

Actinomycosis – A Common Incidental Diagnosis at Different Sites

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Abstract: Actinomycosis is a rare, chronic, and slowly progressive granulomatous disease caused by filamentous Gram positive anaerobic bacteria from the Actinomycetaceae family (genus Actinomyces).¹In humans, actinomyces are often normally found in the oral cavity, the gastrointestinal tract and the female genital tract. Infections of the oral and cervicofacial regions are the most commonly reported cases.²We present three cases where actinomycosis was diagnosed incidentally. The first case was of scalp where it presented as a soft tissue swelling. The second case was of dorsum of foot where it was found in a cyst and the third diagnosis was done in a specimen of appendicectomy.

Keywords: Actinomycosis, scalp, dorsum of foot, appendicectomy

I. Introduction

Actinomycosis is an indolent, slowly progressive, suppurative infection caused by gram-positive branching bacteria of the genus Actinomyces. The organism is a member of the oral and gastrointestinal microflora of humans. The disease actinomycosis most commonly occurs in 3 body regions: cervicofacial (55% of patients), abdominopelvic (20%), and pulmonothoracic (15%).³Actinomycosis very rarely involves other parts of the body. In this article actinomycosis was diagnosed in a scalp swelling and on the dorsum of foot, both of which are very rare presentations. Although appendix is a nidus for actinomycosis it can only be diagnosed after appendicectomy on histopathological examination.⁵

II. Case Reports

Case 1: An 18 year old male presented with a scalp swelling since 1 year in the frontal region which was not associated with pain or discharge. There was a positive history of trauma 4 years back. His general and systemic examination was normal. On local examination an irregular swelling with ulceration of skin measuring 10x6x4 cm was seen. It was firm, mobile and non-tender (figure 1). His CT scan reported it to be a soft tissue lesion with periosteal reaction and bony erosion. Blood investigations were normal. On FNAC only suppurative inflammation was seen. On biopsy, angiomatous lesion was given as a diagnosis. Ultimately the mass was excised and sent for histopathological examination. Grossly, we received an irregular skin covered brownish black firm mass, measuring 8 x 5 x 3.5 cm. Cut surface showed brownish black with few white areas. (figure 2)

On microscopic examination, many colonies surrounded by neutrophilic microabscesses and suppurative areas were seen. A diagnosis of Actinomycosis with suppurative inflammation was given (figure 3)



Figure 1 Irregular swelling with ulceration on scalp



Figure 2 Grossly, an irregular skin covered ulcerated mass



Figure 3-High power view showing colonies surrounded by neutrophilic abscesses
H&E X 40

Case 2-38 year old male presented with a cystic swelling on the dorsum area of the right foot since one month. It was gradually increasing in size and was not associated with pain. There was no history of trauma. His general and systemic examination was normal. On local examination a cystic swelling was seen which was non-tender and non-fluctuant. Overlying skin was normal. The swelling was excised and sent for histopathological examination.

Grossly, we received irregular greyish-brown soft to firm cystic masses. On cut section the cyst wall is irregular, nodular and contains thick reddish-brown material. On microscopy, cyst wall revealed many colonies surrounding eosinophilic material along with dense inflammatory infiltrate. Granulation tissue was also seen. (figure 5). PAS stain was also positive. (figure 6)

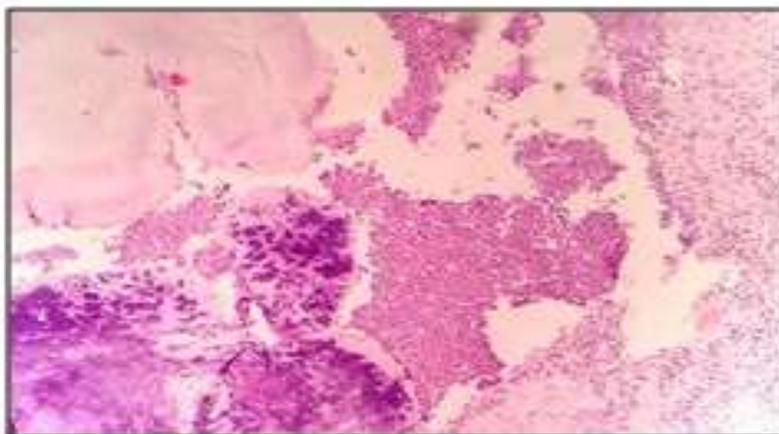


Figure 5-Colonies surrounding eosinophilic material and granulation tissue. H & E X10



Figure 6- photomicrograph showing PAS positive actinomycotic colonies. PASx100

Case 3- 20 year old male came in emergency complaining pain in abdomen. He was afebrile. His past clinical history, physical examination and laboratory investigations were unremarkable apart from WBC count which was raised and there was tenderness present in right lower quadrant. The patient underwent an appendectomy and specimen was sent for histopathological examination. Grossly, the appendix was 5.5x 1.2cm long. On microscopy, appendix revealed an ulcerated mucosa, submucosa, muscularis and serosa. The lumen contained actinomycotic colonies surrounded by dense inflammatory infiltrate. (figure 7 &8)

