

A Rare Isolate of *M. fortuitum* in a Patient of Systemic Lupus Erythematosus with Lupus Nephritis

Vijaya P Torane*, Sushma T Rokade**, Reena Set***, Jayanthi S Shastri+

Abstract

Mycobacterial skin infections are known to evolve into draining subcutaneous abscess and are often associated with *M. fortuitum* and *M. chelonae*. We report a case of subcutaneous abscess in a 36 year old woman due to *M. fortuitum* with the underlying risk factor of Systemic Lupus Erythematosus (SLE) with Lupus Nephritis. The aspirated pus showed growth of *M. fortuitum* when inoculated on Lowenstein Jensen (L-J) media. The organism was susceptible to Co-amoxiclav, Sparfloxacin and Pyrazinamide and resistant to other first line and second line drugs. The patient was treated with injection Co-amoxiclav for 14 days. She responded to treatment emphasizing the importance of isolation and drug susceptibility testing of rapid growers isolated from pus specimen.

Introduction

Rapidly growing atypical mycobacterial infections are rare in patients of SLE. This case is unique because the organisms were isolated at our institute for first time. Also few cases are reported in literature.

Case Report

A 36 year old female, resident of Mumbai was admitted in our institute on 14/8/07 for a swelling over the left scapular region since 15 days. The patient was a known case of SLE with grade IV lupus nephritis. There was no history of trauma and the swelling was not associated with any discharge. There were neither complaints of fever, chills or rigors nor any history of diabetes or hypertension. There was a history of similar swellings over the right arm, left scapular region and infraclavicular region about 2 months back. The swellings over the left scapular and infraclavicular regions had subsided after medication and that of the right arm after incision and drainage of the pus. She had been treated with Co-amoxiclav for 14 days.

*Lecturer; **Resident; ***Associate Professor; +Prof. and Head; Department of Microbiology, T.N.M.C and B.Y.L Nair Ch. Hospital, Mumbai.

Past History

The patient had been admitted in a private hospital from 28th October 2006- 7th November 2006 for sudden swelling of legs and face, joint pain, fever with chills and loss of appetite. Her haemoglobin level was 5 gm% for which she had been given one pint of blood. On chest X-ray she had pleural effusion. The IgM antibody test for chikungunya was positive. She was treated with injection ceftriaxone and discharged after 3 days of hospitalization.

Subsequently she was admitted in a private hospital for acute renal failure and chikungunya from 25th November – 1st December 2006 following which she was admitted in our institute from 23rd December 2006 – 11th January 2007 when a renal biopsy was performed which was suggestive of lupus nephritis and was administered prednisolone from March 2007 onwards.

Clinical Record

During her recent hospitalization on 14/08/07, haemoglobin level, WBC count, liver and renal function tests were within normal limits. The routine examination of urine showed presence of 7-8 RBC's / high power field along with 1-2 pus cells and epithelial cells. A diagnostic FNAC was done on 17th August 2007. The cytological examination gave a differential diagnosis of cold abscess and acute resolving inflammation. In Microbiology laboratory the sample was inoculated on blood agar, MacConkey's agar and

L-J media with gruff solution. Two smears were prepared and stained by Gram's stain and Ziehl-Neelsen (Z-N) stain. The Gram's stain showed presence of pus cells but no organisms. The blood agar and macConkey's agar showed no growth after overnight incubation at 37° c. The Z-N stain showed no acid fast bacilli. The L-J media yielded cream coloured rough colonies within 7 days of incubation at 37° c. The secondary smear showed acid fast bacilli with 10% sulphuric acid decolourization.

On 20th August 2007 incision and drainage of the abscess was done. The pus was sent to the Department of Microbiology for culture. The sample was processed as mentioned above. The Gram's and Z-N stain, plating on blood agar, macConkey's agar and L-J media showed similar results. These organisms were non-acid fast when decolourized with 20% sulphuric acid.

Subcultures were done from LJ medium on to blood agar, chocolate agar and macConkey's agar and these were incubated in a candle jar at 37° c. 2-3 mm cream coloured rough, tough, crumpled colonies were seen on Blood agar (Fig. 1) and Chocolate agar (Fig. 2) within 3-5 days of incubation. MacConkey's agar showed growth of 2-3 mm pink coloured rough and

tough colonies (Fig. 3). The colonies on L-J media also were 2-3 mm cream coloured rough and tough colonies (Fig. 4). The culture smears from Blood agar, Chocolate, MacConkey's agar and L-J media showed Acid fast bacilli with 10 % sulphuric acid decolourization (Fig. 5).

The nitrate reduction test was positive. The organism was identified as *M. fortuitum*. The antibiotic susceptibility test showed sensitivity to co-amoxiclav, sparfloracin and pyrazinamide and resistant to isoniazid, rifampicin, streptomycin, ethambutol, kanamycin, amikacin, D-cycloserine, P-amino salicylic acid, ethionamide, clarithromycin, ciprofloxacin, rifabutin, capreomycin, ofloxacin and roxithromycin. The antibiotic susceptibility test for Co-amoxiclav was done by Kirby Bauer disc diffusion method and that of 1st and 2nd line anti-tubercular drugs was done by proportion method.

