Case report

Primary cutaneous actinomycosis of the lumbar region: An uncommon organism in an uncommon site: A Case Report

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Abstract

Primary cutaneous actinomycosis is a rare entity that is mostly associated with trauma. It is caused by *Actinomyces* species and presents with multiple discharging skin nodules. Its clinical features can resemble other disease conditions including neoplasms. Misdiagnosis can cause delay in treatment with subsequent disease progression and physical deformity.

Here we present the case of an 87-year-old female who presented with multiple discharging skin nodules in the lumbar region. She did not give a history of trauma or features suggestive of actinomycosis at any other site. Imaging and aerobic culture were negative. Anaerobic culture was not done. Biopsy of the lesion revealed *Actinomyces* colonies in the dermis. Subsequently a diagnosis of primary cutaneous actinomycosis was made.

This case report underpins the importance of considering actinomycosis in the differential diagnosis of patients presenting with discharging skin nodules, in uncommon sites, even in the absence of a typical clinical history.

Key words: *Primary cutaneous actinomycosis, skin nodules, histology*

Introduction

Actinomycosis is an indolent and slowly progressive bacterial infection caused by a filamentous, Gram-positive, anaerobic to microaerophilic organism belonging to the genus *Actinomyces*. These organisms are known colonisers of the mouth, colon and vagina. and are also found in the soil. The most prevalent species responsible for human infection is *Actinomyces israelii*.[1-4] The other species of *Actinomyces* are less commonly associated with the human disease[2].

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Actinomycosis affects men more than women. It can involve various organs and may resemble other disease conditions, including neoplasms. *Actinomyces* are known to cause chronic suppurative infections with discharging sinuses and abscesses. Five forms of actinomycosis have been recognised in humans.[2,5] These include cervicofacial, thoracic, abdominal, pelvic and primary cutaneous actinomycosis.[2] Pelvic actinomycosis is primarily seen in females with a history of intrauterine contraceptive device (IUCD) usage. Cervicofacial actinomycosis is seen following dental infection and pulmonary actinomycosis is seen mainly in smokers with poor dental hygiene[4]. Primary cutaneous actinomycosis usually occurs following trauma.[4]

Case Report

An 87-year-old female presented with multiple nodules in the lumbar region of 7 months duration. These nodules had been discharging pus on and off (Figure 1). She was otherwise well with no co-morbidities. She had never used an IUCD. She lived a leisurely life with her children and gave no known history of trauma to the lumbar region. The examination findings were unremarkable except for the nodules in the lumbar region. The nodules were 5mm to 8mm in diameter, non-tender and firm to hard on palpation. Some of the nodules were discharging pus. There were no lesions similar to this elsewhere on her body. Her haematological and biochemical parameters were unremarkable except for an ESR of 50mm/hr.

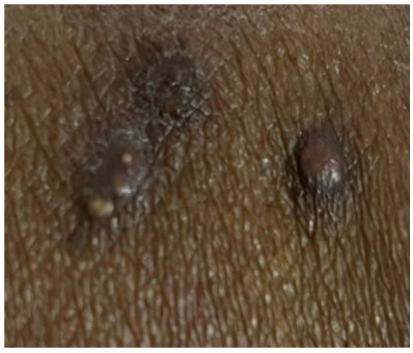

Figure 1: Pus discharging skin nodules in the lumbar

A swab was taken from the pus discharge for Gram stain and culture. A biopsy of the nodule was also done. The Gram stain showed gram positive bacilli. The pus swab did not yield a growth following routine aerobic culture. Histology of the nodule revealed skin showing characteristic colonies of *Actinomyces* in the dermis, surrounded by active inflammation (Figures 2, 3 & 4).

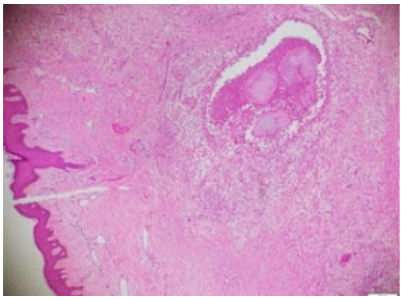

Figure 2. H&E (X40) Skin showing actinomyces colonies in the dermis with surrounding inflammation

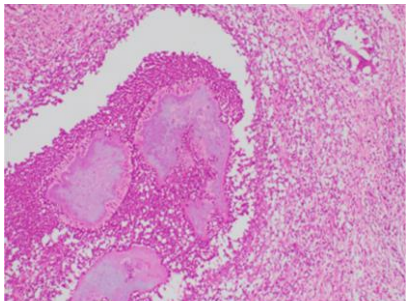

Figure 3. H&E (X100) Skin showing actinomyces colonies in the dermis with surrounding inflammation

