to be firm
- skin not pinchable
- Swelling was immobile fixed to underlying muscle
- Plane of the swelling deep fascia
- Base fixed to underlying muscle
- No lymph nodes palpable
- No restriction of movements of ankle or foot
- Peripheral pulses felt
- Sensation normal

Investigations: Routine hematological investigations were within acceptable limits.
Radiological imaging demonstrated chronic soft tissue involvement without obvious bone destruction.

Pus culture and sensitivity from sinus discharge shows no growth.
Histopathological examination demonstrated sulfur granules surrounded by filamentous Gram-positive organisms consistent with Actinomycosis.



MRI of right foot shows T1 hypointense/T2 heterointense lesion in the subcutaneous plane and intermuscular plane of midsole of foot extending to flexor compartment in sole of foot.
Treatment: The patient underwent

- Wide local excision
- Thorough wound debridement
- Split-thickness skin grafting

Postoperatively, prolonged antibiotic therapy with penicillin-based antibiotics was administered.
The graft uptake was satisfactory, and the wound healed without complications.

Figure 1: preoperative picture

Figure 2: intraoperative picture

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Figure 3: post wound debridement

Figure 4: Post Split Skin Grafting

DISCUSSION

Actinomycosis is a rare chronic bacterial infection caused predominantly by Actinomyces israelii. The disease develops following disruption of normal mucosal barriers, allowing endogenous bacteria to invade adjacent tissues. Primary involvement of the foot is extremely uncommon because Actinomyces species are not normal inhabitants of the skin.

Patients commonly present with a slowly progressive swelling, induration, abscesses, and multiple draining sinuses. Sulfur granules within the discharge are considered highly suggestive of actinomycosis, although they are not always clinically evident. The disease often follows trauma, thorn prick injuries, or prolonged barefoot walking, particularly among agricultural workers.

Because of its rarity, foot actinomycosis is frequently misdiagnosed as:

- Chronic osteomyelitis
- Mycetoma (Madura foot)
- Tuberculosis
- Soft tissue sarcoma
- Chronic pyogenic abscess

Radiological findings are usually nonspecific and may demonstrate only soft tissue swelling or, in advanced disease, cortical bone erosion. Histopathological examination remains the gold standard for diagnosis, demonstrating sulfur granules surrounded by branching filamentous Gram-positive bacteria. Anaerobic culture may confirm the diagnosis but has a relatively low isolation rate due to previous antibiotic exposure and difficulties in specimen handling.

The standard treatment consists of prolonged high-dose penicillin therapy for several months. Surgical intervention is indicated in patients with extensive fibrosis, abscess formation, necrotic tissue, or when malignancy cannot be excluded. Complete surgical excision combined with prolonged antibiotic therapy significantly reduces recurrence rates and improves functional outcomes.

Our patient presented with a chronic plantar swelling associated with multiple draining sinuses and foul-smelling discharge, initially raising the possibility of chronic osteomyelitis or mycetoma. Histopathological examination established the diagnosis of actinomycosis. Successful treatment was achieved with wide local excision, split-thickness skin grafting, and prolonged antibiotic therapy. This case highlights the importance of maintaining a high index of suspicion for this rare entity, particularly in patients with chronic non-healing foot lesions.

CONCLUSION

Actinomycosis of the foot is an uncommon clinical entity that poses significant diagnostic challenges because of its nonspecific presentation and resemblance to other chronic infective and neoplastic conditions. Early recognition through histopathological evaluation and microbiological confirmation is essential for prompt diagnosis. Combined surgical management and prolonged antibiotic therapy remain the cornerstone of treatment and result in excellent clinical outcomes. Clinicians should consider actinomycosis in the differential diagnosis of chronic plantar swellings with sinus formation, especially in patients with a history of barefoot walking or recurrent soft tissue infections.

Learning Points

- Foot actinomycosis is an extremely rare presentation.
- Chronic draining sinuses should always raise suspicion for actinomycosis.
- Histopathology remains the diagnostic gold standard.
- Long-term penicillin therapy is the treatment of choice.
- Surgery is indicated for extensive disease and facilitates complete cure.

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