



Pleural effusion – An unusual cause

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CASE REPORT

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Abstract

Hepatitis A (HAV) infection is one of the most common forms of hepatitis in the paediatric age group in developing countries. It is usually self-limiting and rarely accompanied by extra hepatic complication. In this article, we report two children with hepatitis A who had associated issues of pleural effusion and ascites. Both issues improved with resolution of hepatitis after symptomatic treatment. Although uncommon, extra hepatic manifestations can occur with hepatitis A. However, they resolve completely. Paediatricians in developing countries should be aware of this rare association to avoid unnecessary investigations.

Key Words

Hepatitis A, pleural effusion, ascites

Implications for Practice

1. Although hepatitis A is known to be a self-limiting illness, it is rarely accompanied by some extra hepatic manifestations, which may significantly affect the course of illness and cause an increase in the morbidity as well
2. Pleural effusion and ascites are rare extra hepatic manifestations of hepatitis A infection, which often resolves spontaneously

3. Pleural effusion and ascites accompanying hepatitis A infection usually has a benign course. Paediatricians in developing countries should be aware of this, so as to avoid various unwarranted investigations and invasive procedures.

Background

Hepatitis A (HAV) is a very common infection in developing countries. It is frequent in childhood and is mostly asymptomatic in early childhood. However its clinical presentation may vary over a wide spectrum from anicteric to fulminant hepatic failure. Rarely, it can be accompanied by extra hepatic complications such as renal failure, arthritis and vasculitis. Ascites and pleural effusion as an association with hepatitis A, have rarely been reported. We report here two children with hepatitis A infection, who presented with extra hepatic manifestations of ascites and pleural effusion.

Pleural effusion accompanying ascites in the course of hepatitis A infection is reported only in four cases in literature.¹⁻³ To our knowledge, this is the fifth case report reporting two rare complications (pleural effusion and ascites) of hepatitis A infection. Both of our cases had complete clinical, biochemical and radiological recovery on follow-up

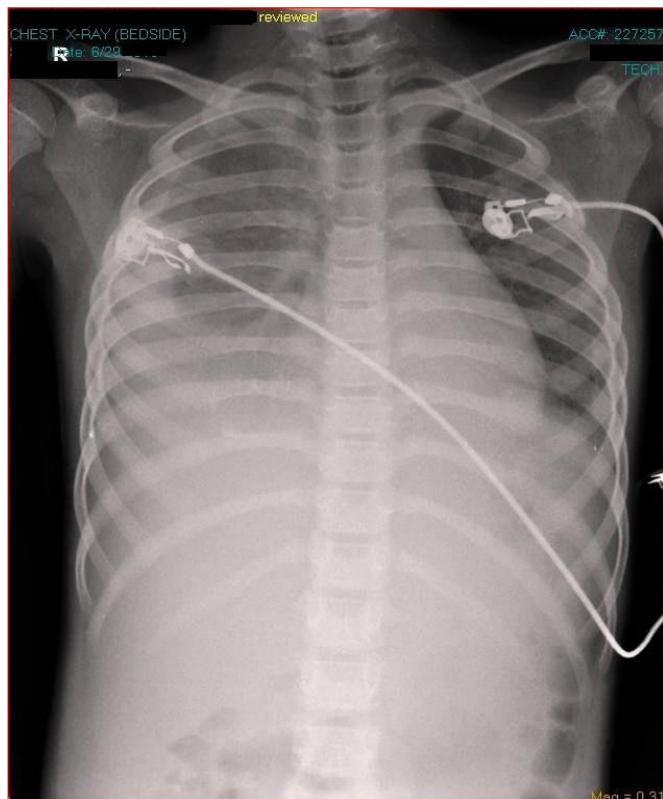
Case details

Case history 1

A seven-year-old, previously well, female child was admitted to Sri Ramachandra Hospital with complaints of abdominal pain of two weeks' duration, progressive abdominal distension, yellowish discoloration of eyes and urine during the second week of illness and difficulty in breathing for the last three days. On examination, the child had icterus and the liver was palpable 4cm below the right costal margin. Breath sounds were decreased on the right side of the chest. Laboratory studies revealed WBC counts of $11 \times 10^9/L$, with lymphocyte predominance. Renal function test and serum electrolytes were normal.