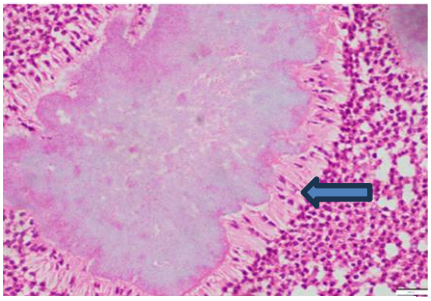

Figure 4. H&E (X400) Actinomyces colonies with radiating filaments (arrow) and surrounding inflammation

Her chest X-ray, as well as CT of the thorax and abdomen, was negative. A diagnosis of primary cutaneous actinomycosis was made. The patient was initially administered intravenous benzyl penicillin 4MU 6 hourly for 2 weeks and subsequently discharged on oral co-amoxiclav 625mg 8

hourly for 3 months. After 3 months, the patient was followed up at the clinic and asked to continue the same dosage of co-amoxiclav for another three months. She was reviewed in her third month following completion of treatment. The nodules had disappeared and she was doing well.

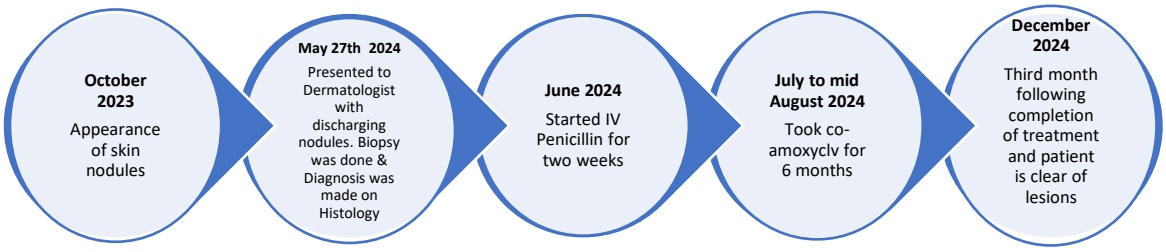

Figure 5. Timeline of events

Discussion

Primary cutaneous actinomycosis is a rare entity that is poorly described.[1-4] As such, a high index of suspicion is required for its diagnosis. Delays in diagnosis can lead to progression of the disease and physical deformity. Most reported cases of cutaneous actinomycosis give a clear history of trauma, such as a human bite or a penetrating injury with soil contamination.[1-4] Haematogenous spread has also been suggested in actinomycosis of the extra facial bones and joints.[4], Haematogenous spread may therefore account for cutaneous actinomycosis secondary to infection elsewhere. Our patient did not give a history of trauma. She did not give a clinical history suggestive of actinomycosis at another site. She had never had an IUCD.

Our patient presented with multiple discharging non tender, firm to hard nodules in the lumbar region. Chronic cutaneous discharging nodules may be due to infections (bacterial, parasitic and fungal infection), inflammatory conditions (granulomatous disease, prurigo nodularis) and tumours. Clinically, granulomatous disease was suspected in this patient.

Fortunately for the patient, a biopsy of the nodules was done at the initial stage. Histology showed skin containing characteristic *Actinomyces* colonies in the dermis. These colonies showed radiating basophilic filaments and were surrounded by an inflammatory infiltrate comprising neutrophils, lymphocytes, plasma cells, microphages and giant cells. Imaging did not identify infection elsewhere. The sample of pus sent for Gram stain showed Gram positive bacilli. *Actinomyces* are anaerobic to microaerophilic. Routine aerobic pus culture therefore, yielded no growth. However, this enabled exclusion of *Nocardia* infection. *Nocardia* is an aerobic organism that also causes discharging nodules and can show somewhat similar colonies on histology. Isolation and identification of *Actinomyces* is seen only in a minority of cases as prolonged bacterial culture under anaerobic conditions are required for bacterial growth. Such conditions will yield the characteristic molar tooth like colonies. Anaerobic culture was not done on this patient's sample.

Molecular diagnostic methods such as PCR and DNA sequencing can be used when infection is suspected but conventional culture is negative. It can also be used for species differentiation as well as to guide antibiotic treatment. It was not done on this patient due to financial constraints[6].

However, histology was able to establish the diagnosis of cutaneous actinomycosis and enable early management of the patient with high-dose intravenous penicillin followed by prolonged treatment with oral co-amoxiclav.

Conclusion

Primary cutaneous actinomycosis is a rare entity that can resemble other infectious and non-infectious diseases. This case report highlights the importance of considering actinomycosis in the differential diagnosis of patients presenting with discharging skin nodules, at uncommon sites, even in the absence of a typical clinical history of trauma.

Declarations

Acknowledgement: Dr D Tissera, Consultant Dermatologist, UH KDU for sending the biopsy.
Conflicts of Interest: The author has no conflicts of interest to declare.
Funding: This case report required no funding.
Ethics statement: Informed consent was obtained from the patient and is available to be produced on request

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