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MEDICINE DEPARTMENT



Pattern of Liver Diseases admissions in medical wards in Major governmental referral Hospitals, City Sana'a , Yemen, from October to December 2022.

A Research Submitted for Partial Fulfillment Graduated inMBBS

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كلية الطب والعلوم الصحية

قسم الباطنية

نمط قبول أمراض الكبد في الأجنحة الطبية في مستشفيات الإحالة الحكومية الكبرى ،
مدينة صنعاء ، اليمن ، من أكتوبر إلى ديسمبر ٢٠٢٢ .

بحث مقدم للوفاء الجزئي تخرج في بكالوريوس طب وجراحة

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ABSTRACT

Back ground and objectives: Liver disease produces significant public health problems with poor long-term clinical outcomes, comprising premature deaths from cirrhosis, liver failure, and hepatocellular carcinoma worldwide. The aim of this study is to determine the patterns of patients presentation with chronic liver disease and to assess the etiological factors among patients admitted to the three major referral hospitals in Sana'a City, Yemen.

Methods: This was a descriptive retrospective analysis study of chronic liver disease patients admitted from 1st October 2021 to 31st December 2021 to the medical wards of the three major referral hospitals in the Yemeni capital, Sana'a City. Data were extracted from patient case folders for the period of under review. Data validated with Microsoft Excel version 13 and exported to Epi- info version 7.3; for statistical analysis. Data were evaluated for demographic and other clinical characteristics as definite variables.

Results: Of the 118 patients diagnosed as chronic liver disease admitted into medical wards during three months period. There were 88 (74.6%) males and 30 (25.4%) females, with a male to female ratio of 2.9:1. The mean overall age of patients and the age range were 43.9 ± 16.6 and 13-80 years, respectively. The peak incidence of age occurred during the fifth and sixth decades of life at 44.9%. The most common liver disease was; autoimmune hepatitis 45(38.1%), followed by non-alcoholic fatty liver disease 37 (31.4%), total viral hepatitis 20(17%) and Vascular disease 5 (4.2%). schistosomiasis similar to neoplastic hepatitis accounted for 4 (3.4%) for each, while Wilson disease, and Biliary diseases were 2 (1.7%) and 1 (0.9%), respectively.

Conclusion: Current findings show that autoimmune hepatitis was the most common cause among chronic liver diseases in Sana'a city, Yemen; the male to female ratio was about three folds for male than female. In light of this, health education and public awareness about hepatitis virus screening tests and schistosomiasis screening and treatment is the primary preventive strategy as increase the vaccination coverage to reduce the morbidity and mortality should be considered.

Keywords: Autoimmune hepatitis, liver diseases, schistosomiasis, viral hepatitis, Yemen.

INTRODUCTION

Liver disease produces significant public health problems with poor long-term clinical outcomes, comprising premature deaths from cirrhosis, liver failure, and hepatocellular carcinoma worldwide [1].

The liver disease pattern varies across geographic locations. Worldwide, eight hundred and forty-four millions persons suffer from chronic liver disease (CLD) as well as a mortality rate of 2 million annually [2, 3].

The leading causes of disease and death for liver disease worldwide, consisting of hepatitis B virus (HBV) and hepatitis C virus (HCV) infection, nonalcoholic fatty liver disease (NAFLD), alcoholic liver disease (ALD), liver failure (LF) and connected with cirrhosis, and hepatocellular carcinoma (HCC) [1,3].

Cirrhosis is widely prevalent worldwide and can be a result of different causes, the term is applied whenever the end result is scarring of the liver. the causes such as obesity, non-alcoholic fatty liver disease, high alcohol consumption, hepatitis B or C infection, autoimmune diseases, cholestatic diseases, glycogen storage diseases, cystic fibrosis, alpha-1-antitrypsin deficiency ,and iron or copper overload hemochromatosis and Wilson disease respectively[4]. Worldwide, the common causes of cirrhosis are alcohol abuse and viral hepatitis (B and C)[5].but in the developed world, the most common causes are hepatitis C virus (HCV), alcoholic liver disease, and nonalcoholic steatohepatitis (NASH),while hepatitis B virus (HBV) and HCV are the most common causes in the developing world[4]. Cirrhosis develops in about 10-20% of patients within 5-30 years [6].

