Letter to the Editor

Enteral entrance of *Mycobacterium avium* in patients with disseminated mycobacterial disease

*Mycobacterium avium* complex (MAC) causes respiratory tract infections and contributes to the development of granulomatous lesions in the alveolar areas and bronchioles in immunocompetent persons [1]. In contrast with the above, the intestinal tract is the primary infection site of immunocompromised hosts, such as patients with acquired immune deficiency syndrome (AIDS) [2]. The following is a case of disseminated MAC disease by enteric infection in an HIV positive patient.

A 41-year-old homosexual male complaining of continuous fever and diarrhea was admitted to the AIDS Clinical Center. At the time of admission, his CD4+ T-cell count was 12.2 cells/μL, but his HIV load was <400 copies/mL. Since *M. avium* were detected in the fecal culture, antimycobacterial agents were started. Swelling of the para-aortic lymph nodes was found on abdominal computed tomographic (CT) images. According to the autopsy examination, it was suggested that the *M. avium* infection was acquired primarily by the gastrointestinal tract, leading to lymphogenous dissemination in the AIDS patient (Fig. 1). In addition, organisms penetrated through the gastrointestinal mucosa and were phagocytosed by macrophages in the lamina propria (Fig. 2a). The aggregated histiocytes with acid-fast bacilli were focally distributed in the lamina propria of the duodenum (Fig. 2b).

MAC is a common pathogen in AIDS patients that is primarily acquired through the gastrointestinal tract, leading to lymphogenous dissemination in the body. The duodenal mucosa, liver, spleen, mesenteric lymph nodes, pancreatic lymph nodes and para-aortic lymph nodes were involved. The organism was detected in those organs, peripheral blood and feces.

![Fig. 1 – Scheme of *Mycobacterium avium* dissemination in the autopsied case. The duodenal mucosa, liver, spleen, mesenteric lymph nodes, pancreatic lymph nodes and para-aortic lymph nodes were involved. The organism was detected in those organs, peripheral blood and feces.](image1)

![Fig. 2 – Critical histological pictures show enteral infection of *Mycobacterium avium* in a case with acquired immunodeficiency syndrome. (a) Organism invades enterocytes, and the lamina propria of the intestinal membrane was filled with histiocytes packed with acid fast bacilli. (b) The mob of histiocytes with acid fast bacilli focally distributed in duodenum membrane.](image2)
to the development of bacteremia and disseminated disease [1,2]. There is very little histological evidence to show the infection via gastrointestinal mucosa. Horsburgh et al. (1999) initially demonstrated this in his review article that a solitary mycobacterium was found in the lamina propria of the colon in an AIDS patient [2]. Bermudez et al. have investigated the pathogenesis of disseminated MAC infection [3-5]. They have shown evidences suggesting invasion of enterocytes and their ability to translocate across the intestinal mucosa with mice models or enteric cell lines [3-5]. The authors presented the pictures showing pathogens infected to enterocyte and proliferated in histiocytes under the epithelial cells layer in an AIDS case. The lesion focally distributed in the intestinal mucosa and the histiocytes packed with acid-fast bacilli occupied lymphoid follicles in the sub-mucosal layer of this case, which is considered an instructive case in learning the pathogenesis of disseminated MAC disease.

Conflict of interest

The authors state that they have no conflict of interest.

Authors’ contributions

Dr. Hibiya is primarily responsible for the medical aspects and the implications of this study. Dr. Oka, Dr. Kikuchi, and Dr. Teruya were the attending doctors in the AIDS Clinical Center. The article was supervised by Associate Professor Tateyama, the Chief Practitioner for HIV intervention, and by Professor Fujita. All authors have approved the final article.

REFERENCES


