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CASE REPORT

Primary Cutaneous Nocardiosis of Axillary Region: A Case Report

Basavaraj V. Peerapur[1], Prashant K. Parandekar[2], Naveen.G[2] and Shyamala[2].*

[1]Department of Microbiology, Raichur Institute of Medical Sciences, Raichur- 584102 (Karnataka), India.[2]Department of Microbiology, BLDEA's Shri B. M. Patil Medical college, BLDE University, Solapur road, Bijapur-586103, (Karnataka), India

Abstract:

Background: Nocardiosis is an uncommon but world-wide infection caused by several species of soil-borne aerobic bacteria belonging to the genus *Nocardia*. Primary cutaneous nocardiosis (PCN) is an uncommon entity. It usually occurs among immunocompetent but occupationally predisposed individuals. Clinically, it can present as acute infection (abscess or cellulitis), mycetoma, or sporotrichoid infection [1]. Here we are reporting a case of PCN presented as mycetoma in axilla which is a rare site. *Case History*: The patient had extensive lesions in and around the axilla, which could be attributed to the fact that the patient, being an agriculturist, had been exposed to recurrent trauma while carrying firewood and soiled sacks. Single lesion initiated four years ago, progressed to multiple lesions with few healed scars. Despite the treatment in several hospitals, lesions recurred. The present patient was diagnosed as PCN caused by *Nocardia brasiliensis* and appropriately treated. *Conclusion*: *Nocardia* infection should be considered in the differential diagnosis of a supportive and granulomatous dermatitis that presents clinically as multiple discharging sinuses with papules and nodules in and around axilla apart from tuberculosis.

Key words: *Nocardia brasiliensis*, mycetoma, primary cutaneous nocardiosis.

Introduction:

Cutaneous nocardiosis presents either as a part of disseminated infection or as a primary infection resulting from inoculation. Disseminated nocardiosis, which accounts for most occurrences of nocardiosis, is most commonly caused by *N. asteroides* and typically affects immunocompromised hosts. *Nocardia brasiliensis* is the main pathogenic organism for primary cutaneous infection, followed by *N. asteroides* [2, 3].

Primary cutaneous nocardiosis is relatively rare [4]. Three clinical variants have been identified: a superficial acute skin and soft tissue infection, a lymphocutaneous infection, and a deeper infection- mycetoma. Latter is common than the other two clinical variants [5].

Mycetoma is a chronic, granulomatous infection involving the skin, subcutaneous tissue, and underlying structures [2]. Clinically, it produces an area of localized swelling with nodules that develop multiple sinus tracts and discharge of colored granules. However, even though the clinical picture may be suggestive, definite diagnosis requires visualization and culture confirmation. Identification of the etiological agent is also essential for institution of adequate treatment and a favorable outcome [6].

Many of the large series on nocardial infections mention the incidence of cutaneous nocardiosis without specifying whether the infection is primary or secondary. None of the previous studies had reported cutaneous nocardiosis in the axillary region as a primary infection. Therefore, we report an interesting case of extensive PCN in and around axilla in an agriculturist.

Case history:

A forty two year old immunocompetent female patient presented with multiple discharging sinuses in and around right axilla. Single lesion initiated four years ago progressed to multiple lesions with few healed scars. There was no history of discharge of granules from the site. Patient had taken treatment in several hospitals. Lesions subsided temporarily but later recurred. Patient was involved in agricultural activities, carrying firewood and soiled sacks but patient did not give history of trauma. There was no history of chronic illness such as diabetes, tuberculosis or malignancy.

Local examination revealed multiple discharging sinuses of 1x1 cm around right axilla. Few healed lesions with hyper pigmentation were seen. Axillary lymph nodes were enlarged and tender.

Fig 1: Lateral view of right axillary region showing multiple sinuses.

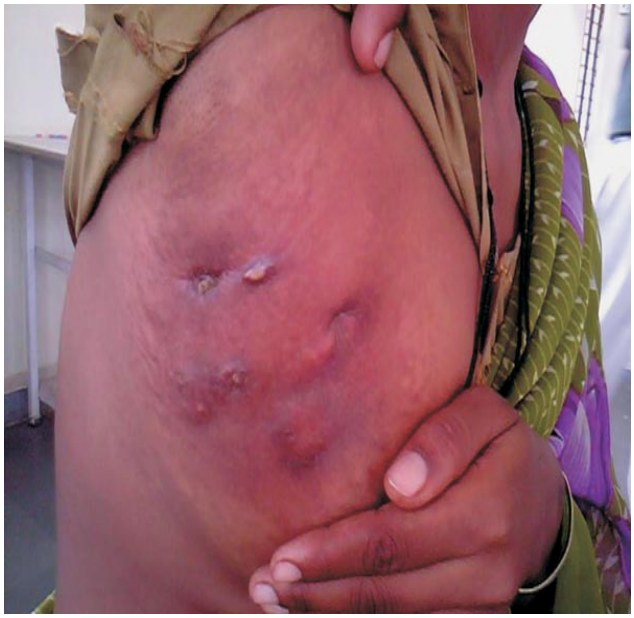

Fig 2: Kinyouns acid fast staining showing thin long branching weakly acid fast bacilli.

