A Case Report of Mycobacterium Marinum Infection of the Hand

Y W Lim, J Chia, K P Looi

ABSTRACT

We report a case of Mycobacterium marinum infection of the hand presenting initially as triggering of the digits. We like to highlight the unusual source of the infection and difficulty of diagnosis in this case as well as the various treatment modalities.

Keywords: Mycobacterium marinum, trigger fingers, tenosynovitis

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INTRODUCTION

Mycobacterium marinum belongs to Runyon Group 1 photochromogenic nontuberculous mycobacteria. It has a world-wide distribution and infection can be acquired from sources as diverse as fish-tanks, dolphin bites[1] to laboratory cultures[2]. It grows at 30-32 degrees Celsius and may explain why it is almost seen exclusively in the limbs and confined to superficial structures.

We report a case of this unusual infection emphasizing the difficulty in diagnosis and the various forms of modern chemotherapy for treating this disease.

CASE REPORT

A 34-year-old Chinese male working as a cook for 9 years presented with the problem of triggering of the right index and ring fingers. The patient had a precedent history of a penetrating injury to the palm and fingers while handling crabs during work. The day after that he developed swelling of the entire palm. He consulted several GPs over a course of 3 months and was given antibiotics and anti-inflammatory medications. There were intermittent symptoms for three months before he eventually sought an opinion with us. Throughout this period he did not have any systemic symptoms. During the first consult he was noted to have swelling over the A1 pulleys of the index and ring fingers. There was no definite triggering elicited. The diagnosis was that of early triggering of the right index and ring fingers and Hydrocortisone and lignocaine injection was given to these fingers. Three weeks later he developed an abscess over the 4th palmar web space. The provisional diagnosis was infective synovitis and a debridement and drainage was done. The histology was reported as acute-on-chronic infection with oedematous granulation tissue and some foreign-body giant cells were noted. The aerobic and anaerobic cultures were negative.

The swelling recurred after a few weeks over the distal and midpalmar region (Fig. 1). He did not keep an aquarium and did not give any significant history to account for the swelling. The Examination revealed a cold abscess 4cm x 4cm over the palmer aspect and no tenderness or discharge was noted. The patient was unable to fully flex or extend his ring and index fingers. No epitroclear or axillary lymph node was felt. His total white count was 7.06 x 10^9/L and the differential count was normal, erythrocyte sedimentation rate was 19 mm/hr, C-reactive protein < 0.15 mg/dl and MTT was 17 mm (previously had BCG in childhood). An X-ray of the hand revealed a soft tissue swelling

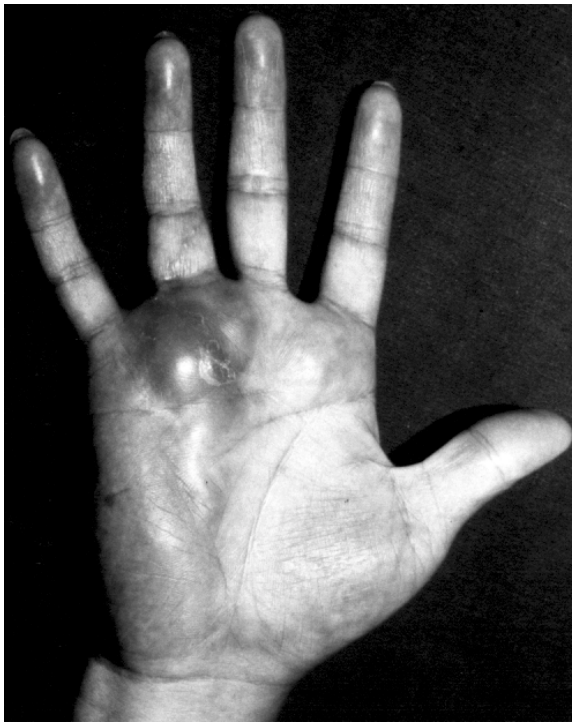

Fig. 1 Recurrent swelling on the left palm following initial debridement and healing.

