

Primary facial cutaneous nocardiosis in a HIV patient and review of cutaneous nocardiosis in India

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Abstract

Nocardiosis is an acute, subacute or chronic bacterial infection caused by several species of geophilic aerobic bacteria of the genus *Nocardia*. Cutaneous nocardiosis is an uncommon infectious disease that presents as primary cutaneous infection or as a sequela of disseminated pulmonary nocardiosis. Its rarity and as nocardiosis is not an AIDS defined disease it is often underreported. The global incidence of cutaneous nocardiosis is not exactly known. The frequency of nocardiosis in HIV patients has increased from 0.3 to 1.85%. In immunocompetent persons Primary Cutaneous Nocardiosis is more commonly seen among gardeners and agriculturists. We report a case of extensive primary facial cutaneous nocardiosis due to *Nocardia asteroides*, in an adult immunocompromised lady who had no pulmonary focus. The lesions were seen as sinus tracts on the zygomatic arch, preauricular and infraauricular regions. Bacteriological examination of the pus confirmed the presence of *N. asteroides*. The rarity of the presentation and Cutaneous nocardiosis in India is reviewed.

Key words: *Nocardiosis*, Cutaneous nocardiosis, HIV, infraauricular, *N. asteroides*

INTRODUCTION

Nocardiosis is caused by a group of aerobic, gram positive, weakly acid fast species of the genus *Nocardia*. Human *nocardiosis* was first detected by Edmond Nocard in 1888^[1], hence the name. Eppinger in 1890 reported first human case of *nocardiosis*. More than 80 species of *Nocardia* causing different types of human infections have been identified. The important pathogenic species are *N. asteroides*, *N. braziliensis*, *N. caviae*, *N. nova* and *N. abscesses*. Human infection occurs either by direct skin inoculation or by inhalation. Pulmonary nocardiosis

is the more common clinical type; primary cutaneous nocardiosis is rare and is always seen in patients with underlying risk. Pulmonary Nocardiosis is very often misdiagnosed as Tuberculosis and treated with antitubercular drugs. Such cases may end fatally.^[2] Cutaneous nocardiosis can be seen in immunocompetent persons as an occupational disease among gardeners and agriculturists. Because nocardiosis is not a notifiable disease and is not AIDS defined illness the global rate of nocardiosis is not known. A rare case of primary Cutaneous nocardiosis occurring in the facial region in an adult immunocompromised patient is reported and Cutaneous nocardiosis in India is reviewed.

CASE REPORT

35 years old immunocompromised lady on ART for 9 years noticed a small blackish patch on the zygomatic arch 3 months back, associated with mild pain, increased in size gradually and developed into

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an abscess, which ruptured 30 days later. The lesion healed spontaneously. 15 days later similar lesion was noticed in the preauricular region. The progress of the lesion was similar to the previous one. Patient experienced severe pain and was unable to open the mouth. This resulted in deficient food intake resulting in weight loss. 1 month later similar lesion was seen in the Infraauricular region. Pus oozed from the ruptured abscess [Figures 1 and 2]. On examination a discharging sinus in the Infraauricular area was noticed, yellowish purulent discharge was seen, the lesion was painful. Pus examination showed gram positive branching filaments forms. Modified acid fast staining showed acid fast branching filaments. White to cream colored friable rough colonies grew on Blood Agar after 48 hrs incubation at 37 degrees [Figure 3]. A positive urease test, growth at 42 degrees and negative hydrolysis of proteins confirmed the growth as *N. asteroides*. Reproducibility of the isolate was established by collection of a repeat pus sample and bacteriological examination. Blood culture was done to detect the disseminating nature, but it did not yield growth of any bacteria after 10 days incubation. Her recent CD 4 Cell count was 74 cells/ cu.mm. she is on irregular ART.

REVIEW OF LITERATURE AND DISCUSSION

Primary Cutaneous nocardiosis is a rare clinical entity. It can present as superficial skin infection, lymphocutaneous type or as mycetoma. Cervicofacial nocardiosis is a rare variant of Cutaneous nocardiosis seen in children.^[1,3,5] Nocardiosis can be a fatal complication of advanced HIV-1 infection. Extensive nature of the disease and non compliance of the treatment are associated with poor prognosis. The prevalence of nocardiosis in general population is not known. The frequency of nocardiosis in HIV patients has increased from 0.3 to 1.85%.^[4] Primary Cutaneous nocardiosis Is known to present with atypical manifestations. It can appear as multiple ascending subcutaneous abscesses appearing sequentially after healing of original lesion.^[6] Similar clinical presentation was noticed in the present case. The lesions appeared sequentially from zygomatic arch ending in deep cervical nodes. The presentation typically indicated the lymphocutaneous type of nocardiosis. Decreasing CMI is the predisposing factor for progressive nocardiosis. Long term usage of corticosteroids and anti-inflammatory drugs induces suppression of CMI, release of cytokines and other chemokines including TNF-alpha, resulting in decreased macrophage activity and poor intracellular killing. Hence nocardiosis is more commonly seen in immunocompromised patients^[7-9], in whom it



