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Isolation of *Mycobacterium celatum* from a Case of Koch's Spine

D. R. Gayathri Devi, P. Ashok Kumar, R. Ranganath

Department of Microbiology, M.S. Ramaiah Medical College, Bangalore, India
Email: gayathri_devi2006@rediffmail.com

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Abstract

***Mycobacterium celatum* is a newly discovered micro-organism causing disseminated infections in immuno compromised patients. Here we report a case of *Mycobacterium celatum* in an apparently immuno competent young patient with Koch's spine, the organism was confirmed at tuberculosis research centre, Chennai. The patient was started with clarithromycin and ciprofloxin along with category-I ATT.**

Keywords

***Mycobacterium celatum*; Tuberculosis; Koch's Spine**

1. Case History

Mycobacterium celatum is one of the potentially pathogenic species, phenotypically similar to *Mycobacterium avium* and *Mycobacterium xenopi* [1] that are widely found in nature and not being transmitted from person to person [2]. Presently, a case of *Mycobacterium celatum* isolated from pus sample drained from a case of Koch spine is being reported.

A 24-year-old young male was admitted with history of on & off discharge from upper back of 8 month's duration. The discharge had increased over two months prior to admission. The discharge was found to increase with forward bending. There was no history of weight loss or fever or cough. Past history revealed that the patient was admitted one year ago with the similar complaints, however no follow-up was done. A cold abscess was noted in the mid-back for which incision and drainage was done and he was given anti tuberculosis treatment for six months along with a Knight Taylor brace.

Examination of cardio vascular system, respiratory system and per abdominal examination was normal. Local examination of the spine revealed angular kyphosis in the mid-back. A sinus was present and the skin around the sinus appeared normal. There were no indurations or tenderness over the back or on the sinus and also there was

no para spinal spasm. Minimal discharge was seen from the sinus on squeezing. Neurological examination revealed no motor/sensory deficit in both lower limbs. X-ray showed partial collapse at T9, T10, T11 levels with a resultant regional kyphosis at 42˚.

The lab findings revealed CBC and LFT as normal, ESR as 50 mm/Hr, Mantoux test as positive (18 mm after 48 hours) and HIV and HBSAg were negative. The diagnosis of Koch's spine with a cold abscess and no neurological deficit was made. Incision and drainage was done and pus was sent for culture and sensitivity. Routine culture yielded no growth. Zeihl Neelsen's stain showed no acid fast bacilli. On Lowenstein Jensen media, growth was seen after three weeks. The rate of growth was slow and the isolate produced orange cauliflower pigmentation after four weeks indicating presence of a probable scotochromogen. Hence, the isolate was sent to National Tuberculosis Institute, (NTI) Bangalore for identification of the organism. The results of analysis at NTI, Bangalore for rate of growth and its pigmentation were five days and scotochromogen respectively. Likewise the biochemical analysis of the described isolate (*Mycobacterium celatum*) to those of *M. avium* and *M. xenopi* at National Tuberculosis Institute revealed the following **Table 1**.

Thereafter the isolate was sent to Tuberculosis Research Centre (TRC), Chennai for speciation and sensitivity of the suspected scotochromogen. The isolate was confirmed at TRC Chennai as *Mycobacterium celatum* by mycolic acid HPLC analysis. The isolate at TRC was found to be sensitive to streptomycin, ethambutol, kanamycin and ofloxacin, while the same was found to be resistant to isoniazid, rifampicin and ethambutol. Hence the patient was advised to continue with category-I therapy along with ciprofloxacin and clarithromycin for six months.

2. Discussion

Mycobacterium celatum is a new NTM described as a slow growing non-photo chromogenic Mycobacteria. Identification of *M. celatum* is difficult since it is phenotypically similar to *M. avium* and *M. xenopi* [3]. Colonies are predominantly small, smooth, non-pigmented but they become pale yellow/orange when cultures are old (**Figure 1**). Information on the anti-microbial susceptibility of *Mycobacterium celatum* is scanty and known to have low *in-vitro* susceptibilities to many antituberculous drugs [4]. In the present study, the isolate was resistant to INH, rifampicin but susceptible to quinolones.

In conclusion, *M. celatum* is one of the rare NTM causing infections in a immune competent individual whenever, other than *Mycobacterium tuberculosis* isolated, a detailed speciation as well as anti biogram is

Table 1. Biochemical characteristics of *M. celatum* compared to those of *M. avium* complex and *M. xenopi*.

Characteristics	Results for		
	Our isolate	*M. avium* complex	*M. xenopi*
Niacin	−	−	−
Nitrate reduction	−	−	−
Heat stable catalase	+	+	+
Growth at 25˚C	+	+	−
Growth at 37˚C	+	+	+
Growth at 45˚C	+	−	+
Tween hydrolysis	−	−	−
Growth in presence of p-nitro benzoic acid (PNB) (500 mg/ml) and TCH (5 mg/ml)	+	+	+
Pigmentation (scotochromogen)	+	−	+
Iron uptake	−	−	−
Tolerance to Nacl (5%)	−	−	−

Figure 1. LJ media showing growth of *M. celatum*.

necessary for the specific therapy and the same being reported.

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