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Liver Abscess in a Returning Traveller: A Case Report

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Abstract

Background: This case describes a liver abscess diagnosed in a returning traveller with three different microorganisms potentially implicated as the causative agent. The varied potential causative agents (including both bacteria and parasites) made the management of this case uniquely challenging, adding to the existing literature on liver abscesses. **Case**: A 70-year-old gentleman, who is a returning traveller from Thailand, presented with confusion and mouth ulcers. He had mildly deranged liver function tests on admission and a CT scan of the abdomen revealed liver abscesses. This was initially treated with antibiotics, and subsequently by insertion of percutaneous hepatic drains, however the gentleman developed septic shock after insertion of the percutaneous drains. Microbiology results revealed a positive *Shistosoma* serology, a *Prevotella denticola* bacteraemia and *Streptococcus intermedius* was cultured from the fluid drained from the abscesses. The gentleman was eventually treated with *Praziquantel* and the size of the abscesses and his liver function tests gradually improved. **Conclusions**: Given the reported polymicrobial nature of liver abscesses described in existing literature, there may be some doubt as to the correct antimicrobial treatment used to treat liver abscesses, especially if greater than one potential causative microorganisms are isolated. The case also highlights a complication associated with treatment, being septic shock secondary to drainage of liver abscesses. Few guidelines exist on the management of liver abscesses, and the difficulties faced in our investigation and treatment of this gentleman with liver abscesses emphasise the need for formal guidelines on the investigation and treatment of liver abscesses.

Keywords

Liver Abscess, *Shistosoma*, *Prevotella denticola*, *Streptococcus intermedius*, Case Report

1. Background

In the UK, the incidence of liver abscesses is thought to be 7 per 100,000 population, tending to affect older people with those with co-morbidities. Liver abscesses can be caused by a variety of organisms, including parasites and bacteria [1]. Furthermore, the polymicrobial nature of liver abscesses makes choosing the correct microbial agent of choice difficult [2]. What made this case unique, was that three microorganisms were identified as possible causative agents, including both bacteria and parasites.

This case highlights the difficulties and pitfalls of managing patients with liver abscesses, in terms of identifying a causative organism, opting for the most appropriate management and being aware of the risks associated with treatments of liver abscesses, namely of percutaneous drainage of liver abscesses. Currently, guidelines for managing liver abscesses, including criteria as to whether or not to percutaneously drain liver abscesses, are difficult to find, and this case hopes to highlight the need for developing guidelines for the management of liver abscesses [1].

2. Case Presentation

A 70-year-old gentleman had returned to the UK after having spent a few months in rural Thailand who had been complaining of a week long history of a sore tongue and mouth ulcers, with reduced oral intake. On arrival to a UK airport, his friend found him to be confused, and he was brought to the nearest hospital. It is worth noting at this stage, that he had not complained of abdominal pain, diarrhoea nor shortness of breath.

His past medical history included Parkinson's Disease and Polymyalgia Rheumatica. His medication history included dopamine replacement and regular oral prednisolone (1 mg once a day). A social history revealed he was a retired engineer, and for the last 10 years of his retirement he had been spending approximately 6 months of each year in rural Thailand. Prior to his hospital admission, he was independent of all activities of daily living.

On examination, his mouth ulcers were noted and he was slightly icteric. Initial blood tests revealed a raised procalcitonin of 49.6 μg/L, a neutrophilia of 25.7 × 10^9/L and a CRP of 128 mg/L. There was also a cholestatic picture on his blood tests, with a total Bilirubin of 68 μmol/L (conjugated Bilirubin was 50 μmol/L), Alkaline Phosphatase of 263 IU/L, Alanine Aminotransfrase of 13 IU/L, Albumin 13 g/L and INR of 1.4. The blood film suggested toxic features, suggestive of acute infection.

A CT scan revealed multiple peripherally enhancing hypotenuse lesions in the right lower lobe of the liver, the largest measuring 6.5 cm in maximum dimension, suggestive of a liver abscess (see **Figure 1**). There were also a couple of small well-defined hypotenuse lesions seen in the left lobe of the liver, the larger one measuring 1.5 cm, likely representing hepatic cysts. A subsequent CT scan revealed a small right sided pneumothorax, which was conservatively managed.

