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Prevalence of the most common external manifestations and comorbidities in men with decompensated alcoholic liver cirrhosis

Prevalencija najčešćih spoljašnjih manifestacija i komorbiditeta kod muškaraca obolelih od dekompenzovane alkoholne ciroze jetre

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Abstract

Background/Aim. External manifestations and comorbidities represent important clinical aspects of decompensated alcoholic liver cirrhosis (ALC), providing insight into disease severity and systemic involvement. The aim of the study was to examine the prevalence of external signs and comorbidities in male patients with decompensated ALC. **Methods.** A prospective, comparative, descriptive, and analytical study was conducted at the Clinic for Internal Medicine, University Clinical Center of the Republic of Srpska, in Banja Luka, Bosnia and Herzegovina. The study included 123 male patients diagnosed with decompensated ALC. All necessary diagnostic evaluations, including laboratory, microbiological, serological, radiological, and endoscopic assessments, were performed during their first hospitalization. **Results.** The mean age of the patients was 59.09 ± 9.32 years. The most common external manifestations were jaundice (79.67%), spider nevi (54.47%), palmar erythema (36.58%), and gynecomastia (18.69%). The most frequent comorbidities were diabetes mellitus (19.51%), congestive heart failure (17.88%), and chronic kidney disease (11.38%). A significant correlation was found between disease severity and the presence of external signs, with jaundice being the most prevalent. **Conclusion.** External manifestations and comorbidities are frequent in male patients with ALC, reflecting the systemic impact of the disease. Recognizing these clinical markers can aid in early diagnosis, risk stratification, and tailored therapeutic strategies.

Key words:
comorbidity; early diagnosis; liver cirrhosis, alcoholic; men.

Apstrakt

Uvod/Cilj. Spoljašnje manifestacije i komorbiditeti predstavljaju važne kliničke aspekte dekompenzovane alkoholne ciroze jetre (ACJ), pružajući uvid u težinu bolesti i sistemsko zahvatanje. Cilj rada bio je da se ispita učestalost spoljašnjih znakova i komorbiditeta kod bolesnika muškog pola obolelih od dekompenzovane ACJ. **Metode.** Sprovedena je prospektivna, komparativna, opisna i analitička studija na Klinici za internu medicinu, Univerzitetskog kliničkog centra Republike Srpske u Banja Luci, Bosna i Hercegovina. Istraživanje je obuhvatilo 123 bolesnika muškog pola kojima je postavljena dijagnoza dekompenzovane ACJ. Sve neophodne dijagnostičke procene, uključujući laboratorijske, mikrobiološke, serološke, radiološke i endoskopske preglede, obavljene su tokom njihove prve hospitalizacije. **Rezultati.** Prosečna starost bolesnika iznosila je 59,09 ± 9,32 godina. Najčešće spoljašnje manifestacije bile su žutica (79,67%), paučinaste vene (54,47%), palmarni eritem (36,58%) i ginekomastija (18,69%). Najčešći komorbiditeti bili su dijabetes melitus (19,51%), kongestivna srčana insuficijencija (17,88%) i hronična bubrežna bolest (11,38%). Ustanovljena je značajna korelacija između težine bolesti i prisustva spoljašnjih znakova, pri čemu je žutica bila najzastupljenija. **Zaključak.** Spoljašnje manifestacije i komorbiditeti su česti kod bolesnika muškog pola obolelih od ACJ, što odražava sistemski uticaj bolesti. Prepoznavanje ovih kliničkih pokazatelja može doprineti ranijoj dijagnozi, stratifikaciji rizika i prilagođenim terapijskim strategijama.

Ključne reči:
komorbiditet; dijagnoza, rana; jetra, bolesti izazvane alkoholom: muškarci.

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Introduction

Alcoholic liver cirrhosis (ALC) is a significant global health issue, which represents the final stage of chronic liver disease resulting from excessive alcohol consumption. According to the World Health Organization, variations in alcohol consumption range from as low as 0.01 L *per* year in Sudan and Luxembourg to as high as 16.8 L *per* year in Russia, highlighting stark regional differences in alcohol use [1]. Globally, ALC is responsible for approximately 1.32 million deaths annually, underscoring the severity of this health crisis. The rising trend in alcohol consumption, with over 2.6 million alcohol-related deaths in 2019, presents an urgent challenge for legislative bodies and healthcare systems [2].