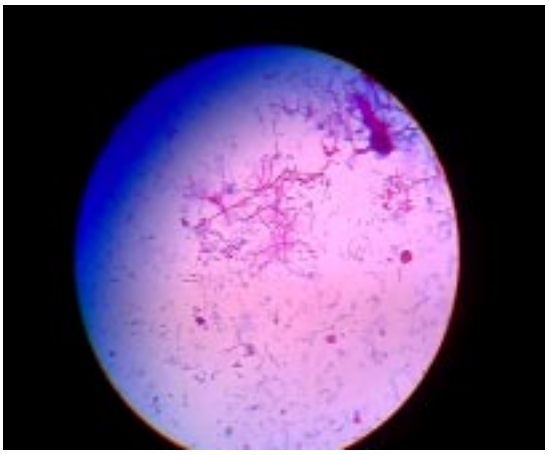

Fig 3: Culture on Lowenstein-Jensen media showing dry, wrinkled, granular colonies

Microbiological Study:

Pus sample was collected aseptically in normal saline and allowed to stand. Macroscopic examination didn't reveal the presence of granules.

A 10% potassium hydroxide preparation from the discharge did not show any fungal elements. Gram's stain examination of the pus showed dense network of branching fine delicate Gram positive filaments and they were also acid fast by Kinyoun's stain. No acid fast organisms were seen after staining with routine Zeihl-Neelsen staining followed by decolourisation with 20% sulfuric acid.

Pus cultured on Brain heart infusion agar and LJ medium, yielded adherent wrinkled dry cream-tan brown colonies after one week of incubation. The organism was identified as *Nocardia brasiliensis* on the basis of its ability to hydrolyze casein, hypoxanthine and tyrosine. Catalase, urease, and nitrate reduction tests were positive. The isolate fermented glucose but not arabinose. Hence the speciation was done as *N. brasiliensis* and subjected further for antibiotic susceptibility testing.

Patient responded well to treatment with cotrimoxazole and gentamicin according to modified Welsh regimen for 6 months.

Discussion:

PCN remains a diagnostic challenge. None of the three types has any characteristic feature that would make a definitive clinical diagnosis possible. In the case described here the initial clinical differential diagnosis was made with diseases having a similar clinical presentation and included deep mycosis, actinomycetoma, cutaneous tuberculosis and atypical mycobacteriosis [2]. Tubercular lymphadenitis was strongly suspected as it is the common cause of infectious lymphadenopathy at cervical and axillary regions.

The mode of transmission of PCN is accidental inoculation. It is prevalent among the rural population where agriculture is the main way of livelihood [5]. However, in the present study we could not elicit the history of trauma. The present case, being an agriculturist could have possibly been exposed to unnoticed recurrent trauma.

Mycetoma is described as a chronic, indurated, progressively destructive, granulomatous infection of skin, subcutaneous and eventually deeper tissues following localized trauma, with multiple draining sinus tracts and elimination of grains. The incidence of nocardial mycetoma in Indian reports varies from 5.2%-35% [7, 8]. It occurs most commonly on the extremities, especially the foot, but other locations have been reported [9, 10]. The present case is unique as the primary site of infection is axilla, which is an unusual site for PCN. This would have been commonly misdiagnosed clinically as axillary tuberculous lymphadenitis as the lesions recurred in spite of repeated treatment at different hospitals.

Identification of the *Nocardia* species by culture is a tedious process and it is advisable to submit multiple clinical specimens for culture because smears and cultures are simultaneously positive in only one-third of infections [5]. The organism is slow growing and it may take up to 2–3 weeks for isolation from a clinical specimen [2]. The small nocardial colonies are occasionally overgrown by other rapidly growing organisms, resulting in an initial negative cul-

ture report. We also faced some of the similar difficulties because of long incubation period and drying of media. Species identification is based on classical biochemical methods. These can be complemented by Western blot assay, using monoclonal antibodies against 54-kDa circulating antigens of *Nocardia*, and species specific DNA probing help in the rapid and definitive diagnosis of nocardiosis. ELISA for serodiagnosis of nocardial infection is also useful [11].

An antibiogram is suggested for all species isolated because of the varied antibiotic sensitivity pattern. In our study, we found the isolate to be susceptible to co-trimoxazole, amikacin and gentamicin.

Sulphonamides have been the mainstay of antimicrobial therapy for human nocardiosis [2, 12]. Trimethoprim and sulphamethoxazole (TMP-SMZ) is used most commonly. In our case Patient responded well to treatment with co-trimoxazole and gentamicin according to modified Welsh regimen for 6 months. Other effective drugs include minocycline, dapsone, tetracycline, amikacin, amoxicillin-clavulanic acid, cefotaxime, imipenem, and rifampicin. Although the optimal duration of therapy is uncertain, suggestions range from 6 weeks to one year [2, 12].

The present case report highlights the fact that apart from tuberculous lymphadenitis, *Nocardia* infection should be considered in the differential diagnosis of a suppurative and granulomatous dermatitis that presents clinically as multiple discharging sinuses with papules and nodules in and around axilla. Early recognition and prompt treatment can prevent unwarranted surgical debridement and complications.

Conclusion:

We report a rare case of PCN at the axillary region that responded well to prolonged treatment with TMP-SMX. It was possible to isolate and speciate the causative organism, which proved to be crucial for effective management of present case.

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***Author for Correspondence:** Dr. Naveen. G, Postgraduate student cum Tutor, Department of Microbiology, BLDEA's Shri B M Patil Medical college, BLDE University, Solapur road, Bijapur-586103, (Karnataka), India. Cell-09964565057, Email- g_naveen49@yahoo.co.in*