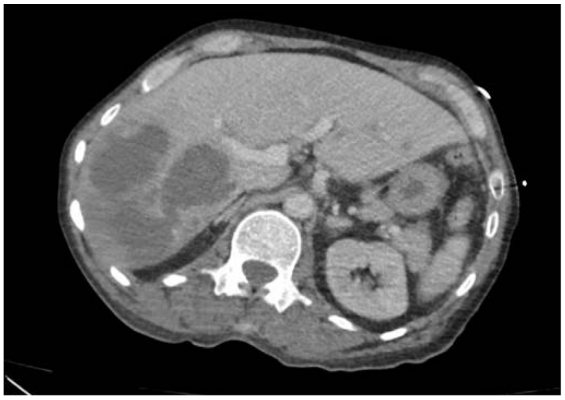

Figure 1. Initial CT Abdomen and Pelvis with contrast: multiple peripherally enhancing hypoattenuating lesions in the right lower lobe of the liver, at least 3 of which with a diameter of approximately 3 cm.

Two percutaneous drains were radiologically inserted into the liver in order to drain the liver abscesses. However, soon after insertion of the percutaneous drains, which he became tachycardic and hypotensive, requiring vasopressor support in the intensive care unit. It is likely that he developed septic shock post insertion of the percutaneous drains. He recovered from this over the next few days, being weaned off vasopressor support, and he eventually was stepped down back to a medical ward. The fluid from the hepatic drains grew was pyogenic and grew *Streptococcus intermedius*, which at the time, was thought to be a contaminant. The hepatic drains were eventually removed once their output was negligible.

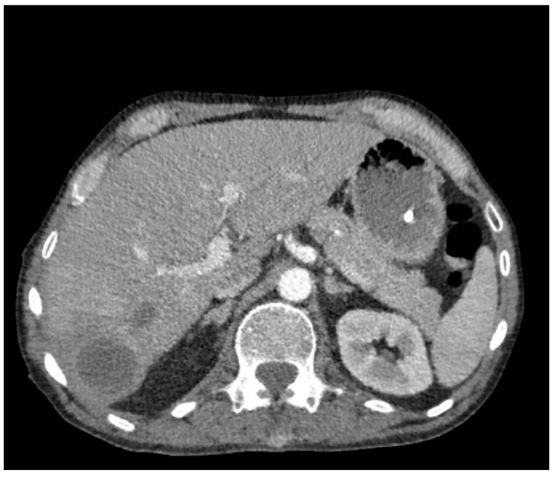

Figure 2. Subsequent CT scans: Improving appearance of liver abscesses, some having resolved completely, and one having reduced to 1cm diameter; hepatic drains have been removed by this point.

Amoebic and Hydatid ELISA were negative, the latter excluding *Echinococcus Granulosus* as a potential cause, however *Shistosoma* ELISA came back positive. It should be noted the turnaround time for these results was over 10 days, hence

the gentleman was covered with antibiotics that covered anaerobic bacteria in the interim, given the liver abscesses. The antibiotics used included amoxicillin and metronidazole, which was well tolerated. The patient had also grown a *Prevotella denticola* baceteraemia, however because of its fastidious nature, no sensitivities could be provided. Once the ELISA results had come back, on the advice of the microbiology team, *Praziquantel* had been prescribed, however unintentionally it had been prescribed as a course rather than a single dose. The gentleman developed a wide-spread desquamating skin rash subsequent to this, and *Praziquantel* was discontinued.

A subsequent CT scan performed just over 2 weeks after the initial CT scan, revealed improving appearances of the liver abscess (see **Figure 2**). His mouth sores had eventually healed and neutrophil levels and liver function tests eventually normalised. His ability to swallow, however, unfortunately appeared to deteriorate, which was highlighted during video fluoroscopy, despite timely administration of his Parkinson's medications through an NG tube. It was eventually agreed for risk feed approach and he was discharged to a rehabilitation facility.

3. Discussion

Unlike most bacteria, parasites such as *Schistosoma* won't appear on blood cultures. Diagnosis requires requesting specific serology for *Shistosoma* and other parasites, and therefore requires a high index of suspicion, as it may not be commonly requested. It's worth noting, however that positive serology in a patient who is native to an area endemic with a parasite may reflect only a past infection unrelated to current clinical condition. These antibodies may be present for months to years, and it should be noted that parasite-specific IgM or IgG antibodies are often not useful either, hence establishing the acuity of an infection may be difficult [3]. Although the gentleman in this case was not native to Thailand, he did spend many years in Thailand in his later life, and although *Schistosoma* has in the literature been implicated in development of liver abscesses [4], whether the positive serology reflects a previous relatively innocuous infection or whether it reflects a cause of his abscesses is not clear.

