SJIF Impact Factor: 6.711

WORLD JOURNAL OF ADVANCE HEALTHCARE RESEARCH

ISSN: 2457-0400
Volume: 9
Issue: 9
Page N. 195-199
Year: 2025

Original Article

www.wjahr.com

COMPARISON BETWEEN ICTERIC AND NON-ICTERIC HEPATITIS A VIRUS PRESENTATION AMONG PEDIATRIC PATIENTS ADMITTED TO AL SALAM TEACHING HOSPITAL IN MOSUL/IRAQ

Dr. Mohammad Ali Mohammad*[1], Dr. Oday Ahmad Khalaf[2] and Dr. Rafi Akram Younis Al Saati[3]

[1,2]M.B.Ch.B/ F.I.B.M.S/Al Salam Teaching Hospital.
[3]M.B.Ch.B/DCH/C.A.B.P./Al Salam Teaching Hospital.

Article Received date: 08 July 2025 **Article Revised date**: 29 July 2025 **Article Accepted date:** 19 Aug. 2025

***Corresponding Author: Dr. Mohammad Ali Mohammad**
M.B.Ch.B/ F.I.B.M.S/Al Salam Teaching Hospital.

ABSTRACT

Background: Hepatitis A often manifests as jaundice, dark urine, anorexia, nausea, abdominal pain, and an abrupt onset fever. Children under 6 years of age are often asymptomatic, however older children and adults are more likely to experience symptoms such as acute hepatic dysfunction and jaundice. **Objectives:** To compare between icteric and non-icteric Hepatitis A virus infection regarding different demographic and clinical variable among a sample of Mosul province in Iraq. **Patients and methods:** This is a cross sectional study conducted at Al Salam Teaching Hospital during the period from the first of September 2022 to the first of June 2025, all patients were randomly chosen. The study included 150 subjects with clinical suspicion of A infection, aged less than 14 years. The questionnaire includes three parts, part one for sociodemographic information of the study participants. Part two for the clinical manifestations of the study participants. Part three for the prehospital and hospital received treatment. **Results:** The study includes 150 patients 100 (66.7%) of them had jaundice and 50 (33.3%) had no jaundice. Most of the patients had jaundice (100%), hepatomegaly (100%), fever (94%), abdominal pain (93%), vomiting (65%), malaise (53%), less frequently diarrhea was present in (21%), headache in (18%), splenomegaly in (7%) and ascites in (4%). While among non icteric group, most of patients had fever (100%), hepatomegaly (100%), abdominal pain (88%), vomiting (58%), malaise (52%), less frequently they had headache (14%), ascites (8%), diarrhea (6%) and splenomegaly (2%). It's evident that statistically significant difference between the two groups regarding their age (P value <0.001), residence (P value <0.001), family history (P value <0.001), nutritional state (P value =0.041), personal hygiene (P value 0.023). While no statistically significant difference between the groups regarding their sex (P value = 0.378) and presence of chronic drug use (P value =1). Moreover, no statistically significant difference between the two groups regarding both prehospital and hospital received management with P value of 0.571 and 0.692 respectively. **Conclusions:** Icteric hepatitis A infection significant related to older children, urban residence, positive family history, bad personal hygiene and poor nutritional status. Preventive measures and supportive treatment are the main issues of decrease the incidence and management of this disease.

KEYWORDS: Jaundice, Pediatric, Symptomatic, Viral.

1- INTRODUCTION

Hepatitis A infection is caused by the hepatitis A virus (HAV), which is classified as a picornavirus.[1] Humans are the only natural hosts of HAV, which is commonly contracted by consuming contaminated food or drink, being in close proximity to an infected individual, and spreading by sharing needles and sexual or domestic contact.[2-3] The feco-oral route is the most common route of transmission.[4] Hepatitis A often manifests as jaundice, dark urine, anorexia, nausea, abdominal pain, and an abrupt onset fever.[1-5]