The worldwide prevalence of cirrhosis is unknown [7] and accounts for more than one million deaths each year [8] 1. It is considered as a leading cause of mortality and morbidity across the world and is the 11th leading cause of death and 15th leading cause of morbidity, accounting for 2.2% of deaths and 1.5% of disability-adjusted life years worldwide [9]. It is a leading cause of death in Asia and in USA, cirrhosis ranks as the tenth most common cause of death [10].In Yemen, liver cirrhosis establishes a challenging health problem, Hepatitis B and C have moderate transmission in Yemen and health practices still an important mode of

transmission of both viruses [11]. According to the latest WHO data published in 2020 Liver Disease Deaths in Yemen has reached 2891 or 1.86% of total deaths and The age adjusted Death Rate is 21.23 per 100,000 of population ranks Yemen number 84 in the world [12].

Most patients with cirrhosis remain asymptomatic until they develop features of decompensation. At this stage, patients experience complications associated with portal hypertension including ascites, spontaneous bacterial peritonitis (SBP), hepatic encephalopathy (HE), hepatorenal syndrome, portopulmonary hypertension, or variceal bleeding (hematemesis). In addition, intestinal microbial translocation in patients with cirrhosis might also cause SBP and HE [13].

Ascites is the most common complication of cirrhosis and is frequently a cause of admission to the hospital [14]. Within 10 years of the diagnosis of cirrhosis, more than 50% of patients develop ascites [15]. Overt hepatic encephalopathy affects approximately 20% of patients with liver cirrhosis each year and a common cause of admission to emergency departments [16]. Esophageal variceal bleeding is a common complication of cirrhosis with a mortality of 17-42% per bleeding episode[17]. Hepatocellular carcinoma (HCC), the most common primary liver cancer, can develop at any stage of liver cirrhosis [18]. The complications of which often result in hospitalisation, impaired quality of life, and high mortality. Progressive portal hypertension, systemic inflammation, and liver failure drive disease outcomes [19].

The management of liver cirrhosis is centred on the treatment of the causes and complications, and liver transplantation can be required in some cases [20]. It is possible to slow or stop cirrhosis from worsening. Many of the causes and complications that lead to cirrhosis are treatable or manageable [21], however the overall prognosis is poor. Many patients present with advanced disease and/or serious complications that carry a high mortality [22]. The global burden of cirrhosis is substantial. Although vaccination, screening, and antiviral treatment campaigns for hepatitis B and C have reduced the CLD burden in some parts of the world (developed countries), concomitant increases in injection drug use, alcohol misuse, and metabolic syndrome threaten these trends [23].

JUSTIFICATIONS:

1. Scarce of data on the determinants of chronic liver disease and its complications such as cirrhosis in Yemen.

2. Our university is one of the emergent universities in our country so , There is no previous study done in this topic.

GOALS AND OBJECTIVES:

1. To determine the patterns of patients presentation with chronic liver disease.
2. To determine the causes of chronic liver disease and cirrhosis among patients admitted to medical wards of the major referral governmental hospitals in Sana'a city and how to prevent it.

METHODOLOGY

1.0 Study design:

A descriptive retrospective study.

2.0 Study Location:

The major referral governmental hospitals in Sana'a City, Yemen (Al-Thawrah, Al-jamhorry and Al-kuwait Hospitals).

3.0 Study Duration:

Data validated with Microsoft Excel version 13 and exported to SPSS version 23.0 for windows; for statistical analysis. Statistics were explored for demographic and other clinical characteristics as categorical variables. The mean and standard deviation were established for quantitative variables such as age. The data were obtainable as a frequency distribution and plots were generated for the partial categorical variables, while the mean and standard deviation were for a quantitative variable.

The study took approximately 3 months from October 2022 to end of December 2022.

4.0 Study Population:

The study Population was all case files of patients with chronic liver disease that admitted to the medical wards at major referral governmental hospitals in Sana'a City, Yemen.

5.0 Sample Size Determination

The Sample was Taken by all patients admitted to the major referral governmental hospitals, Following official approvals was obtained From The Previously Selected Settings.

6.0 Data collection

Data will be collected by eleven medical students from patient's medical files with liver disease, according to a previously prepared sheet.

