

POSTOPERATIVE INFECTION OF LAPAROSCOPIC SURGERY WOUND DUE TO *MYCOBACTERIUM CHELONAE*

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Abstract

We report a case of postoperative wound infection due to *Mycobacterium chelonae*. A 35-year-old woman presented with multiple erythematous nodules, plaques and discharging sinuses over the abdomen. 45 days after she had undergone laparoscopic ovarian cystectomy. The seropurulent discharge from the wound showed acid-fast bacilli on Ziehl-Neelsen stain and culture yielded *Mycobacterium chelonae*. The patient responded to clarithromycin and doxycycline. The source of infection was probably contaminated water or disinfectant solution used for sterilization of laparoscopic instruments.

Key words: Atypical mycobacteria, *Mycobacterium chelonae*, post operative wound infection

Infections with pathogenic, water borne mycobacteria are being recognized more often in the recent years.¹ Skin and soft tissue infections due to these pathogens, however, have been rarely reported from India.^{2,3} Such infections need to be specifically diagnosed, as they require to be treated with drugs other than the routine anti-tuberculous drugs used for treating *Mycobacterium tuberculosis* infections.³ We report a case of postoperative wound infection caused by *Mycobacterium chelonae* following laparoscopic surgery.

Case Report

A woman of 35 years, from a village in Kolar district, Karnataka, was diagnosed in November 2004 to have an ovarian cyst on the right side, at R.L. Jalappa Hospital, Kolar. Her history revealed that she had undergone abdominal tubectomy eleven years ago. She underwent laparoscopic surgery in October 2004, for ovarian cyst, which was histologically diagnosed as a serous cystadenoma. The postoperative period was uneventful. After a week the sutures were removed and the wound was found to be healthy at the time of discharge.

One and a half months later, she came back with complaints of swellings, discharge and pain at the suture sites. Nodular swellings and induration with a few discharging sinuses were seen at the sites of laparoscopic portals of entry including the umbilicus (Fig. 1). Microscopy and culture were done on the sero-sanguinous discharge from the lesions.

Gram stain smear of the discharge showed numerous polymorphonuclear leucocytes but no bacteria. Ziehl-Neelsen (ZN) stain, however, revealed acid-fast bacilli

(AFB). There was no growth on blood agar, MacConkey agar and thioglycollate broth after 48 hours of incubation. The patient was initially treated with amikacin and ceftriaxone. Subsequently DOTS therapy was administered with rifampicin, isoniazid and pyrazinamide for a month.

Discharge from the wound persisted and the patient visited the hospital repeatedly. During these visits, two samples of pus from the discharging lesions were collected at an interval of 15 days for repeat microscopy and culture. Skin biopsies taken from two different sites of the lesions were subjected for both histopathology and culture. AFB were seen in both the pus samples collected. Culture grew non-pigmented, smooth colonies on Lowenstein-Jensen (LJ) medium within seven days of incubation at 37°C. One of these samples also yielded scanty growth of *Methicillin-resistant Staphylococcus epidermidis* (MRSE), in addition to mycobacteria. The pus and the tissue samples from the patient were also sent to the National Tuberculosis Institute (NTI), Bangalore for confirmation and identification of the AFB.

Histopathological examination of the skin biopsy showed normal epidermis, but the superficial dermis had lymphoplasmacytic infiltration and the deep dermis showed aggregates of polymorphs surrounded by lymphocytes and plasma cells (Fig. 2). Foci of haemorrhage, capillary proliferation, vasculitis with perivascular lymphocytic infiltration and fibrosis were also seen. No epithelioid granulomas were seen.

The samples sent to NTI grew non-pigmented AFB within four days on LJ medium. The isolate was reported to have grown at 25°C, 37°C and 42°C. It was found to grow on MacConkey agar but not on LJ medium containing 5% sodium chloride. The isolate also grew in the presence of para-nitro benzoic acid (PNB) and thiophene-2-carboxylic acid hydrazide (TCH), reduced nitrate and was urease positive. Tests for Tween-80 hydrolysis and iron uptake were negative. It was resistant to streptomycin, ethambutol, rifampicin and isoniazid by proportion method. It was sensitive to ciprofloxacin and

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Figure 1: Indurated nodular lesions seen at the laparoscopic portals of entry in the umbilical region