Children under 6 years of age are often asymptomatic, however older children and adults are more likely to experience symptoms such as acute hepatic dysfunction and jaundice.[6] Although uncommon, severe clinical manifestations of hepatitis A infection are possible.[7] HAV infection is a leading cause of acute liver failure (ALF) in developing countries, accounting for 81.4% of cases.[8] However, ALF is more common in adults and individuals with underlying chronic hepatopathy than in children.[9] With a death rate of up to 80%, fulminant hepatitis is the most serious uncommon consequence.[8]

Age has a major role in determining the severity and clinical outcome of HAV infection; in other words, as an individual age, HAV infection is linked to more severe illness, a higher risk of fulminant hepatitis, and mortality.[10]

Serologic testing is necessary for a confirmed diagnosis of hepatitis A because it is difficult to differentiate it from other forms of viral hepatitis based solely on clinical characteristics. Serologic testing identifies the presence of immunoglobulin M (IgM) anti-HAV in the acute phase of infection and immunoglobulin G (IgG) anti-HAV in the convalescent phase of infection.[11-12] AntiHAV IgM antibodies indicate recent or present infection, whereas IgG antibodies indicate prior infection and typically persist throughout an individual's lifetime after infection or immunization.[12-13] Hepatitis A illness appears sporadically over the world, with a cyclic recurrence pattern.[14] HAV is thought to be responsible for around 100 million clinical cases of viral hepatitis each year, with only about 1.5 million cases being recorded. This indicates a significant underreporting of HAV infections, mostly due to asymptomatic infections in younger age groups.[15]

The aim of the study is to compare between icteric and non-icteric Hepatitis A virus infection regarding different demographic and clinical variable among a sample of Mosul province in Iraq.

2- PATIENTS AND METHODS

This is a cross sectional study conducted at Al Salam Teaching Hospital during the period from the first of September 2022 to the first of June 2025, all patients were randomly chosen. The study included 150 subjects with clinical suspicion of A infection, aged less than 14 years. In order to prepare serum, a 2 mL blood sample was drawn from each patient. The enzyme-linked immunosorbent assay was then used to identify the anti-HAV antibodies, immunoglobulin G (IgG) and immunoglobulin M (IgM). To confirm the diagnosis of HAV hepatitis, antibody levels over the determined cut-off point were regarded as positive. Furthermore, each patient's age, sex, residency, family history of recent positive HAV, personal hygiene, nutritional status, and history of chronic drug use were gathered. The two groups were further compared regarding their prehospital and hospital received management. The 150 patients were subsequently divided into two groups based on whether or not they had jaundice at presentation.

Analysis of data was carried out using the available statistical package of SPSS 30 (Statistical Package for Social Sciences-version 30). The significance of different percentages (qualitative data) was tested using chi-square test. Statistical significance was considered whenever the P value was less than 0.05.

3- RESULTS

The study includes 150 patients 100 (66.7%) of them had jaundice and 50 (33.3%) had no jaundice. As shown in figure 3.1.

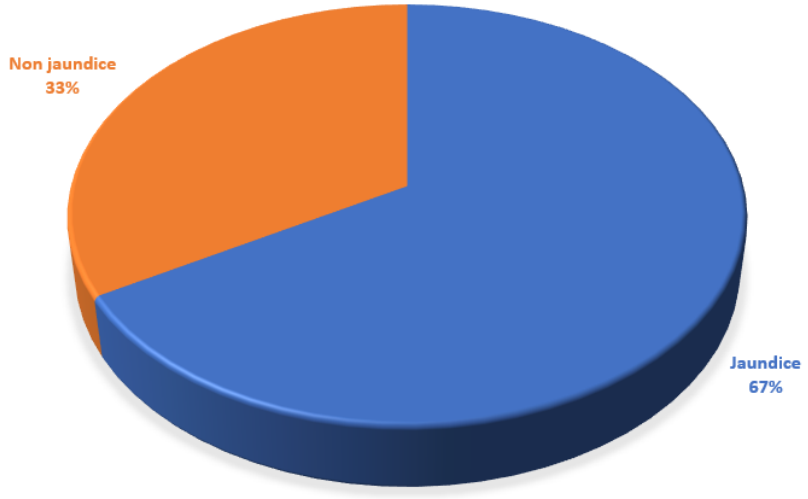

Figure 3.1: Distribution of the study participants according to their icteric state.