In recent years, the increasing prevalence of alcohol use and its association with liver-related complications have drawn significant attention to the need for better understanding and management of this condition. ALC leads to progressive liver dysfunction, which manifests not only through liver-specific biochemical markers but also through a variety of external clinical signs and comorbidities that can serve as indicators of disease severity and systemic involvement. This disease is particularly prevalent in developed countries in Europe and the United States, where it is considered the fourth leading cause of premature death among adults [3, 4].

Between 2022 and 2040, the total economic burden of alcohol-associated liver disease is expected to reach approximately $880 billion. This figure encompasses about $355 billion in direct healthcare costs and an estimated $525 billion in losses due to reduced workforce productivity and economic consumption. The annual cost of alcohol-associated liver disease is projected to rise significantly, from $31 billion in 2022 to $66 billion by 2040, marking an increase of 118% [5].

External manifestations of cirrhosis, such as jaundice (icterus), spider nevi, palmar erythema, and gynecomastia, are common and have been widely recognized as indicative of liver dysfunction. These signs are often related to the severity of liver damage and may reflect underlying pathological processes, such as hormonal imbalances, altered bilirubin metabolism, and vascular changes [6–10]. A study by Tapper and Parikh [11] highlights the relationship between these external signs and the stage of liver disease, indicating that their presence can offer valuable clues for early diagnosis and monitoring the progression of cirrhosis.

In addition to external manifestations, patients with ALC often present with a range of comorbidities, which complicate their clinical course and affect their overall prognosis. Diabetes mellitus (DM), cardiovascular disease, and chronic kidney disease (CKD) are frequently observed in this patient population, suggesting that liver cirrhosis has widespread systemic effects [12]. The interplay between liver dysfunction and these comorbid conditions, as noted by Dugum and McCullough [13], underscores the complexity of managing patients with decompensated cirrhosis. Understanding the prevalence and relationships between these comorbidities is crucial for developing effective management strategies.

By examining the distribution of these clinical markers and their associations with disease severity, this study provides valuable insights into the systemic impact of ALC. The findings underscore the need for comprehensive care strategies that address both liver-specific and extrahepatic complications. Moreover, these insights could contribute to faster and earlier diagnosis of alcohol-related diseases, primarily decompensated ALC, which would consequently enable earlier and more comprehensive treatment.

The aim of this study was to examine the prevalence of external manifestations and comorbidities in male patients with decompensated ALC, with an emphasis on how these factors vary with age.

Methods

This prospective, comparative, descriptive, and analytical study was conducted at the Internal Medicine Clinic, University Clinical Center of the Republic of Srpska, in Banja Luka, Bosnia and Herzegovina, within the Department of Gastroenterology and Hepatology. The study was conducted from June 2021 to January 2025, and a total of 123 male patients over the age of 18 years hospitalized for decompensated ALC were included. The mean age of patients was 59.09 ± 9.32 years. The diagnosis of cirrhosis was based on clinical, laboratory, radiological, and endoscopic criteria. The study was conducted in accordance with the Helsinki Declaration and was approved by the Ethics Committee of the University Clinical Center of the Republic of Srpska, Banja Luka, Republic of Srpska, Bosnia and Herzegovina (No. 01-19-462-2/24, from November 28, 2024). All participants provided informed consent for participation in the study.

Exclusion criteria included female patients, patients under the age of 18 years, patients with cirrhosis of other etiologies (viral, autoimmune, metabolic, or biliary), those with concurrent malignancies except hepatocellular carcinoma (HCC), patients with active infections, and those with incomplete medical records.

All patients underwent a comprehensive diagnostic evaluation, which included: clinical examination – focused on identifying external signs of chronic liver damage, such as jaundice, spider nevi, palmar erythema, gynecomastia, and other manifestations; laboratory tests – complete blood count, biochemical parameters for liver and kidney function, coagulation profile, and serological tests for viral hepatitis; radiological methods – abdominal ultrasound to assess liver structure, spleen size, and the presence of ascites and endoscopic examinations – esophagogastroduodenoscopy to evaluate esophageal and gastric varices.

Associated comorbidities were identified based on medical history, clinical records, and previous diagnostic findings. Patients were categorized into age groups to analyze the prevalence of external signs and comorbidities across different age categories.

