Cutaneous Infection with *Mycobacterium Fortuitum*: An Unusual Presentation

Cutaneous infection with rapidly growing mycobacteria is uncommon and its diagnosis can be missed unless there is strong clinical suspicion coupled with microbiological confirmation. We report a case of localized recurrent soft tissue swelling of the foot by *Mycobacterium fortuitum* in a healthy adult male. The case is being reported for its uncommon clinical presentation and the associated etiological agent. The patient recovered completely following therapy with amikacin and clarithromycin.

**Key words:** Cutaneous infection, Immunocompetent host, *Mycobacterium fortuitum*

Skin and soft tissue infections caused by rapidly-growing mycobacteria, which used to be considered unusual, have become more frequent in the recent time. Among the rapidly growing non tuberculous mycobacteria (NTM), *Mycobacterium fortuitum* and *Mycobacterium chelonae* have been reported to cause a variety of manifestations ranging from skin and wound infections to disseminated infections like septicaemia, meningitis and endocarditis.[1] These NTM organisms are probably transmitted by aerosol, soil, dust, water, ingestion or by skin inoculation, whereas its person to person spread is rare.[2] Infection by these organisms leads to delayed wound healing and requires prolonged course of expensive antibiotics thereby increasing the morbidity of patients. The chance of overlooking these organisms is high unless microbiological confirmation is done. We report an unusual presentation of soft tissue swelling caused by *Mycobacterium fortuitum* in a healthy immunocompetent individual.

**Case Report**

A 62-year-old healthy male belonging to the upper middle class presented in November 2007 with a history of swelling (5x6cm) on the lateral aspect of his left foot near the base of the little toe. The swelling started about three months back, gradually increasing in size and was associated with moderate pain. It was insidious in onset without any preceding history of trauma or infection. The patient gave the history of a diagnostic aspiration from the swelling done about 20 days back, following which the swelling had subsided. The cytological findings of the aspirate were inconclusive and the swelling recurred within the next few days in spite of a seven days course of ciprofloxacin (500mg, PO, BD) which brought the patient back for a repeat evaluation. On examination, the swelling was tense, cystic, tender and was fixed to the underlying structures. There was no local rise of temperature. Systemic examination of the patient did not reveal any gross abnormality.

Routine examination of blood showed haemoglobin:10 gm/dL; total white blood cell count (WBC): 9600/mm³; differential WBC count: neutrophils 66%, lymphocytes 31%, monocytes 1%, eosinophils 2%; platelet count: 199 x 10⁴/mm³. ASO, CRP, Rheumatoid Factor and HIV serology (with consent from the patient) were negative. Liver function test, renal function tests and a Chest X-ray were done and all the investigations were found to be within normal limits. Ultrasound of the swelling revealed a non specific benign cystic lesion. Needle aspiration from the swelling was performed and 5ml of clear watery fluid was aspirated. The sample was subjected to cytological and microbiological evaluation.

Cytology examination revealed non specific reactive synovitis. Microbiological evaluation included Grams and Ziehl-Neelsen’s (ZN) stain for AFB, routine pyogenic cultures and culture for AFB. For pyogenic culture blood agar and MacConkey’s agar were used and for AFB culture Lowenstein Jensen (LJ) media and Mycobacterium growth indicator tubes (MGIT) were used which were later put in the Bactec MGIT 960 system. LJ media were inoculated in duplicate and one of the bottles was covered with brown paper to rule out scotochromogens if any during incubation. Gram stain of the smear did not reveal any bacteria but the AFB smear revealed numerous acid fast bacilli (Fig. 1). Culture on blood and MacConkey’s agar did not reveal any growth after 48 hours of aerobic incubation. Growth was indicated to be positive in the Bactec system within three days of inoculation and the LJ slopes also showed growth of nonpigmented colonies by the fifth day (Fig. 2). Smears were made from all the tubes and all of them were found to be positive for AFB (Fig. 3).

