



Case report

A fatal hepatitis A virus with dengue fever co-infection

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ABSTRACT

We report the first pediatric fatal case of Hepatitis A virus (HAV) and dengue virus (DENV) co-infection. A 4-year-old boy who had a partial recovery of HAV infection but with subsequent DENV infection; the condition was complicated by acute fulminant hepatic failure, and death.

The risk of DENV co-infection should be considered as cause of acute fulminant hepatic failure in pre-existing Hepatitis A infection.

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Introduction

Dengue is one of the most rapidly spreading mosquito-borne viral disease in the world [1]. Annually, about 50 million dengue infections occur, travelers from non-endemic countries to endemic dengue areas are at risk [2], most infections are asymptomatic, the hemorrhagic complication of the disease mainly affect children under 15 years of age [3].

Case report

A 4-year-old boy was admitted to the pediatric intensive care unit in Jizan City Hospital in Saudi Arabia with acute viral hepatitis A after 2 weeks of illness; the patient had initially been diagnosed in Jordan during a family visit there, the family left Saudi Arabia two months before the child becoming ill, the child was a product of a term pregnancy (Twin A). He was healthy before this illness, but his vaccine history did not document hepatitis A virus immunization. In Jordan, during the visit, patient had acute illness of fever, abdominal pain and vomiting, with a deep yellow colour of the sclera. The diagnosis of hepatitis A was confirmed with IgM for anti-HAV. The patient was managed supportively with intravenous fluid and observation, after 2 weeks of illness, he partially improved and was discharged from the Jordan hospital, at which point the family returned to Jizan (Saudi Arabia). On the 18th day of his illness the patient was admitted to the pediatric ward in our hospital with abdominal distension, deep dark urine, and yellow sclera; he was conscious and alert at that time, but five days later his condition worsened, with irritability and a change in his sleep pattern noted. Therefore, he was transferred to the pediatric intensive care unit

(PICU). His anti-HAV-IgM test was performed by ELISA; fever was not documented, and no meningeal or focal symptoms were observed. The laboratory test results are shown in Table 1.

The patient's respiratory condition worsened because of progressive abdominal distension, with hepatomegaly and no focal lesion on ultrasonographic study.

Further deterioration in the level of consciousness required airway intubation; the patient received antibiotics (piperacillin tazobactam 4g/day), lactulose to inhibit intestinal ammonia production and diuretic therapy. On the 27th day of illness, the patient received intravenous gamma globulin in two doses.

Prolonged INR PT/PTT showed the abnormal coagulation profile of the patient, so treatment with fresh frozen plasma was provided. The suspicion of Dengue fever, a hemorrhagic disease, was raised because this condition is endemic in this geographic region of Jizan (Saudi Arabia) and because of the patient's deterioration after initial recovery. The diagnosis of dengue hemorrhagic fever was confirmed using dengue virus IgM by ELISA, IgG was negative. PCR test was not approved by the insurance company at that time, but several endemic DENV cases were reported by PCR.

On the 32nd day of illness, a prominent coagulopathy was found, high level of ammonia and severe progressive thrombocytopenia, despite intensive treatment for hepatic failure, platelet transfusions, vitamin k therapy and fresh frozen plasma.

The patient died on the 33rd day of illness secondary to massive pulmonary bleeding.

Discussion

Dengue is human arbovirus disease transmitted by mosquitoes [4]. There are three DENV serotypes were detected in Jizan region, DEN-1, DEN-2 and DEN-3. DEN-2 is the most common predominant type rating 83.9% [5]. Jizan is a region located in the south of Saudi

Abbreviation: HAV, hepatitis A virus; DENV, dengue virus.

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Table 1
Laboratory findings.

Test	In pediatric Ward unit	In PICU
Hemoglobin g/dL	10.8	7.5
WBC x 10 ⁹ /L	6.5	10.6
Platelets	446	374
Albumin g/dl	3.4	4.1
ALT U/L	558	1464
AST U/L	812	2392
INR	1.38	5.8
Total bilirubin mg/dL	10	27.3
Direct bilirubin mg/dL	8.3	12
Serum ammonia	53	88
Serum creatinine mg/dL	0.8	0.5

Arabia, it is an endemic region for Dengue fever [6], the hepatitis A virus is also quite common [7]. The effect of Dengue on liver usually asymptomatic but fulminant hepatic failure have been reported in children [8]. Less than 1% of patients with acute HAV will develop acute liver failure [9].

To the best of our knowledge, this is the first described fatal case of HAV with DENV co-infection in Saudi Arabia. HAV with DENV co-infection with severe coagulopathy and acute hepatic failure was previously reported in India [10].

We propose that the patient's deterioration after their initial recovery from HAV infection is secondary to DENV co-infection.

Conclusion

Although acute fulminant hepatic failure can be the result of HAV infection or DENV infection solely, we believe that this case can bring light to the fact that when the course of infection becomes complicated after the initial recovery, the risk of DENV co-infection should be considered, and stays in highly endemic areas of Dengue fever should be avoided by patients with pre-existing hepatitis.

Author statement

The author was responsible for the patient's management, drafting and revising the manuscript including literature search and references. He approved the final manuscript.

Ethics approval and consent to participate

Not applicable.

Consent for publication

Parent authorized the author for publication.

Competing interests

The authors declare that they have no competing interests.

Availability of data and materials

All data included in this published article and additional files.

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Authors' contribution

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