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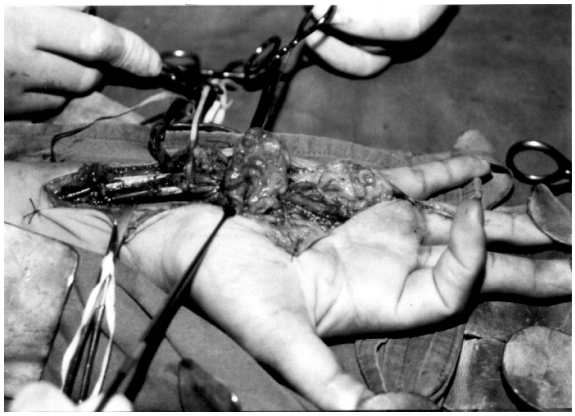

Fig. 2 Extensive tuberculous granuloma involving the fibrous flexor sheath and carpal tunnel was excised.

over the palm and chest X-ray was clear. The provisional diagnosis was that of non tuberculous mycobacteria infection possibly mycobacterium marinum. A further synovectomy was scheduled. During the operation, there were extensive synovitis from the right ring finger to the distal forearm. Extensive synovectomy and releases of the A1 pulleys of the ring and index fingers and carpal tunnel were done (Fig. 2). The histology was reported as marked chronic granulomatous inflammation with plentiful epitheloid granulomas and giant cells. A focus of caseation type of necrosis was also noted. A Ziehl-Neelson stain showed acid fast bacillus in the necrotising granuloma. After 8 weeks the culture grew Mycobacterium marinum sensitive to rifampicin, ethambutol, streptomycin and kanamycin. It was intrinsically resistant to isoniazid.

He was continued on rifampicin 450 mg om, ethambutol 1 gm om and clarithromycin 250 mg bd for 8 weeks. At 1 year follow up, there was no recurrence of the disease.

DISCUSSION

Mycobacterium marinum belongs to Runyon Group 1 photochromogenic nontuberculous mycobacteria. It has a world-wide distribution and infection can be acquired from sources as diverse as fish-tanks, dolphin bites[1] to laboratory cultures[2]. It grows at 30-32 degrees Celsius. This may explain why it is almost seen exclusively in the limbs and confined to superficial structures. However Williams and Riordan (1973) reported 6 cases of infection of deeper structures of the hand[3]. Its colonies can appear as early as 2 weeks. The usual presentation is trauma to the skin in non chlorinated water or salt water and after about 2 weeks of inoculation it will develop into a localised papulonodular lesion which eventually ulcerates. But in some cases a sporotrichoid pattern with abscess formation and secondary nodules along lymphatics may occur[4]. The early lesion on histology usually reveals a collection of polymorphonuclear cells surrounded by histiocytes. An older lesion usually gives a more definite diagnosis with lymphocytes, epitheloid cells and Langhan giant cells usually without caseation.

The treatment is usually surgical debridement followed by chemotherapy. Most cases are intrinsically resistant to isoniazid and streptomycin while sensitive to rifampicin and ethambutol but lately doxycycline, clotrimoxazol[5,6] and macrolides like clarithromycin and azithromycin[7] have also been shown to be effective in treatment. The chemotherapy is usually given for 6 weeks to 18 months depending on the extent of disease and clinical response. Spontaneous resolution without chemotherapy has been reported[4,8].

Mycobacterium marinum has been reported as a human pathogen since 1954 (Linell and Norden, 1954)[9]. It belongs to the same group as M. Kansasii, M. simiae and M. asiaticum. With the increased numbers of immunocompromised patients, it is likely that we will see a rising trend in these infections. An index of suspicion is the key to diagnosis[10].

There are a few didactic points that are worth mentioning in this case. Firstly the diagnosis of this infection warrants a high index of suspicion. Direct questioning with regards to contact with aquatic animals should not be left out in any synovitis of the hand. It should be strongly suspected in protracted synovitis of the extremities. The use of polymerase chain reaction was used as part of the initial investigation but the result was falsely negative as the test was meant solely for saliva specimen and any other specimen would not give a good yield. It is therefore imperative that one checks with the laboratory with regards to this aspect before excluding this diagnosis. As the organism grows only at an environmental temperature of 30-32 degree Celsius, it would be wise to specify the organism one wishes to culture in the culture form. The use of isoniazid and streptomycin as empirical treatment should be avoided as it is well documented that this organism is usually resistant to these drugs. It is also worth noting that in most cases the organism cam be grown in culture in just over 2 weeks in contrast to the long culture period for tuberculous. Lung and other systematic manifestations of the disease are also unusual. This case illustrates a typical cause of triggering of digits and the use of local steroid injection may exacerbate and actually aid the spread of the disease process. It is therefore important to elicit a proper history in cases of triggering before the use of local steriod injections.

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