Statistical analysis

The data were analyzed using descriptive and inferential statistical methods with version 29 SPSS. Categorical variables were presented as absolute and relative frequencies (num-

bers and percentages). The Chi-square test was applied to assess statistical significance, with a significance level set at $p < 0.05$. A detailed description of the statistical tools and methods used for the analysis is provided below. For comparative purposes, patients were divided into the following age groups: under 50 years, 51–60 years, 61–70 years, and over 71 years. The Chi-square test was applied to compare the distribution of categorical variables (such as the presence of external signs of the disease and comorbidities) across the different age groups. This allowed for the assessment of potential associations between age and the frequency of these variables.

Results

The majority of patients belonged to the 61–70 age group (39.80%), followed by the 51–60 age group (36.60%). Patients under 50 years accounted for 14.60%, while those over 71 years made up 8.90% of the study population.

External signs of liver cirrhosis varied among patients, with jaundice being the most common manifestation, present in 98 (79.67%) patients. Spider nevi were observed in 67 (54.47%) patients, followed by palmar erythema in 45 (36.58%) patients. Gynecomastia was diagnosed in 23 (18.69%) patients, while parotid gland enlargement was recorded in 10 (8.13%) cases. Dupuytren's contracture and lacquer tongue were the least frequent, occurring in 1.62% of patients each (Table 1).

The distribution of external signs across different age groups showed significant differences. Jaundice was most prevalent in patients over 61 years ($p = 0.002$), while spider nevi and palmar erythema were more common in younger patients ($p = 0.014$ and $p = 0.027$, respectively). Gynecomastia was significantly associated with the 51–60 age group ($p = 0.032$), whereas parotid gland enlargement was more frequent in patients over 71 years ($p = 0.041$) (Table 2).

Comorbid conditions were frequently observed in the study population. The most common comorbidity was DM, present in 24 (19.51%) patients, followed by congestive heart failure (CHF) in 22 (17.88%) patients. CKD was identified in 14 (11.38%) cases, while peptic ulcer disease (PUD) was found in 7 (5.69%) patients. Chronic obstructive pulmonary disease (COPD) was present in 6 (4.87%) cases, and HCC was diagnosed in 5 (4.06%) patients. Cerebrovascular and peripheral vascular diseases were equally distributed, each occurring in 4 (3.25%) of patients (Table 3).

Table 1

External manifestations of liver cirrhosis

External signs	n (%)	Age groups (years)	*p*-value
Icterus	98 (79.67)	61–70	0.002
Spider nevi	67 (54.47)	51–60	0.014
Palmar erythema	45 (36.58)	51–60	0.027
Gynecomastia	23 (18.69)	51–60	0.032
Parotid swelling	10 (8.13)	61–70	0.041
Dupuytren's contracture	2 (1.62)	no significant difference	0.089
Lacquer tongue	2 (1.62)	no significant difference	0.091

n – number.

Table 2

Distribution of external manifestations by age

External signs	Age groups (years)				*p*-value
	< 50	51–60	61–70	> 71	
Icterus	10 (55.60)	32 (71.10)	43 (87.80)	13 (100.00)	0.002
Spider nevi	12 (66.70)	29 (64.40)	21 (42.90)	5 (45.50)	0.014
Palmar erythema	8 (44.40)	22 (48.90)	12 (24.50)	3 (27.30)	0.027
Gynecomastia	2 (11.10)	12 (26.70)	7 (14.30)	2 (18.20)	0.032
Parotid swelling	0 (0.00)	2 (4.40)	5 (10.20)	3 (27.30)	0.041
Dupuytren's contracture	0 (0.00)	1 (2.20)	1 (2.00)	0 (0.00)	0.089
Lacquer tongue	0 (0.00)	0 (0.00)	1 (2.00)	1 (9.10)	0.091

All values are given as numbers (percentages).

Table 3

Comorbidities in patients according to age

Comorbidities	n (%)	Age groups (years)	*p*-value
Diabetes mellitus	24 (19.51)	61–70	0.009
CHF	22 (17.88)	61–70	0.015
CKD	14 (11.38)	61–70	0.021
Peptic ulcer disease	7 (5.69)	< 60	0.038
COPD	6 (4.87)	51–60	0.033
HCC	5 (4.06)	no significant difference	0.086
Cerebrovascular diseases	4 (3.25)	61–70	0.048
Peripheral vascular diseases	4 (3.25)	61–70	0.048
Rheumatologic diseases	3 (2.43)	no significant difference	0.073
Myocardial infarction	1 (0.81)	> 71	0.061

n – number; CHF – congestive heart failure; CKD – chronic kidney disease; COPD – chronic obstructive pulmonary disease; HCC – hepatocellular carcinoma.