Liver functions showed an elevated bilirubin level of 93.5mmol/L with direct 83.3mmol/L, serum alanine aminotransferases 1430 U/L, serum aspartate aminotransferases 678U/L, total protein of 53g/L and serum albumin 25g/L. Coagulation studies were normal. Anti HAV Ig M antibodies were positive. Other viral markers including hepatitis B, C, and E were negative. Chest X-ray showed bilateral pleural effusion more on right side (Figure 1). Serological analysis for Dengue, Leptospirosis, enteric fever and rickettsial infections were negative. An abdominal ultrasound confirmed hepatomegaly with altered echogenicity with minimal ascites and bilateral pleural effusion. Thoracocentesis was undertaken and pleural fluid analysis was suggestive of transudative effusion with no leucocytes or atypical cells and protein of 20g/L. Pleural fluid for tuberculosis polymerase chain reaction (TB PCR) and culture were negative. The child was given supportive treatment. Repeat chest X-ray after three weeks was normal and the child is on regular follow-up. Further follow-up after another three weeks showed complete resolution of the hepatitis and pleural effusion.

Figure 1: Chest X-ray of case 1 showing bilateral pleural effusion with right side involvement more than left side



Case history 2

A female child of 10 years of age presented with fever, vomiting and abdominal pain of seven days' duration. Clinically, she showed signs of icterus and hepatomegaly of 3cm below the right costal margin. Investigation

revealed normal blood counts, elevated serum bilirubin of 119mmol/L with direct bilirubin of 102mmol/L. Serum alanine aminotransferases 1510 U/L, serum aspartate aminotransferases 798U/L, albumin 32g/L, total protein of 62g/L and coagulation profile were normal. Among viral markers anti-body to HAV (IgM) was reactive whereas other serological markers were negative. A plain film chest X-ray showed the presence of bilateral pleural effusion (Figure 2). An ultrasound examination of the abdomen confirmed the presence of hepatomegaly with minimal ascites and bilateral pleural effusion. The child improved dramatically with symptomatic management, and the child was discharged after clinical and biochemical improvement. On follow-up liver function tests and plain film chest X-ray revealed a complete recovery.

Figure 2: Chest X-ray of case 2 showing bilateral minimal obliteration of costophrenic angles



Discussion

Acute hepatitis caused by hepatitis A viral infection is associated with significant morbidity and occasional mortality. Although extra hepatic manifestations can occur, clinical symptoms are usually associated with liver inflammation. The severity of the disease is age dependent. In children, the clinical presentation is usually asymptomatic and anicteric, with complete recovery occurring in 85% of patients over a period of three months, however mortality increases with advancing age.⁴

Extra hepatic manifestations are reported in 6.4–8% of children infected with hepatitis A virus.^{5,6} These



manifestations include acalculous cholecystitis, cryoglobulinemia, cutaneous vasculitis, arthralgia, apalastic anaemia, Guillane-Barre syndrome, transverse myelitis, haemophagocytic syndrome, pancreatitis, acute tubular necrosis, nephrotic syndrome, pleural effusion, reactive arthritis and Gianotti crosti syndrome.⁵⁻⁷

In children, pleural effusion due to hepatitis A infection is a rare complication. It is reported to occur during the early period of the disease and resolves spontaneously with resolution of hepatitis.^{1,8-10} The first case was reported in 1971.¹¹ To the best of our knowledge, only 15 case reports described the association of hepatitis A with pleural effusion, of which eight were reported in adults and seven in children.^{1,8-15} The exact pathogenesis of the effusion is unknown, but it seems likely to be related with inflammation of the liver, immune complex mediated, transport of fluid from diaphragmatic lymphatics, directly through a diaphragmatic defect secondary to ascites, or direct viral invasion.^{1,16,17} There is a spontaneous resolution of pleural effusion in all the cases so far reported, except that reported by Tesovic et al which resulted in death.⁸ Ascites is a known complication of hepatitis A infection and is reported to occur during the later stages of disease especially in older children and adults. Venous or lymphatic obstruction due to liver involvement or reduction in oncotic pressure due to hypoalbuminemia, has been postulated to be the mechanism of ascites in hepatitis A infection.^{4,16}

In our case report, thoracocentesis has been attempted to prove the linear correlation between hepatitis A and pleural effusion. Complications of thoracocentesis include pneumothorax, haemopneumothorax, haemorrhage, hypotension (vaso vagal response) and re-expansion pulmonary oedema. All these complications should be considered before attempting the procedure. The financial burden on the patient for undergoing the procedure and accompanying pleural fluid analysis should also be borne in mind. But in a developing country like India, where tuberculosis is considered as one of the prime aetiologies, a procedure like thoracocentesis cannot be completely neglected. Nevertheless paediatricians in developing countries should be aware of this rare association to avoid various unwarranted investigations and invasive procedures.

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CONFLICTS OF INTEREST



The authors declare that they have no competing interests

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PATIENT CONSENT

The authors, Vinoth PN, Anitha P, Muthamilselvan S, Sasitharan R, Shuba S, Rajakumar PS, and Julius Xavier Scott declare that:

1. They have obtained written, informed consent for the publication of the details relating to the patient(s) in this report.
2. All possible steps have been taken to safeguard the identity of the patient(s).
3. This submission is compliant with the requirements of local research ethics committees.