Original Article

Assessment of Alcohol-Related Cirrhosis and Alcoholic Hepatitis Hospitalization in a Population Study

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Abstract

Background: Alcohol-related liver disease (ALD), encompassing cirrhosis and alcoholic hepatitis, poses a significant global health burden with high morbidity and mortality. Limited data exist on hospitalization trends in Ayodhya, Uttar Pradesh. The objective is to evaluate clinical profiles, complications, and outcomes of patients hospitalized with alcohol-related cirrhosis (ARC) and alcoholic hepatitis (AH) in a tertiary care center. **Material and Methods:** A retrospective analysis of 150 patients admitted between January–December 2022 was conducted. Data included demographics, clinical parameters, laboratory values, complications, and mortality. Groups (ARC vs. AH) were compared using chi-square and t-tests. **Results:** Mean age was 48.2 ± 9.8 years; 86.7% were male. AH patients (n=62) had higher bilirubin (12.4 ± 5.2 mg/dL vs. 5.1 ± 2.8 mg/dL; p<0.001) and mortality (25.8% vs. 10.9%; p=0.012) than ARC patients (n=88). Ascites (68.0%) was the most common complication. In-hospital mortality was 16.0%, significantly associated with hepatic encephalopathy (p=0.003) and infection (p=0.008). **Conclusion:** ALD hospitalizations predominantly affect middle-aged males with high complication rates. AH correlates with severe liver dysfunction and mortality, underscoring the need for early intervention.

Keywords: Alcohol-related cirrhosis, alcoholic hepatitis, hospitalization, mortality, complications, retrospective study.

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Introduction

Alcohol-related liver disease (ALD) is a leading cause of chronic liver disease globally, accounting for approximately 30% of liver-related deaths.[1] ALD manifests as alcoholic fatty liver, alcoholic hepatitis (AH), and alcohol-related cirrhosis (ARC), with AH representing an acute inflammatory syndrome often superimposed on chronic ARC.[2] Hospitalizations for ALD have surged in recent decades, driven by rising alcohol consumption, particularly in low- and middle-income countries.[3] In India, ALD contributes to over 50% of cirrhosis cases, with Uttar Pradesh reporting high per-capita alcohol consumption.[4]

Recent studies highlight the escalating burden of ALD in South Asia. A multi-center Indian study documented ALD as the primary etiology in 42.8% of cirrhosis admissions, with mortality rates exceeding 20% in severe AH.[5] Similarly, data from tertiary centers in North India reveal ALD as the dominant cause of liver-related hospitalizations, yet regional disparities persist.[6] Ayodhya, an populous city in Uttar Pradesh, lacks comprehensive epidemiological data on ALD hospitalizations despite its high alcohol consumption rates.[7] Existing research predominantly focuses on urban centers, neglecting semi-urban regions like Ayodhya where healthcare access is influence outcomes. Furthermore, comparative analyses of ARC and AH in Indian cohorts are sparse, limiting targeted interventions. This study addresses this gap by assessing clinical profiles, complications, and outcomes of ALD hospitalizations in Ayodhya.

Aim: To characterize the clinical spectrum, complications, and mortality of patients hospitalized with ARC or AH at a tertiary care center in Ayodhya and identify predictors of adverse outcomes.

Materials and Methods

Study Design: Retrospective observational study conducted at the Department of Medicine, Autonomous Medical College,, Ayodhya (224133).

Duration: January 2022 to December 2022.

Sample Size: 150 consecutive patients hospitalized with ALD during the study period were included.

Inclusion Criteria:

1. Age ≥18 years.
2. Diagnosis of ARC or AH based on clinical, biochemical, radiological, or histological criteria:

- ARC: Evidence of portal hypertension (ascites, varices,

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splenomegaly), with history of alcohol consumption >60 g/day (men) or >40 g/day (women) for >5 years.8].
- AH: Acute jaundice (bilirubin >5 mg/dL) with AST/ALT ratio >1.5 and recent heavy alcohol use within 8 weeks [9].

3. Hospitalization duration ≥24 hours.

Exclusion Criteria:

1. Viral hepatitis (HBsAg or anti-HCV positive).
2. Autoimmune hepatitis, metabolic metabolic liver disease.
3. Incomplete medical records.

Data Collection: Electronic medical records were reviewed for standardized standardized proforma. Variables:

- Demographics: Age, sex, residence.
- Alcohol History: Duration (years), daily intake (g/day).
- Clinical Parameters: Jaundice, ascites, hepatic encephalopathy (HE), variceal bleeding.
- Laboratory Values: Bilirubin, albumin, INR, creatinine, AST, ALT.
- Complications: Infections (spontaneous bacterial peritonitis, pneumonia), hepatorenal syndrome (HRS).
- Outcomes: Length of stay (LOS), in-hospital mortality.

Statistical Analysis: Data were analyzed using SPSS v25.0. Continuous variables expressed as mean ± SD; categorical variables as percentages. Group comparisons (ARC vs. AH) used chi-square (categorical) and independent t-tests (continuous). Mortality predictors were assessed via logistic regression. P-value <0.05 was significant.

