

Fever in a patient with liver metastasis of bowel carcinoma

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A 62-year-old patient presented with fever and abdominal pain in the right upper quadrant. He had an 18-month history of adenocarcinoma of the colon (T3N1M1) with liver metastases, for which he underwent a right hemicolectomy and received chemotherapy with irinotecan and cetuximab; in addition he underwent chemoembolization of the liver lesion. His past medical history was significant for diverticulosis, atrial fibrillation, hypertension (amlodipine 5 mg every 12 hours per os and atenolol 25 mg once a day) and appendectomy.

On examination he was cachectic and febrile with a temperature of 38.0°C. He had hepatomegaly and his liver was hard and irregular on palpation. A scar of his previous operation was evident. Otherwise the physical examination was normal.

Investigations showed a leukocytosis and increased erythrocyte sedimentation rate and serum C-reactive protein levels. Blood cultures and urine cultures were sterile. His chest X-ray and his electrocardiogram were normal. Computed tomography scan of the abdomen showed lesions in the liver (Figure).

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Diagnosis

One of the lesions of the liver (figure) was aspirated under computed tomography guidance and the aspirate (pus) was sent for culture and polymerase chain reaction for detection of *M. tuberculosis*. This culture was positive and grew *Klebsiella pneumoniae* and *Candida albicans*; DNA of *Mycobacterium tuberculosis* was detected as well on quantitative real-time polymerase chain reaction. Ziehl-Neelsen stain and culture for *M. tuberculosis* were negative. Ziehl-Neelsen stain performed on sputum and urine, as well as culture for *M. tuberculosis* were negative.

Management

The patient was commenced on treatment for the responding pathogens with intravenous piperacillin-tazobactam, and caspofungin acetate and oral administration of isoniazid, rifampicin, ethambutol, and pyrazinamide and he became afebrile with a concurrent improvement in laboratory indices during the next 6 weeks. The selection of four drugs as the initial regimen against the mycobacterial infection was based on data regarding the considerable proportion of multidrug resistant *M. tuberculosis* in Greece as well as personal experience.^{1,2} Treatment with antituberculous drugs continued. However unfortunately the patient died 5 months later due to his neoplastic disease.

Teaching points

1. Liver abscesses are either monomicrobial³ or polymicrobial⁴. Polymicrobial liver abscesses are usually due to a combination of various gram-negative bacteria and anaerobic bacteria. Various underlying conditions have been associated with their presence such as diseases of the biliary tree, diseases of the colon, immunosuppressive conditions, bacteremia and transarterial chemoembolization.⁵

2. Various primary and secondary tumours of the liver have been associated with hepatic abscesses.^{6,7} An underlying malignancy of the colon may be present and should specifically be sought for if bacteria such as *Streptococcus bovis*, *Clostridium septicum* are cultured from aspirated pus or the blood.^{8,9} The differentiation of a liver abscess from a mass due to primary or secondary liver cancer is not always easy. In fact many times the two entities coexist i.e. a superinfection of a metastatic liver mass happens as the latter may undergo necrosis at its centre.^{10,11}

3. To our knowledge there is only a previous case where *M. tuberculosis* formed part of the list of pathogens responsible for the polymicrobial liver abscess.¹² Polymerase chain reaction testing of liver tissue for DNA of *M. tuberculosis* is useful in reaching a diagnosis in cases where other diagnostic modalities remain negative, as was the case in our patient.¹³ Our patient's case is unique in that the hepatic metastasis was infected with three different kinds of pathogens namely a bacterium, a fungus, and a mycobacterium. While presentation of patients with liver abscess may be attributed immediately to the usual culprits (gram negative and gram positive bacteria and anaerobes)¹⁴ one may possibly have to consider the concurrent presence of other microorganisms such as fungi and mycobacteria, especially in the setting of a

patient with malignancy.

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