Table 3.1 shows distribution of the study groups according to their clinical presentation. With regard to the icteric group, most of the patients had jaundice (100%), hepatomegaly (100%), fever (94%), abdominal pain (93%), vomiting (65%), malaise (53%), less frequently diarrhea was present in (21%), headache in (18%), splenomegaly in (7%) and ascites in (4%). While among non icteric group, most of patients had fever (100%), hepatomegaly (100%), abdominal pain (88%), vomiting (58%), malaise (52%), less frequently they had headache (14%), ascites (8%), diarrhea (6%) and splenomegaly (2%).

Table 3.1: Clinical presentation of the study participants.

Variable	Icteric = 100		Non icteric =50	
	Number	Percent	Number	Percent
Jaundice	100	100%	0	0%
Fever	94	94%	50	100%
Vomiting	65	65%	29	58%
Diarrhea	21	21%	3	6%
Abdominal pain	93	93%	44	88%
Malaise	53	53%	26	52%
Headache	18	18%	7	14%
Hepatomegaly	100	100%	50	100%
Splenomegaly	7	7%	1	2%
Ascites	4	4%	4	8%

Table 3.2 shows comparison between patients with icteric and non icteric jaundice regarding their sociodemographic variables. It's evident that statistically significant difference between the two groups regarding their age (P value <0.001), residence (P value <0.001), family history (P value <0.001), nutritional state (P value =0.041), personal hygiene (P value 0.023). While no statistically significant difference between the groups regarding their sex (P value = 0.378) and presence of chronic drug use (P value =1).

Table 3.2: Comparison between the icteric and non icteric groups regarding their sociodemographic information.

Variable	Icteric = 100		Non icteric =50		P-value
	Number	Percent	Number	Percent	
Sex:					
-Male	63	63%	31	62%	0.378
-Female	37	37%	19	38%	
Age:					
-Less than 5	39	39%	33	66%	**<0.001**
-More than 5	61	61%	17	34%	
Residence:					
-Urban	58	58%	13	26%	**<0.001**
-Rural	42	42%	37	74%	
Family history:					
-Positive	71	71%	3	6%	**<0.001**
-Negative	29	29%	47	94%	
Nutritional state:					
-Good	82	82%	48	96%	**0.041**
-poor	18	18%	2	4%	
Personal hygiene:					
-Good	21	21%	21	42%	**0.023**
-Bad	79	79%	29	58%	
Chronic drug use:					
-Present	2	2%	1	2%	1
-Absent	98	98%	49	98%	

Table 3.3 shows comparison between patients with icteric and non icteric jaundice regarding their prehospital and hospital received management. No statistically significant difference between the two groups regarding both prehospital and hospital received management with P value of 0.571 and 0.692 respectively.

Table 3.3: Comparison between patients with icteric and non icteric jaundice regarding their prehospital and hospital received management.

Variable	Icteric = 100		Non icteric =50		P-value
	Number	Percent	Number	Percent	
Prehospital management					
- Antibiotic	55	55%	21	42%	0.571
- Symptomatic	69	69%	39	78%	
- Non	26	26%	13	26%	

hospital management					
- Antibiotic	91	91%	43	86%	0.692
- Symptomatic	87	87%	40	90%	
- Vitamin K	16	16%	6	12%	

4- DISCUSSION

Hepatitis A virus, an enteric viral infection, is common in developing countries, with a frequency of up to 100% in preschool age children. Moreover, this high rate of infection makes the people immune to infection later on. while in developed countries, the high sanitation and hygiene measures, make most of people reach adulthood without infection.[16]