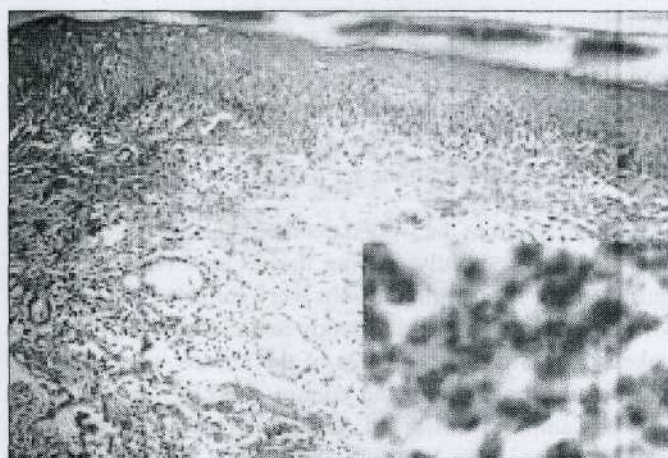


Figure 2: Photomicrograph of the nodular lesion showing infiltration by lymphocytes and plasma cells in the superficial dermis (H&E, x100). Insert shows aggregates of polymorphs surrounded by lymphocytes and plasma cells in the deep dermis (H&E, x400)

resistant to cephalothin and polymyxin B by Kirby Bauer disc diffusion method on Mueller-Hinton agar. The isolate was identified as *M. chelonae* based on these characteristics.

The anti-tubercular therapy was discontinued after it was identified as *M. chelonae* and the patient was administered clarithromycin 500 mg twice daily and doxycycline 100 mg once daily for four weeks. The patient responded to clarithromycin. Two discharging sinuses, however, persisted; exploration of these sinuses revealed lurking proline suture material. After the removal of suture material, the wounds healed completely.

Discussion

Here we report a case of postoperative wound infection caused by *M. chelonae* in a woman who underwent laparoscopic surgery. *M. chelonae* is a rapidly growing *Mycobacterium* (RGM); it grows in seven days as non-pigmented colonies on LJ medium. It can also grow on MacConkey agar. It gives a negative iron uptake test and is

resistant to first line of antitubercular drugs,² polymyxin B and cephalothin.⁴ Our isolate had all of these features. *M. chelonae* is classified into three subspecies: *M. chelonae chelonae*, *M. chelonae abscessus* and an unnamed subspecies known as *M. chelonae like organism* (MCLO).⁵ Our isolate reduced nitrate and was ciprofloxacin sensitive akin to some of the strains grouped under the third subspecies, designated as MCLO.⁴

M. chelonae is named after the sea turtle, *Chelona corticata*, from which it was first isolated. It is one of the environmental *Mycobacteria*: water borne pathogen found in rivers, ponds, hot water springs, soil samples and house dust.⁶ It is known to cause nosocomial skin and soft tissue infections following contaminated injections,⁷ cosmetic surgical procedures⁸ and laparoscopic surgery.^{2,3} Skin lesions due to *M. chelonae* are usually localized, erythematous and indurated with discharging sinuses, similar to those seen in our patient.³

Our patient had mixed inflammatory reaction with polymorphs, lymphocytes and plasma cells in the deep dermis. The tissue response to RGM, such as *M. chelonae*, is known to range from pyogranulomas with mixed inflammatory exudate to granuloma formation.⁹

There have been earlier reports from India of postoperative wound infections following laparoscopy caused by *M. chelonae*.^{2,3} Inadequate sterilization of laparoscopes has been incriminated as a cause of infection in these cases. Sterilization of laparoscopes for 30 minutes in 2% alkaline glutaraldehyde solution is recommended.⁷ Many a time, paucity of instruments and the patient load may not permit such sterilization for 30 minutes. This may facilitate implantation of organisms leading to infection. Moreover, some of the RGM can survive in such disinfectant solutions for periods as long as four hours.⁷ Tap water used for cleaning the instruments can also be a source for such infections.¹ Earlier reports from India have also suggested proline material as a possible cause of infection. It is surprising to note that our patient showed proline suture material in one of the discharging sinuses, even though the incisions made for laparoscopy or biopsy were not closed with the proline suture material. Thus, the proline material lurking from the previous abdominal tubectomy done 11 years ago, might have acted as a nidus for persistent infection. Water used for washing instruments or disinfectant solution used for sterilization, could also have been a source of infection in our patient.

It took us almost two months to make a specific bacteriological diagnosis and start the patient on clarithromycin, to which, the patient responded promptly. In localized RGM infections clarithromycin is the drug of choice¹⁰ and single drug therapy is thought to be sufficient. We recommend that whenever RGM is grown from postoperative wounds or similar lesions, the patient should have the benefit of prompt treatment with clarithromycin even before the organism is identified. More important than this, stringent disinfection of instruments

would prevent such infections.

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