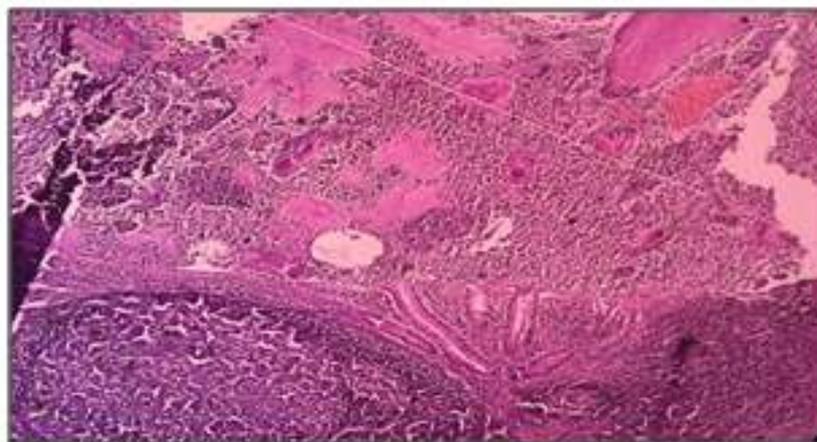


Figure 7 – low power view showing actinomycotic colonies with dense inflammation in the lumen of appendix H&E X10

III. Discussion

Actinomyces is a rare soft tissue infection known in Cattle, since early 19th century and were misclassified as fungal infection. In 1857, human form was first reported in literature. *Actinomyces israelii* the causative organism was isolated in 1891.⁶ There are six species of actinomycetes responsible for human disease, *Actinomyces israelii*, *Actinomyces naeslundii*, *Actinomyces odontolyticus*, *Actinomyces ischaemicus*, *Actinomyces meyeri*, *Actinomyces visus*. The most common forms of actinomyces are cervicofacial (50%), thoracic (15%) and abdominal (20%).² Histopathology examination discloses one to three sulfur granules in about 75% of cases, described as basophilic masses with eosinophilic terminal clubs on staining with hematoxylin and eosin. Typical microscopic findings include necrosis with yellowish sulfur granules and filamentous Gram-positive fungal-like pathogens.⁴

In CASE 1 the patient presented with a soft tissue swelling so a biopsy was performed initially and it revealed only vascular proliferation therefore a diagnosis of angiomatous lesion was given but the CT scan showed bony erosions so the two diagnosis were not correlating therefore, excision was done.

During histopathological examination we saw actinomycotic colonies. It was an unusual presentation as cutaneous actinomyces in cervicofacial region generally presents as draining sinuses, tissue fibrosis, abscesses or classic sulphur granules.⁷ But in some cases particularly in granulomatous lesions, actinomyces can mimic a soft tissue tumor or a malignant neoplasm.⁸ In these cases history of preceding trauma could also be present.⁷

In these cases a biopsy is helpful which reveals sulphur granules but they are only seen in 25% cases and can be missed if the biopsy is small.⁹ which was our case.

In these cases only excision can lead to a confirmatory diagnosis. In our case patient was put on long term course of antibiotics after the excision as surgery alone is not curative.¹⁰ There is always a need of combination of surgical intervention with antibiotics for faster resolution and prevention of recurrences.¹¹

In CASE 2 the patient presented with a cystic swelling on the dorsum of the foot and there was no history of trauma. Clinicians suspected it to be a benign neoplastic cyst and therefore excised it. Grossly also it appeared to be benign cyst only but it was not fitting into any etiology. Only after it was viewed under the microscope, it came out to be actinomyces.

Actinomyces is also very rare on foot and that too mimicking a cystic lesion. Actinomyces is an endogenous organism and its pathogenic are parasites which usually inoculate soft tissues which lack the blood supply due to disruption of mucosal barriers and their spread occurs through direct extension with a complete disregard to lymphatics, tissue planes or hematogenous routes thus primary involvement of extremities is not a common manifestation.³

In past only 6 cases of actinomyces of foot have been reported³ and almost all of them had a history of trauma. Most of them presented as osteomyelitis of foot with draining sinuses which was not the presentation in this case. Although some studies do mention that infection can spread to extremities from primary infections but incidence is only 3%.¹² In this case patient had no other complaints thus making this case unusual.

In CASE 3 the patient came with acute appendicitis. Although abdominal region is not a very rare site for actinomycosis i.e. only 20% very few cases of actinomycosis as the cause of acute appendicitis have been reported.⁶ Laboratory and radiological investigations cannot differentiate between the actinomycotic and the other inflammatory conditions so a preoperative diagnosis is not possible. Almost 50% of the cases were diagnosed postoperatively on histopathological examination as was in this case.⁶

Mostly abdominopelvic actinomycosis is related to trauma, abdominal surgery or IUD⁶ but no such predisposing factor was present in this case. The treatment is surgery along with 6-12 months of antibiotic course. Inflamed appendix due to actinomycosis if left untreated can lead to life threatening complication of abscesses and sinuses of abdominal wall.

In summary, these cases show that actinomycosis can occur at very rare sites and can present with unusual morphologies therefore a high degree of suspicion is required to recognise them early. Also histopathology plays a very significant role in the diagnosis as seen in all the above cases where actinomycosis was diagnosed incidentally. The treatment involved is long term antibiotics and surgical intervention.

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