Table 4

Distribution of comorbidities by age

Comorbidities	Age groups (years)				*p*-value
	< 50	51–60	61–70	> 71	
Diabetes mellitus	2 (11.10)	6 (13.30)	12 (24.50)	4 (36.40)	0.009
CHF	2 (11.10)	5 (11.10)	10 (20.40)	5 (45.50)	0.015
CKD	1 (5.60)	4 (8.90)	7 (14.30)	2 (18.20)	0.021
Peptic ulcer disease	2 (11.10)	4 (8.90)	1 (2.00)	0 (0.00)	0.038
COPD	1 (5.60)	3 (6.70)	2 (4.10)	0 (0.00)	0.033
HCC	0 (0.00)	2 (4.40)	2 (4.10)	1 (9.10)	0.086
Cerebrovascular diseases	0 (0.00)	1 (2.20)	2 (4.10)	1 (9.10)	0.048
Peripheral vascular diseases	0 (0.00)	1 (2.20)	2 (4.10)	1 (9.10)	0.048
Rheumatologic diseases	1 (5.60)	0 (0.00)	1 (2.00)	1 (9.10)	0.073
Myocardial infarction	0 (0.00)	0 (0.00)	0 (0.00)	1 (9.10)	0.061

For abbreviations, see Table 3.

All values are given as numbers (percentages).

Comorbidities showed varying distributions across age groups. DM and CHF were significantly more prevalent in older patients ($p = 0.009$ and $p = 0.015$, respectively). CKD was most frequent in patients over 61 years ($p = 0.021$), while COPD was primarily observed in the 51–60 age group ($p = 0.033$). The presence of HCC was evenly distributed across age categories without significant statistical differences ($p = 0.086$) (Table 4).

Discussion

In discussing ALC, it is crucial to emphasize its significant impact on global health, as it represents the final stage of chronic liver disease resulting from excessive alcohol consumption. Data shows that ALC accounts for approximately 1.32 million deaths annually, highlighting the severity of this health issue. Furthermore, the variation in alcohol consumption across regions complicates public health strategies. For instance, while countries like Sudan and Luxembourg have minimal alcohol consumption, Russia reports exceptionally high levels, presenting specific challenges for prevention and treatment in different regions [1, 2, 14].

In recent years, the growing prevalence of alcohol use and its association with liver diseases have become subjects of intense research, as ALC leads to progressive liver dysfunction, which manifests through various clinical signs and comorbidities. These external symptoms, including jaundice, spider nevi, palmar erythema, and gynecomastia, often serve as indicators of liver damage and can reflect underlying systemic changes in the body. These signs are frequently associated with hormonal imbalances, alterations in bilirubin metabolism, and vascular changes, making them crucial for assessing the severity of the disease and its systemic effects [4, 6, 15].

Interestingly, ALC is particularly prevalent in developed countries, such as those in Europe and the United States, where it remains one of the leading causes of premature death among adults [3]. This trend suggests that, despite advances in healthcare, alcohol consumption continues to have a significant negative impact on public health. Therefore, further research is necessary to improve the prevention, diagnosis, and treatment of ALC, as well as to develop public health initiatives that could help reduce the number of alcohol-related deaths associated with this condition [9–11].

The demographic and clinical findings from this study provide significant insights into the characteristics and external manifestations of decompensated ALC. Our cohort aligns with previous studies, which suggest that ALC predominantly affects middle-aged and older men. In addition, our data show that the largest percentage of patients falls within the 51–70 age group [15–19]. Interestingly, while cirrhosis is more commonly seen in patients over 50, decompensated ALC was noted in a considerable number of patients younger than 50, underlining the importance of early identification and management in this group.

External manifestations in liver cirrhosis are important indicators of chronic liver damage and are linked to systemic complications. In our cohort, the most common external sign was icterus, observed in 79.67% of patients. This is consistent with the well-established association between jaundice and liver failure resulting from impaired bilirubin metabolism. A significant age-related trend was observed for icterus, as it predominantly affected patients over 61 years of age ($p = 0.002$).