Figure 1: Infra auricular sinus



Figure 2: Zygomatic sinus

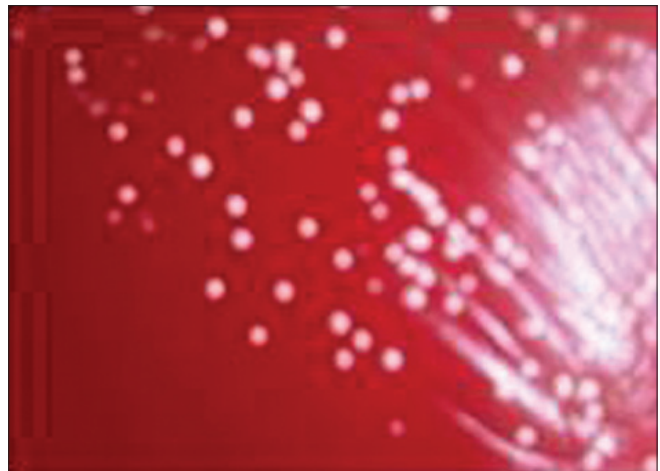


Figure 3: Blood agar with growth

can be fatal. Primary Cutaneous Nocardiosis can also occur as an associated complication of other systemic diseases like Crohn's disease.^[10] It may also disseminate to distant organs like extension

Table 1: Cutaneous nocardiosis reports

Researcher, place	Cl. type, Predisposing factors	Year	Species	Occupation
Ingole, <i>et al</i> ,	Male, abdominal wall trauma	1995	<i>N.ast</i>	Laborer
Lakshmi, <i>et al</i> ,	Multiple abscess at the back, female, epidural abs	2002	<i>N.b</i>	Laborer
Inamdar, <i>et al</i> ,	10 cases	2003		
	Foot		<i>N.b</i>	Agri
	Foot		<i>N.b</i>	Laborer
	Scalp		<i>N.b</i>	Agri
	Back		<i>N.sp</i>	Agri
	Abscess leg		<i>N.sp</i>	Agri
	Leg, lymphocutaneous, leg		<i>N.sp</i>	Agri
	Sole, mycetoma		<i>N.b</i>	H.wife
	Abscess, foot		<i>N.b</i>	Labour
	Abscess, hand		<i>N.b</i>	Agri
	Lymphocutaneous, hand, forearm, HIV		<i>N.nova</i>	Agri
Shivprakash, <i>et al</i> ,	12 consecutive cases predominantly males (75%) age range of 8-65 yrs, mean age 38.4 yrs. 11 pts. had known underlying illness including renal transplantation, HIV inf, and long-term steroid therapy. One patient with cerebral nocardiosis had no detectable predisposing factor. CNS (3 cases), lungs (5 cases), SC (1 case), and anterior mediastinum (1 case). Disseminated infection in two patients.	2004 to 2006	<i>N.a-- 6</i> <i>N.b--5</i> <i>N.otitidis--1</i>	Not known
Baradkar, <i>et al</i> ,	Sporotrichoid pattern	2008	<i>N.a</i>	Farmer
Nagmoti, <i>et al</i> ,	Spinal Osteomyelitis, HIV POS	2008	<i>N.a</i>	Low soc
Sharma, <i>et al</i> ,	Swelling discharge rt. Ankle, male	2008	<i>N.b</i>	Labourer
	Female, multiple sinuses, rt. leg		<i>N.spe</i>	Agri
	Male		<i>N.b</i>	Lab
	Lady, multiple nodules, gluteal, lumbo sacral areas		<i>N.species</i>	Not known
Patil, <i>et al</i> ,	Scalp, fronto - parietal sinus	2009	<i>N.b</i>	Fisherman
Adhikari, <i>et al</i> ,	Female, abscess, mycetoma	2010	<i>N.farcinica</i>	Thorn prick

to craniocerebral region, epidural space leading to abscess formation in immunocompetent persons^[11,13] The indolent nature and slow progression of the lesion may lead to dissemination to distant organs which may be detected months or years later. Cutaneous nocardiosis can also present with CNS symptoms.^[12]

Such unusual and rare presentations reemphasizes the need to consider nocardiosis as one of the differential diagnosis, especially in a patient giving a previous history of discharging sinus. Appropriate cultures and stains are required to reveal the true nature of the organism and ensure that appropriate therapy is instituted. A case of Nocardiosis causing thyroid abscess in an immunocompromised patient presenting as PUO has been reported.^[14] Cases of bilateral conjunctivitis and of endophthalmitis due to *N. asteroides* have been reported from India. An unusual presentation of nocardiosis causing corneal ulcer in a leprosy patient has been detected. Decreased corneal sensation was the underlying risk factor.^[15] Review of nocardiosis in India emphasizes the varied and unusual presentation of primary Cutaneous [Table 1] Nocardiosis can also present as spinal

Osteomyelitis.^[16] *Nocardia* species is recognized as an opportunistic pathogen in patients with impaired host defense mechanisms. Lymphoreticular malignancies, organ transplantation, corticosteroid or other immunosuppressive therapy, and underlying pulmonary disease are important predisposing factors. Infection with human immunodeficiency virus type I (HIV I) is associated with profound dysfunction of CMI that results in life threatening opportunistic infections. Although nocardiosis in patients with AIDS has been described, it is considered to be an uncommon complication of HIV I infection. Delay in diagnosis of nocardiosis may progress to severity and worsen the outcome.^[17] Further national level detailed studies in all HIV seropositives will help in better understanding of nocardiosis and also will help in the management. This case report emphasizes the importance of proper and detailed identification of all gram positive non sporing bacilli seen in gram smear or grown in culture.

Patients with HIV infection and severe nocardiosis seem to have a worse prognosis and should be treated aggressively. The effectiveness of prophylactic trimethoprim-sulfamethaxazole as a potent

prophylactic agent is not very clear.^[18]

This collection of reviews emphasizes the importance of considering *Nocardia* in the differential diagnosis of any immunosuppressed patient presenting with fever, especially those with signs or symptoms localizing to the lungs, skin, or CNS.

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