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The Medicine Forum

Volume 23 Article 11

2022

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A Confounding Case of Acute Hepatitis A

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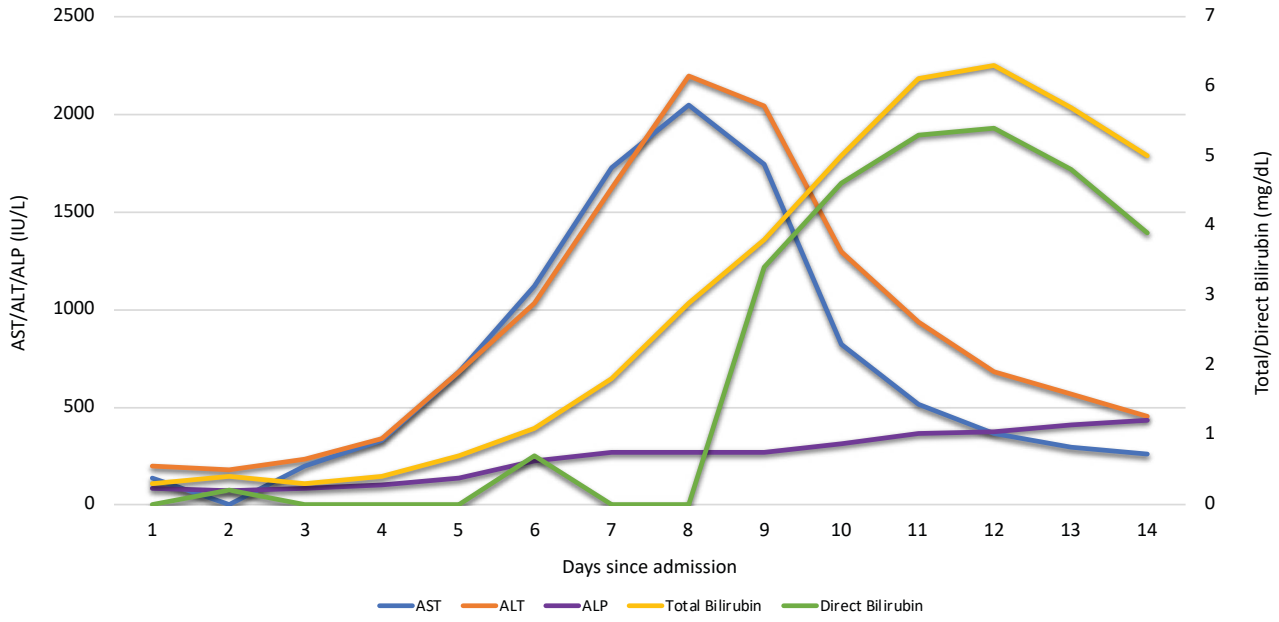
Figure 1: Liver Function Tests Through Hospitalization



INTRODUCTION

Hepatitis A (HAV) is a picornavirus transmitted via fecal-oral route that disproportionately affects homeless persons, men who have sex with men, and individuals who use intravenous drugs.[1] Acute HAV typically presents with nausea, vomiting, abdominal pain, and fever. It is most commonly self-limited but can progress to fulminant hepatic failure in less than 1% of cases.[2] The following case is a unique presentation of acute HAV infection requiring diagnostic dexterity and critical thinking.

CASE DESCRIPTION

A 28-year-old male with a past medical history of opioid use disorder and chronic hepatitis C (HCV) without baseline evidence of cirrhosis who presented with several days of fevers and lethargy. He denied abdominal pain, nausea, vomiting, and diarrhea. The patient was febrile to 103.4F and tachycardic to 145 bpm. Initial labs were notable for WBC 4.3 B/L, HgB 11.0 g/dL, Plt 143 B/L, AST 136 IU/L, ALT 193 IU/L, and HCV PCR 7000 IU/L. He received broad spectrum antibiotics, fluid resuscitation, and was admitted to general medicine. Given his high-risk demographic, the HAV vaccine was administered for primary prophylaxis.