There have been reported cases of *Prevotella denticola*, which is a normal component of the upper respiratory tract, causing liver abscesses, particularly if associated with periodontal disease [5] [6]. Although poor dentition did not appear to be a concern, given the presentation including mouth ulcers and a sore tongue, one may wonder whether it was in fact *Prevotella* as a causative organism of the abscess rather than *Schistosoma*.

Streptococcus intermedius, like *Prevotella denticola*, is a normal component of the upper respiratory tract. There have been reported potential associations of *Streptococcus intermedius* with liver abscesses [7]. Therefore, another question we have to ask is whether *Streptococcus intermiedus* grown in this gentleman's fluid from his hepatic abscesses was indeed a contaminant or a possible causative

agent (or potentially one of the causative agents) in this case? Indeed, there is the possibility that the liver abscess in this case was polymicrobial. In fact, a study in USA, examined 20 patients with pyogenic liver abscesses and found 12 of them to have polymicrobial liver abscesses [8].

Liver abscesses are generally either pyogenic or amoebic. Amoebic liver abscesses are caused by the parasite *Entamoeba Histolytica*, whereas pyogenic liver abscesses are caused by a range of bacteria. Advanced age has been reported to be more of a risk factor for pyogenic liver abscesses than it does for amoebic liver abscesses, where immunosuppression is described in the literature as being more of a risk factor. It is worth noting that the long term use of low dose steroid medication in this case likely had a role to play in lowering the immune system, to predispose this gentleman in developing liver abscesses.

The two different types of liver abscesses (amoebic and pyogenic) are usually clinically and radiologically difficult to distinguish, although pyogenic liver abscesses are more likely to have multiple liver abscesses. Given the relatively advanced age of the gentleman in this case, and the multiple abscesses found on the CT scan, it is likely that he had a pyogenic liver abscess. Given that bacteria are generally the cause of pyogenic liver abscesses, and *Prevotella denticola* and *Streptococcus intermedius* were the bacteria that were cultured in this case, it is likely that one or both of these bacteria were potentially the cause of the pyogenic liver abscesses. Certain literature describes the recommended treatment for amoebic liver abscesses as including amebicides (+/− drainage of the abscess), whereas antibiotics with drainage is recommended for pyogenic liver abscesses [2].

The gentleman developed hypotension and tachycardia post insertion of the percutaneous drains, therefore it is possible he had developed septic shock potentially as a result of percutaneous drainage of the liver abscesses. One study, based in USA analysed 27 patients who had hepatic abscesses drained percutaneously. 7 of the patients developed symptoms of "septicaemia" after they were drained, 2 of whom were reported to have died from the post procedure "septicaemia" [9]. Although, there is a huge importance of draining hepatic abscess, the study and the case both highlight the need to be aware of the risks of percutaneously draining liver abscesses.

Another issue, this case highlighted, there is a significant proportion of bacteria that are fastidious, i.e. they are not easily grown on media. This may be due to there not being able to grow on media currently used in practice today or interactions with other bacteria in the environment. This issue means that there may be pathogenic bacteria that may cause abscesses that we are unable to incubate, and therefore unable to identify or treat [10].

The strengths of this case were that there was access to parasitic serology testing as well as interventional radiology to allow drainage and culture of the hepatic abscess. The limitations of this case was this gentleman was managed in a gastroenterology ward at a district general hospital, and not a specialist liver unit in a tertiary centre, where outcomes and prognosis potentially may be different.

4. Conclusion

Nevertheless, we can conclude that clinicians managing patients with hepatic abscesses need to be aware of what investigations to request as well being aware of what management would be most appropriate, especially to be aware of complications from treatments. Given there are no specific guidelines for managing liver abscesses, there needs to be effort to create guidelines to aid clinicians in managing patients suffering from liver abscesses.

Declarations

Ethics Approval and Consent to Participate

Patient Consent form attached.

Consent for Publication

Patient Consent form attached.

Availability of Data and Material

Images available.

Authors' Contributions

I am the sole author. I have independently written up the entire manuscript.

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Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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