

Mycobacterium avium-intracellulare (MAI) liver abscess mimicking liver metastasis in a patient with rheumatoid arthritis on adalimumab and methotrexate

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DESCRIPTION

A 75-year-old man with a history of rheumatoid arthritis (on adalimumab and methotrexate), hiatal hernia and Barrett's oesophagus presented to an outside hospital with a 1 day history of severe vomiting and abdominal pain. CT of the abdomen showed a large paraesophageal hernia, and he was transferred to a tertiary hospital for hernia repair. Physical examination was significant for mild epigastric tenderness. Gastroenterology consultants endoscopically placed a postpyloric enteric tube. After the procedure, the patient developed a high fever of 40°C and CT of chest/abdomen/pelvis with contrast was performed, which revealed multiple hypodense lesions in the liver (figure 1A,B). MRI of the liver with contrast demonstrated ring-enhancing lesions and malignancy was suspected (figure 2A,B). Surgical repair of the hernia was cancelled and a liver biopsy was performed. Pathology showed lymphohistiocytic infiltrate with acid-fast bacilli (AFB) consistent with mycobacteria (figure 3A,B). No malignant cells were seen. Both AFB blood culture and tissue culture grew *Mycobacterium avium-intracellulare* (MAI). The patient was diagnosed with disseminated MAI infection with liver abscess. All immunosuppressants were held and he was started on azithromycin, ethambutol, rifampin and amikacin for severe disseminated MAI infection.

Non-tuberculous mycobacteria (NTM) are mycobacterial species other than those belonging to the *Mycobacterium tuberculosis* complex and *Mycobacterium leprae*. Molecular identification techniques, including whole-genome sequencing, have identified ~200 NTM species.¹ *Mycobacterium avium* complex (MAC) organisms are ubiquitous in the environment and thus easily encountered. Among NTM, MAC is the most common cause of pulmonary disease worldwide.¹ Disease due to MAC manifests as chronic pneumonia, acute hypersensitivity pneumonitis, skin, soft tissue, bone and

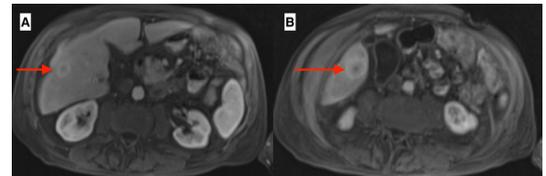


Figure 2 (A,B) MRI with contrast showed multiple ring-enhancing lesions with targetoid appearance in segments 5, 6 and 8 some of which show diffusion restriction, concerning for metastatic cancer.

disseminated infection. Liver abscess due to MAC is rarely reported.² In North America, mean annual period prevalence between 2004 and 2006 was reported to be 5.5 cases per 100 000 population.³ Disseminated MAC disease primarily occurs in severely immunocompromised patients, such as those with advanced HIV infection, haematological malignancy or a history of immunosuppressive therapy including therapy with tumour necrosis factor alpha inhibitors.⁴⁻⁶ Clinically, disseminated MAC manifests as intermittent or persistent fever (>80%), night sweats (>35%) and weight loss (>25%), with additional symptoms including fatigue, malaise and anorexia.^{6,7} The diagnosis is most readily established by culture of blood for mycobacteria. In cases where histopathology is obtained before infection is suspected, additional microbiological studies are helpful as morphologically distinguishing NTM species from each other and from *M. tuberculosis* can be difficult.⁸ While limited data are available to guide management of disseminated MAC in patients without HIV infection, a multidrug regimen similar to pulmonary MAC disease (a macrolide, ethambutol, a rifamycin

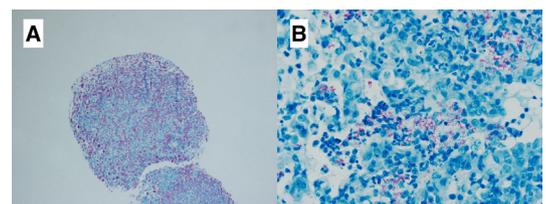


Figure 3 (A,B) Surgical biopsy showed extensive inflammatory infiltrate with large aggregates of foamy macrophages. Acid-fast stain highlights numerous acid-fast bacilli within these macrophages, consistent with mycobacterial infection.



Figure 1 (A,B) CT showed hypodensities in segment 5 and 6 in the liver suspicious for mass lesions.



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Learning points

- ▶ *Mycobacterium avium* complex (MAC) infection can manifest as liver abscess and mimic liver malignancy, although it is extremely rare.
- ▶ Disseminated non-tuberculous mycobacterial infection needs to be considered in the differential diagnosis of patients with fever, night sweats and weight loss who are on tumour necrosis factor inhibitors.
- ▶ Disseminated MAC infections are treated with a multidrug regimen (macrolide, ethambutol, rifamycin combination) similar to that used for pulmonary MAC infection.

combination) is generally used for patients with macrolide-susceptible disease and continued for 12 months.⁶ A parenteral aminoglycoside, such as amikacin, is sometimes used as a fourth drug for patients with extensive, severe or life-threatening disease during the initial 8–12 weeks of therapy, although data are limited.

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