Over the next 24 hours, fevers persisted despite antibiotics. Blood cultures remained negative. An MRI spine performed for back and neck pain was negative for infection. The patient's hepatic function panel peaked at: ALP 270 IU/L, AST 2047 IU/L, ALT 2196 IU/L, total bilirubin 6.3 IU/L, direct bilirubin 5.8 IU/L with associated INR 1.15, PT 13.5 sec, PTT 38 sec (**Figure 1**). Comprehensive infectious workup (**Table 1**) came back negative other than a positive HAV IgM antibody. Since the clinical interpretation of positive HAV IgM antibody was unclear in the setting of recent vaccination, an HAV viral PCR was ordered and returned positive, confirming the diagnosis of acute hepatitis A.

Table 1: Exhaustive Infectious Workup		
Lab Name	**Value**	**Reference Range**
HAV Ab	reactive	nonreactive
HAV IgM	reactive	nonreactive
HAV RNA PCR	positive	negative
Hepatitis B Surface Ab	nonreactive	nonreactive
Hepatitis B Surface Antigen	nonreactive	nonreactive
Hepatitis B Core Antibody	nonreactive	nonreactive
HCV Antibody	reactive	nonreactive
HCV PCR VL	7010 IU/ml; 6990 IU/ml	not detected
HIV Antibody/Antigen	nonreactive	nonreactive
HIV PCR	not detected	not detected
Varicella Zoster Virus IgG	positive	negative
Varicella Zoster Virus PCR	<500 copies/ml	<500 copies/ml
Cytomegalovirus PCR	<100 IU/ml	<100 IU/ml
Herpes Simplex Virus 1 DNA PCR	<100 copies/ml	<100 copies/ml
Herpes Simplex Virus 2 DNA PCR	<100 copies/ml	<100 copies/ml
Ehrlichia chaffeensis IgG	<1:64	<1:64
Ehrlichia chaffeensis IgM	<1:20	<1:20
Anaplasmosis phagocytophilium IgG	<1:64	<1:64
Anaplasmosis phagocytophilium IgM	<1:20	<1:20
Epstein-Barr Virus EBNA IgG	positive	negative
Epstein-Barr Virus VCA IgG	positive	negative
Epstein-Barr Virus VCA IgM	positive	negative
Epstein-Barr Virus DNA PCR	<200 copies/mL	<200 copies/mL
Epstein-Barr Virus DNA PCR	<2.3 log cps/ml	<2.3 log cps/ml

DISCUSSION & CONCLUSIONS

The etiology of our patient's acute illness was challenging to diagnose due to several confounding variables. On hospital day 1, he received a single antigen inactivated HAV vaccine. On hospital day 7, his HAV IgM was positive. We hypothesized that the positive HAV IgM antibody represented either acute HAV infection or an antibody response to recent immunization. Evidence suggests that anti-HAV IgM is detected 2-3 weeks after administration of the single dose inactivated HAV vaccine.2 It would be unusual for the patient to develop anti-HAV IgM in the 7 day period between vaccination and testing.

The patient's history of HCV also complicated the diagnosis. He received past treatment for HCV, but admission labs were indicative of treatment failure or reinfection. Ultimately, HCV viral load remained stable, reducing concern for acute HCV as the cause of his presentation.

Finally, acute HIV and tick-borne illnesses were of concern due to active IVDU and homelessness. However, his HIV, ehrlichia, and lyme antibodies were negative. The diagnosis of acute HAV was established when HAV RNA PCR returned and confirmed the positive IgM was due to acute HAV infection rather than vaccination.

In order to avoid confusion and ensure correct diagnosis, this clinical case highlights the importance of checking HAV IgM in anyone presenting with potential infection prior to vaccination against HAV.

REFERENCES

1. Christian Herzog, Koen Van Herck & Pierre Van Damme (2021) Hepatitis A vaccination and its immunological and epidemiological long-term effects – a review of the evidence, Human Vaccines & Immunotherapeutics, 17:5, 1496-1519, DOI: 10.1080/21645515.2020.1819742
2. Lednar WM, Lemon SM, Kirkpatrick JW, Redfield RR, Fields ML, Kelley PW. Frequency of illness associated with epidemic hepatitis A virus infections in adults. Am J Epidemiol. 1985 Aug;122(2):226-33. doi: 10.1093/oxfordjournals.aje.a114093. PMID: 3860002.
3. Prevention of hepatitis A through active or passive immunization: Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR Recomm Rep. 1999 Oct 1;48(RR-12):1-37. PMID: 10543657.