Spider nevi, another hallmark of cirrhosis, were found in 54.47% of patients, particularly in those younger than 60 years ($p = 0.014$). This result corresponds with prior literature that associates spider nevi with estrogenic effects, commonly seen in younger cirrhosis patients [9, 19–22]. Palmar erythema, another frequent manifestation (36.58%), also demonstrated a significant association with patients under 60 years ($p = 0.027$).

Gynecomastia, a manifestation of hormonal imbalance, was present in 18.69% of patients, with the highest prevalence observed in the 51–60 age group ($p = 0.032$). Parotid swelling was present in only 8.13% of the cohort, with a notable increase in patients over 71 years ($p = 0.041$), likely indicating advanced disease and its systemic effects. Dupuytren's contracture and lacquer tongue were observed in only a small percentage of patients (1.62%), with no significant association to any particular age group. This suggests that while these signs are recognized, they are less commonly seen in the cohort.

The study revealed several comorbid conditions associated with decompensated ALC. DM was present in 19.51% of patients, particularly in those over 61 years ($p = 0.009$). This is consistent with known associations between chronic liver disease and metabolic disorders, such as diabetes, which often results from hepatobiliary dysfunction and insulin resistance seen in cirrhosis [12, 13].

CHF was another prominent comorbidity found in 17.88% of patients. The prevalence of CHF increased with age, with the highest rates observed in patients over 61 years ($p = 0.015$). The pathophysiological link between heart failure and liver cirrhosis, known as cirrhotic cardiomyopathy, may contribute to this association [23–24]. CKD, another comorbidity, was observed in 11.38% of patients and was more prevalent in older patients ($p = 0.021$), reflecting the complexity of multiorgan involvement in advanced cirrhosis.

PUD and COPD were seen in smaller proportions of the sample (5.69% and 4.87%, respectively), with the latter being more common in the 51–60 age group ($p = 0.033$). HCC was diagnosed in 4.06% of the cohort, with no significant age-related variation ($p = 0.086$). This highlights the ongoing risk of HCC development in cirrhosis patients, although the relatively low percentage may be indicative of the cohort's limited follow-up duration or the stage of disease at the time of diagnosis.

Cerebrovascular and peripheral vascular diseases were found in 3.25% of patients, predominantly in those over 61 years ($p = 0.048$), further supporting the multifactorial nature of cirrhosis and its systemic complications. Rheumatologic diseases (2.43%) and myocardial infarction (0.81%) were observed in fewer patients. However, these findings highlight the broad spectrum of comorbid conditions that can be associated with cirrhosis, potentially complicating management and outcomes.

The distribution of external manifestations across different age groups further emphasizes the association between age and the presence of certain signs. For instance, icterus and parotid swelling were more frequent in older age groups, while spider nevi, palmar erythema, and gynecomastia were more common in younger patients. This suggests that the degree of liver dysfunction and systemic involvement may influence the manifestation of specific signs [15, 16, 20, 21].

The study highlights a high prevalence of external signs and comorbidities in male patients with decompensated ALC. Jaundice was the dominant external manifestation, with a significantly higher occurrence in older patients. Comorbidities such as DM and CHF were frequent, particularly in the elderly population. The findings underscore the systemic impact of ALC and the importance of comprehensive clinical assessment in affected patients.

Similarly, the distribution of comorbidities by age group illustrates a tendency for certain conditions, such as DM, CHF, and CKD, to increase with age, reflecting the overall burden of disease in older cirrhosis patients. Interestingly, PUD and COPD were more common in younger patients, possibly reflecting lifestyle factors or earlier onset of disease.

Conclusion

The findings of this study highlight the multifaceted nature of decompensated alcoholic liver cirrhosis, with a high prevalence of external signs and comorbidities closely linked to age. Icterus, spider nevi, and palmar erythema emerged as the most common external manifestations, with significant age-related variations. Similarly, diabetes mellitus, congestive heart failure, and chronic kidney disease were the most frequently encountered comorbidities. These results emphasize the need for comprehensive management strategies that address both liver disease and its associated systemic complications, particularly in older patients. Further studies are warranted to investigate the long-term outcomes and survival rates in this patient population, as well as to identify potential interventions to mitigate the impact of comorbidities on overall health.

Conflict of interest

The author declares that there is no conflict of interest related to this research. The study was conducted without any commercial or financial influences, ensuring the objectivity and integrity of the research process and findings.

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