Discussion

M. fortuitum was isolated from scapular abscess pus aspirated on two occasions 3 days apart in a 36 year old female patient suffering from SLE with type IV lupus nephritis. The patient was on prednisolone for past 6 months. The rapidly growing mycobacteria like *M. chelonae* and *M. fortuitum* are known to cause cutaneous infection especially in immunosuppressed patients.¹ Few cases are reported around the world where skin infections in patients of SLE are caused by rapidly growing mycobacteria.^{2,3,4} Sporotrichoid movement of rapid growers may occur in immunosuppressed patients.^{1,5} This patient had an abscess on her right arm



Fig. 1 : Blood agar with 2-3 mm cream coloured rough, tough and crumpled colonies of *M. fortuitum*.

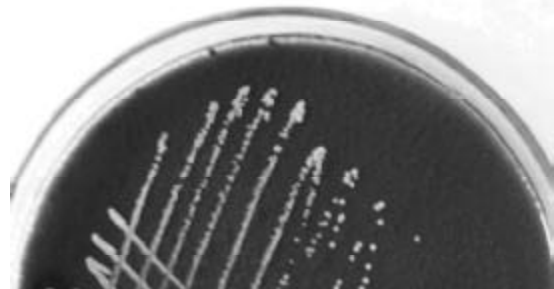


Fig. 2 : Chocolate agar with 2-3 mm cream coloured rough, tough and crumpled colonies of *M. fortuitum*.

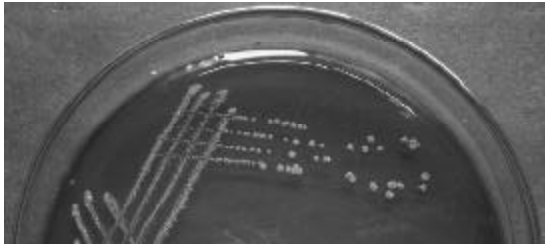


Fig. 3 : MacConkey's agar with 2-3 mm pink coloured rough, tough and crumpled colonies of *M. fortuitum*.



Fig. 4 : LJ media with 2-3 mm cream coloured rough and tough colonies of *M. fortuitum*.

which was drained in June 2007 i.e. 2 months before the appearance of the scapular abscess. She was given multiple injections on her arms during her stay in various hospitals and thereafter. The rapidly growing mycobacteria are commonly present in the water, soil, dust and air. Water appears to be a particularly conducive environment for NTM and they have been recovered from water distribution systems worldwide.^{6,7} The organism may have entered the skin during injections if aseptic precautions had not been adequate.⁸

The atypical mycobacteria are resistant to first line antituberculous drugs. She was treated with Co-amoxiclav for 14 days. The antibiotic susceptibility testing was done at JJ Research Society, Mumbai.

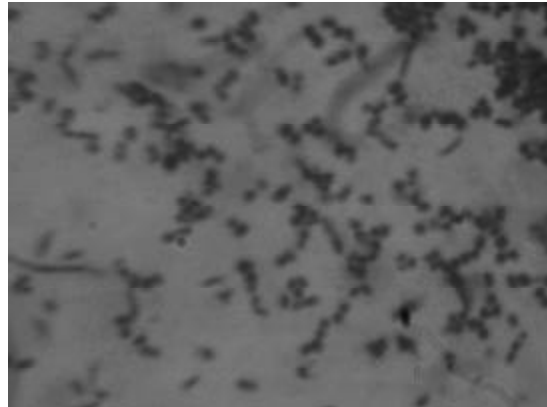


Fig. 5 : Culture smear showing acid fast bacilli with 10% sulphuric acid decolorization.

Conclusion

Rapidly growing mycobacteria can be the cause of cutaneous abscesses especially in immunosuppressed individuals and the samples from such patients should be processed for mycobacteria as well. A partial acid fast stain of secondary smear should also be performed for correct identification. To prevent skin and device related infections, strict avoidance of tap (unsterile) water for medical procedures and instrument cleaning is recommended.⁹ Performing drug susceptibility is of utmost importance since the rapid growers do not respond to 1st line drugs.

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SHOULD THE CD4 THRESHOLD FOR STARTING ART BE RAISED?

Current British and American guidelines recommend that, in the absence of an AIDS –defining illness, ART should be started in patients with blood CD4 cell counts in the range 200-350 cells per μL . It might be time for the pendulum to swing once more towards earlier treatment.

Frequency of death, or combined AIDS and death, in patients receiving and not receiving ART was used to identify a minimum threshold of 350 cells per μL for starting ART.

Those who deferred treatment had a far higher rate of major morbidity and all-cause mortality than did those treated immediately.

At high CD4 cell counts, differences in absolute risk of AIDS and death between early and deferred ART are small and uncertainty about the risk to benefit ratio remains. Even when benefits outweigh risks, cost-effectiveness is unclear. Data are needed on serious complications of ART that might negate the benefits, such as cardiovascular, renal and hepatic disease.

When considering both high-income and resource-limited settings, the question of when to start ART might have more than one right answer. WHO guidelines for resource-limited settings currently recommend initiation of ART before blood CD4 cell counts fall below 200 cells per μL with an upper threshold of 350 cells per μL .

Robin Wood, Stephen D Lawn, *The Lancet*, 2009; 373 : 1315-16.