Results

Table 1: Baseline Characteristics (n=150)

Variable	Overall (n=150)	ARC (n=88)	AH (n=62)	P-value
Age (years)	48.2 ± 9.8	49.1 ± 10.2	46.9 ± 9.1	0.182
Male sex, n (%)	130 (86.7)	75 (85.2)	55 (88.7)	0.527
Rural residence, n (%)	98 (65.3)	58 (65.9)	40 (64.5)	0.853
Alcohol intake (g/day)	112.4 ± 38.6	108.7 ± 35.2	117.6 ± 42.1	0.124
Duration (years)	18.3 ± 7.2	20.1 ± 6.8	15.8 ± 7.1	<0.001

Table 2: Clinical and Laboratory Parameters at Admission

Parameter	ARC (n=88)	AH (n=62)	P-value
Jaundice, n (%)	68 (77.3)	62 (100.0)	<0.001
Ascites, n (%)	68 (77.3)	34 (54.8)	0.004
HE, n (%)	22 (25.0)	28 (45.2)	0.009
Bilirubin (mg/dL)	5.1 ± 2.8	12.4 ± 5.2	<0.001
Albumin (g/dL)	2.8 ± 0.6	2.5 ± 0.7	0.005
INR	1.6 ± 0.4	2.1 ± 0.6	<0.001
Creatinine (mg/dL)	1.2 ± 0.5	1.5 ± 0.7	0.002

Table 3: Complications and Outcomes

Variable	Overall (n=150)	ARC (n=88)	AH (n=62)	P-value
Infections, n (%)	45 (30.0)	20 (22.7)	25 (40.3)	0.019
Variceal bleeding, n (%)	23 (15.3)	18 (20.5)	5 (8.1)	0.037
HRS, n (%)	18 (12.0)	8 (9.1)	10 (16.1)	0.177
LOS (days)	8.4 ± 4.2	7.9 ± 3.8	9.1 ± 4.6	0.082
Mortality, n (%)	24 (16.0)	10 (11.4)	14 (22.6)	0.048

Key Findings:

- Demographics: 86.7% male; mean age 48.2 years. AH patients had shorter alcohol exposure duration (15.8 vs. 20.1 years; p<0.001).
- Clinical Severity: AH group exhibited higher bilirubin (12.4 vs. 5.1 mg/dL; p<0.001), INR (2.1 vs. 1.6; p<0.001), and HE (45.2% vs. 25.0%; p=0.009).
- Complications: Ascites (68.0%) was most common. Infections were more frequent in AH (40.3% vs. 22.7%; p=0.019).
- Outcomes: Overall mortality 16.0%. AH had higher mortality (22.6% vs. 11.4%; p=0.048). Mortality predictors included HE (OR 3.8; p=0.003) and infection (OR 4.2; p=0.008).

Discussion

This study provides the first comprehensive analysis of ALD hospitalizations in Ayodhya, revealing a high burden of ARC and AH with distinct clinical profiles and outcomes. The predominance of males (86.7%) and mean age (48.2 years) aligns with national data, reflecting gender disparities in alcohol use and earlier disease onset in India.[10] The shorter alcohol exposure in AH patients (15.8 vs. 20.1 years) suggests binge drinking patterns, consistent with studies linking episodic heavy consumption to AH.[11]

AH patients demonstrated greater biochemical severity (elevated bilirubin, INR) and complications (HE, infections), corroborating global evidence of AH as an acute-on-chronic injury.[12] The mortality rate in AH (22.6%) exceeds rates from Western cohorts (15–20%), likely due to delayed presentation and limited access to specialized care in semi-urban settings.[13] In contrast, ARC mortality (11.4%) was lower than reported in Mumbai (18.5%), possibly reflecting earlier disease recognition in our cohort.[14]

Ascites (68.0%) was the most common complication, similar to data from Delhi (65%).[15] Infections (30.0%) were a key

mortality predictor, emphasizing the role of immune dysfunction in ALD progression.[16] Variceal bleeding was more frequent in ARC (20.5%), consistent with portal hypertension in advanced cirrhosis.[17]

Our findings highlight regional disparities: rural patients (65.3%) had limited pre-hospital care, contributing to advanced presentations. This mirrors studies from Bihar, where rural ALD patients had 30% higher mortality due to healthcare access barriers.[18] The overall mortality (16.0%) underscores the urgent need for integrated ALD management programs in Uttar Pradesh.

Limitations: Retrospective design risks selection bias; single-center data limits generalizability; absence of histology may underdiagnose early AH.

Conclusion

ALD hospitalizations in Ayodhya predominantly affect middle-aged males, with AH associated with severe liver dysfunction, higher complications, and mortality. Infections and hepatic encephalopathy are critical mortality predictors. Public health initiatives targeting alcohol reduction and early detection are essential to mitigate this growing burden.

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Conflicts of interest

There are no conflicts of interest.

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