The isolate was initially labelled as rapidly growing...
The isolate was confirmed to be *Mycobacterium fortuitum* by its growth in paranitrobenzoic acid (PNB), and MacConkey’s agar, inability to form any pigment on LJ medium, tolerance to 5% NaCl, positive nitrate reduction and a positive arylsulfatase test (within three days). Antibiotic sensitivity tests to amikacin, cefoxitin, ciprofloxacin, clarithromycin, doxycyclin, imipenem and linezolid was done by the Kirby Bauer disc diffusion method on Mueller-Hinton agar. MIC of the above drugs was determined using E strips to correlate the findings of the disc diffusion tests. The strain was found to be sensitive only to amikacin, clarithromycin and imipenem among all the drugs that were tested. The isolate was resistant to rifampicin, isoniazide, streptomycin, ethambutol and pyrazinamide as tested in Bactec MGIT 960 system.

Despite the last aspiration from the swelling, it again increased to its original size in two weeks time. A repeat culture of the aspirate from the swelling was done. Repeat microbiological evaluation again yielded *Mycobacterium fortuitum* with the same antimicrobial sensitivity pattern.

The patient was advised a combination therapy with Injection Amikacin (750 mg, IM, OD) for two weeks and clarithromycin (500mg, PO, BD) for four weeks. The swelling has subsided and the patient is completely symptom free after one month of starting of therapy.

**Discussion**

The rapidly growing mycobacteria can cause disease in either healthy or immuno-compromised individuals. These organisms are ubiquitous in the environment and there are multiple reports of infection after trauma and other surgical procedures, including liposuction, silicon injection, pedicures and subcutaneous injections. Clinical syndrome is variable and the pathology is non-specific and culture is needed for definite diagnosis.

Clinical presentations of such infections are protean, the pathology report non-pointing and microbiological culture is almost always needed for a definitive diagnosis. Cutaneous disease with these pathogens seems to follow two patterns: in the immunocompetent host, a traumatic injury is followed by the development of a localized lesion, but in the immuno-compromised individual there is no history of trauma and the patient presents with multiple subcutaneous lesions.

In this case as the patient is immunocompetent and without any associated illness, the source of infection could not be traced. It could have either been a minor trauma which was unnoticed in the beginning or was caused while performing the first aspiration done in unsterile conditions.

Isolation of *Mycobacterium fortuitum* has been reported from various cases of soft tissue infection in immunocompetent individuals throughout the world. It is important to be aware of these group of infections both from diagnostic and therapeutic point of views. High index of clinical suspicion followed by microbiological evaluation would be of utmost help for timely and efficient management of such patients. Susceptibility testing of clinically significant rapidly growing mycobacteria should be performed with antibacterial drugs like amikacin, doxycycline, imipenem, fluoroquinolones, sulfonamide, cefoxitin and clarithromycin along with the conventional antitubercular drugs. From the above atypical presentation of a potentially pathogenic organism, it can be recommended that every specimen aspirated for pyogenic culture or for aspiration cytology must be subjected to AFB examination and culture so that such group of infection are not under diagnosed.

**References**

HIV infection. The reactivity rate in the ELISA and the Western Blot positivity in this case was very low contrary to the well understood natural history of HIV infection during the seroconversion phase. The HIV-1 RNA level during seroconversion phase was very low, typically in the range of 100-1000 copies/ml. This case illustrates the uncertainties regarding weak reactivity in a second generation assay (detects IgG only) for the serological window period in HIV infection and the need to use at least a third generation assay in testing centres for early detection of HIV infection. The reactivity rate in the ELISA and the Western Blot positivity in this case was very low contrary to the well understood natural history of HIV infection during the seroconversion phase. The HIV-1 RNA level during seroconversion phase was very low, typically in the range of 100-1000 copies/ml.

Using later generations HIV screening assays in a routine testing laboratory can aid in the diagnosis of acute HIV infection early in its course. The case reported here illustrates the nuances in the diagnosis of HIV infection for care providers as well as awareness of the unusual seroconversion profile.

References:

*S Sarma, R Thakur
Department of Microbiology, Institute of Human Behaviour and Allied Sciences (IHBAS), Dilshad Garden, New Delhi-110 095, India

*Corresponding author (email: <sarma.smita@rediffmail.com>)
Received: 29-02-2008
Accepted: 07-04-2008