The study found that there is no significant difference in gender distribution between patients with icteric (jaundiced) and non-icteric (non-jaundiced) forms of the disease. While some types of hepatitis, like Autoimmune Hepatitis (AIH), show a female predominance.[17] This means that the likelihood of developing jaundice in Hepatitis A infection does not appear to be influenced by the patient's sex. Comparable findings obtained from a study of 145 children with Hepatitis A at Babylon Maternity Hospital, including 87 males and 58 females, revealed no gender-based difference in the prevalence of jaundice.[18]

Jaundice appeared in this study to be more prevalent among patients age more than 5 years than in those aged less than 5 years. The reason for this age-related difference in symptom presentation isn't fully understood, but it's may be related to the immune system's response to the virus as younger children may not mount as strong an immune response, leading to less severe symptoms. This is runs with what was published by Rosa M Pintó et al.[19] Moreover, jaundice caused by HAV found in this study more frequently in urban resided children. As hygiene and sanitation improve in urban areas, the rate of early childhood infections decreases. This leads to a larger proportion of the population reaching adolescence without prior exposure and thus susceptible to symptomatic infection.

On the other hand, most of icteric patients found in this study had positive family history of viral hepatitis A, while viral hepatitis A can be associated with a positive family history of the disease, it is not the primary factor determining the presence of jaundice in patients. Other factors like residence, personal hygiene, and nutritional status also play a significant role. Which is in agreement with Bashar Sahib Khalaf and Zainab Adil Ghani Chabuck study findings.[18]

Viral hepatitis A is often self-limiting and requires just supportive therapy. Furthermore, acute hepatitis A patients do not benefit from certain meal types. Symptomatic therapy is focused on a specific scenario and symptoms. To prevent dehydration from diarrhea and emesis, it's important to give sufficient amount of fluids. Additionally, to avoid serious problems, liver-toxic drugs should be given with cautions.[20]

Hospitalization is often only necessary in cases of acute hepatic failure. Hepatic damage is indicated by an INR > 1.5, PT > 15 with encephalopathy, or INR > 2.0, PT > 20 with or without encephalopathy. These measurements should be completed within 8 weeks of disease start, and the coagulopathy (prolonged prothrombin time and/or INR) should not respond to vitamin K treatment. At this moment, aggressive supportive management is necessary, and patients should be referred for liver transplantation.[21-22]

5- CONCLUSIONS

Icteric hepatitis A infection significant related to older children, urban residence, positive family history, bad personal hygiene and poor nutritional status. Preventive measures and supportive treatment are the main issues of decrease the incidence and management of this disease.

ACKNOWLEDGEMENTS

I would like to express my deepest appreciation for our Families. In this respect, I also would like to thank the healthcare workers in Al-Salam hospital in Mosul/ Iraq and some doctors whose encouragement made this effort possible.

REFERENCES

1. Gholizadeh O, Akbarzadeh S, Ghazanfari Hashemi M, Gholami M, Amini P, Yekanipour Z, Tabatabaie R, Yasamineh S, Hosseini P, Poortahmasebi V. Hepatitis A: viral structure, classification, life cycle, clinical symptoms, diagnosis error, and vaccination. Canadian Journal of Infectious Diseases and Medical Microbiology, 2023; 2023(1): 4263309.
2. Li J. Transmission, pathology, and prevention strategies of hepatitis A virus. Molecular Pathogens, Nov. 21, 2023; 14.
3. Foster MA. Hepatitis A. InFoodborne Infections and Intoxications, Jan. 1, 2021; 307-315. Academic Press.
4. Makhmudova MO. Geographical Distribution of Hepatitis A: Features in Countries with Different Income Levels. Odontia: Journal of Dental Innovations and Oral Health, Dec. 1, 2024; 1(1): 1-6.
5. Zahid TA, Qamar W, Asif H, Bashir H. Hepatitis A: An Overview.
6. Van Damme P, Pintó RM, Feng Z, Cui F, Gentile A, Shouval D. Hepatitis A virus infection. Nature Reviews Disease Primers, Sep. 28, 2023; 9(1): 51.
7. Migueres M, Lhomme S, Izopet J. Hepatitis A: epidemiology, high-risk groups, prevention and

