

NOCARDIA BACTERAEMIA IN AN HIV POSITIVE PATIENT - A CASE: REPORT

R Ramchandran, *S Swaminathan, S Sulochana, CN Parmasivan

Abstract

Nocardiosis has been recognized in recent times as an unusual opportunistic infection associated with HIV. Bacteraemia due to this pathogen is even rarer and only few cases have been reported in the literature. We report here a case of pulmonary nocardiosis with bacteraemia, which was initially diagnosed as pulmonary tuberculosis. A high index of suspicion is required to diagnose this infection as the clinical presentation and radiographic features mimic pulmonary tuberculosis,

Key words : *Nocardia*, *bacteraemia*, *HIV*

Nocardia is a gram positive actinomycete that is found worldwide in soil and decaying organic matter. *Nocardia asteroides* is the commonest species isolated from clinical specimens. Human infection is rare and contracted through inhalation. Infection is more common among immunocompromised patients, especially those with impaired cell mediated immunity. It has been reported in patients receiving cancer chemotherapy, corticosteroids, post transplant on immunosuppressants and in profoundly immunosuppressed HIV positive patients. Though a number of reports describe pulmonary and disseminated forms of nocardiosis in HIV- I positive patients, bacteraemia due to this organism is a rare entity with only a few cases being reported in the literature.¹ Unless investigations like Gram stain and culture for *Nocardia* are specifically done, most often the pulmonary infection is mistaken for tuberculosis.² We report here a case of *Nocardia* bacteraemia in an HIV positive patient with pulmonary disease, who was initially diagnosed to have pulmonary tuberculosis.

Case Report

A 35-year-old male presented with high grade fever, night sweats, productive cough with moderate amounts of mucopurulent expectoration, anorexia, weight loss; of 3 months duration. Physical examination revealed a febrile, emaciated individual with pallor and dry skin. There was no icterus, cyanosis, pedal edema or generalized lymphadenopathy. Examination of the respiratory system revealed rates in both infra scapular

*Corresponding author

Tuberculosis Research Center, Indian Council of Medical Research, Chetput, Chennai - 600 031, Tamil Nadu, India.

Received : 22-05-2003

Accepted : 04-07-2003

areas. The rest of the examination of the other systems revealed no abnormality. The hemoglobin was 8.0 gm% and the WBC count was 4800/cumm. with a differential count showing 85% polymorphs, 10% lymphocytes and 5% eosinophils. The CD4 lymphocyte count was 86 cells/cumm, (measured by flow cytometry using standard techniques on a Becton Dickenson FACSsort). The plasma glucose, liver function and serum electrolytes were normal. The ELISA for HIV-1 was positive. The HIV testing was done initially by a rapid test (TRIDOT, J Mitra & Co.) and confirmed with a routine ELISA (Lab Systems). Radiograph of the chest showed bilateral upper zone opacities with a cavity in the right apex. Multiple specimens were examined for AFB by smear and routine culture was set up. Blood culture was done with BACTEC 13A blood culture medium (Becton-Dickenson, USA). Conventional Ziehl Neelsen staining for AFB was negative from the positive BACTEC vial (after 15 days), however modified Ziehl Neelsen staining using 1% sulphuric acid showed acid fast branching filaments. Gram stain showed the presence of gram positive branching filaments with coccoid elements suggestive of *Noardia* species.



Figure : Blood agar showing dry, chalky white, raised, colonies of *N.asteroides*

Subcultures made from 13A BACTEC medium onto Lowenstein-Jensen and blood agar revealed dry whitish to tan colonies, which on prolonged incubation showed the typical raised, chalky white appearance (Figure). The biochemical reactions (tyrosine and xanthine hydroxylase negative and urease positive) confirmed the organism as *Nocardia asteroides*.

The patient was initially started on antituberculosis drug therapy. On isolation of *Nocardia asteroides*, antituberculosis therapy was withdrawn and patient was put on co-trimoxazole two tablets twice daily for two weeks. Dramatic improvement in the patient's clinical condition was observed with total radiological clearing. Patient was discharged from the hospital and subsequently lost to follow up.

Discussion

Unlike tuberculosis, nocardiosis is not a reportable disease and its incidence among HIV negative and positive individuals is low. Pulmonary nocardiosis is seen only in severely immunosuppressed HIV positive individuals.² Bacteraemia due to this infection is very rare with few reports in immunosuppressed HIV negative³ and HIV positive patients.⁴ The clinical presentation of pulmonary nocardiosis is similar to pulmonary tuberculosis (fever, night sweats, malaise, cough and weight loss). Gram staining of sputum and other specimens, which shows the characteristic gram-positive, beaded branching filamentous bacteria, and culture to identify the organism is essential. Isolation of *Nocardia* by culture may take up to 2-4 weeks; direct

gram staining of sputum samples is crucial to make a rapid diagnosis of this infection.

The actual extent of nocardial infection among HIV positive patients is unknown as it is not a reportable disease and also not an AIDS defining illness as per the current criteria of the Centres for Disease Control. Another important factor for missing the diagnosis is laboratory dependant. Most laboratories discard bacterial cultures, which are negative at 48 hours and tuberculosis laboratories do not process sputum specimens without initial decontamination with sodium hydroxide, which is detrimental to the growth of *Nocardia* on culture media.

When patients present with typical features of active tuberculosis and if smears are repeatedly negative for AFB, there is good reason to suspect nocardiosis. In this situation, additional samples should be collected to establish the diagnosis of *Nocardia*. Identification helps in the management of the patient, as the drug of choice for this infection is Co-trimoxazole.⁵ Penicillin and third generation cephalosporins are also used.

To the best of our knowledge, this is the first report of *Nocardia* bacteraemia from India. This report underlines the fact that nocardial infection is usually missed even though it is a common differential diagnosis of tuberculosis. Establishing the diagnosis of *Nocardia* is highly relevant because the first line antituberculosis drugs have no action on *Nocardia* and patients may succumb to nocardial infection if they are not treated with appropriate antibiotics. Physicians caring for AIDS patients need to be aware of this entity.

References

1. Suhhash HS, Christopher DJ, Roy A, Cherian AM. Pulmonary nocardiosis in Human Immunodeficiency Virus infection: A tuberculosis mimic. *J Postgrad Med* 2001;**47**(1):30-32.
2. Javalay K, Horowitz HW, Wormser GP. Nocardiosis in patients with HIV infection. Report of two cases and review of literature. *Medicine* 1992;**71**(3):128-138.
3. van Burick JA, Hackman RC, Nadeem SQ, Hiemenz JW, White MH, Flowers MED, Bowden RA. Nocardiosis after bone marrow transplantation: A retrospective study. *Clin Infect Dis* 1997;**24**:1154-1160.
4. Uttamchandani RB, Daikos GL, Reyes KR, Fischl MA, Dickinson CM, Yamaguchi E, Kramer MR. Nocardiosis in 30 patients with advanced HIV infection: Clinical features and outcome. *Clin Infect Dis* 1994;**18**:348-353.
5. Palmer DL, Harvey RL, Wheeler JK. Diagnostic and therapeutic considerations in *Nocardia asteroides* infection. *Medicine* 1974;**53**:391-401.