research on antiviral treatment. Viruses, Sep. 22, 2021; 13(10): 1900.
8. Guzman-Holst A, Luna-Casas G, Burguete Garcia A, Madrid-Marina V, Cervantes-Apolinar MY, Andani A, Huerta-Garcia G, Sánchez-González G. Burden of disease and associated complications of hepatitis a in children and adults in Mexico: a retrospective database study. PLoS One, May 18¸2022; 17(5): e0268469.
9. Sabapathy DG, Desai MS. Acute liver failure in children. Pediatric Clinics, Jun. 1, 2022; 69(3): 465-95.
10. Lee HW, Chang DY, Moon HJ, Chang HY, Shin EC, Lee JS, Kim KA, Kim HJ. Clinical factors and viral load influencing severity of acute hepatitis A. PLoS One., Jun. 19, 2015; 10(6): e0130728.
11. Castaneda D, Gonzalez AJ, Alomari M, Tandon K, Zervos XB. From hepatitis A to E: A critical review of viral hepatitis. World journal of gastroenterology, Apr. 28, 2021; 27(16): 1691.
12. Baymakova M, Kunchev M, Mihaylova-Garnizova R, Zasheva A, Plochev K, Kundurzhiev T, Tsachev I. Comparative Analysis on Clinical Characteristics Among Patients with Acute Hepatitis A Virus (HAV) and Patients with Acute Hepatitis E Virus (HEV): A Single-Center Retrospective Study from Bulgaria. Infection and Drug Resistance, Dec. 31, 2023: 3349-66.
13. Hunderkar S, Ganorkar N, Walimbe A, Lole K. Evaluation of hepatitis A virus recombinant proteins for detecting anti-HAV IgM and IgG antibodies. Microbiology Spectrum, Apr. 1, 2025; 13(4): e01528-24.
14. Shouval D, Shibolet O. Hepatitis A virus. InViral Infections of Humans: Epidemiology and Control, Oct. **1, 2023**; 1-47. New York, NY: Springer US.
15. Kibet LB. Epidemiology of Hepatitis Viruses, Molecular Characterization of Prevailing Hepatitis a and B Viruses and Evaluation of Hepatitis B Vaccine Compliance in Kenya (Doctoral dissertation, University of Nairobi).
16. Yassin NA, El-Houchi SZ, Abd El-Shafy SF, Soliman NS, Elmonem MA, El-Koofy N. Frequency of Hepatitis A virus as a cause of anicteric hepatitis in children under 5 years: a common yet under-recognized cause. Egyptian Pediatric Association Gazette, Oct. 18, 2022; 70(1): 41.
17. Floreani A, Gabbia D, De Martin S. Are Gender Differences Important for Autoimmune Liver Diseases?. Life., Apr. 12, 2024; 14(4): 500.
18. Khalaf BS, Chabuckb ZA. Comparative study between icteric and non-icteric hepatitis A among pediatric patients admitted to Babylon Maternity Hospital, Iraq. J Contemp Med Sci., Jun. 1, 2018; 4(3): 140-3.
19. Pintó RM, Pérez-Rodríguez FJ, Costafreda MI, Chavarria-Miró G, Guix S, Ribes E, Bosch A. Pathogenicity and virulence of hepatitis A virus. Virulence, Dec. 2021; 12(1): 1174-1185.
20. Koslap-Petraco MB, Shub M, Judelsohn R. Hepatitis A: disease burden and current childhood vaccination strategies in the United States. J Pediatr Health Care., 2008; 22: 3–11.
21. Narkewicz MR, Dell Olio D, Karpen SJ, Murray KF, Schwarz K, Yazigi N, et al. Pattern of diagnostic evaluation for the causes of pediatric acute liver failure: an opportunity for quality improvement. J Pediatr, 2009; 155: 801–806. e1. 35.
22. Lee WM, Stravitz RT, Larson AM. Introduction to the revised American Association for the Study of Liver Diseases Position Paper on acute liver failure 2011. Hepatology, 2012; 55: 965–967.