Sheet: -

The sheet form consists of items divided into four parts, which consists of personal data including socioeconomic characters of patients with chronic liver disease, presentations, laboratory and radiologic findings and causes of liver disease found in every patient case. See appendix (1)

7.0 Data Analysis:

Immediately after the data collection was completed and each check list was thoroughly reviewed for completeness and consistency by the collectors, supervisor and investigators. Epi-info 7.3 version and Excel sheet analyzed the data.

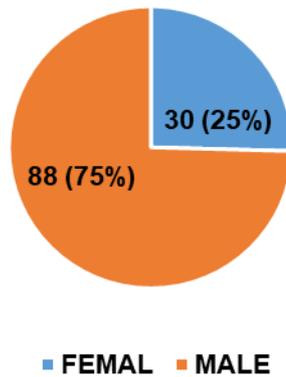
8.0 Ethical Consideration:

Data collection form, proposal and Ethical Consideration forms was provided to the Ethical committee of the university. Before collecting data, the objective of the study was explained to every consequences.

RESULTS:

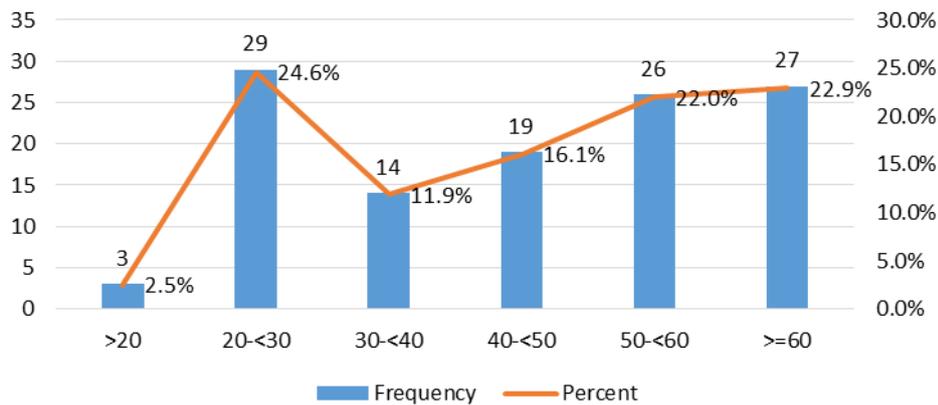
A total of 118 cases admitted from 1st October to 31st September 2022 diagnosed as chronic liver diseases. There were 88 (74.6%) males and 30 (25.4%) females, with a male to female ratio of 2.9:1.

Figure (1): Disterbution of the chronic liver disease cases acording to the sex Sana'a,Yemen, Oct. to Dec.2022 (n=118).



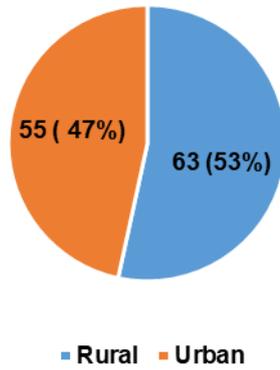
The mean overall age of patients and the age range were 43.9 ± 16.6 and 13-80 years. The peak incidence of age occurred during the sixth and seventh decades of life at 44.9%.

Figure (2): Disterbution of the chronic liver disease cases acording to the age Sana'a,Yemen, Oct. to Dec.2022 (n=118).



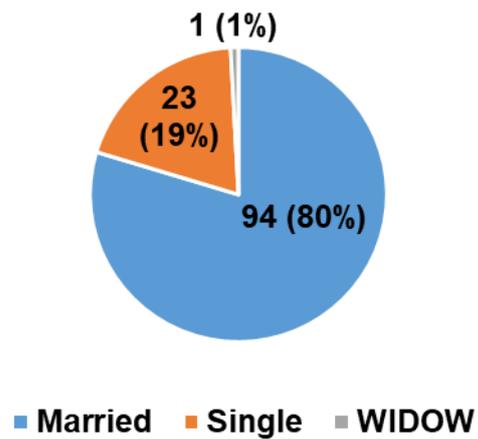
Accurding to th e residence the rural slightly more than urban 63 (53%), 55(47%) respectively Figure (3).

Figure (3): Disterbution of the chronic liver disease cases acording to the residence Sana'a,Yemen, Oct. to Dec.2022 (n=118).

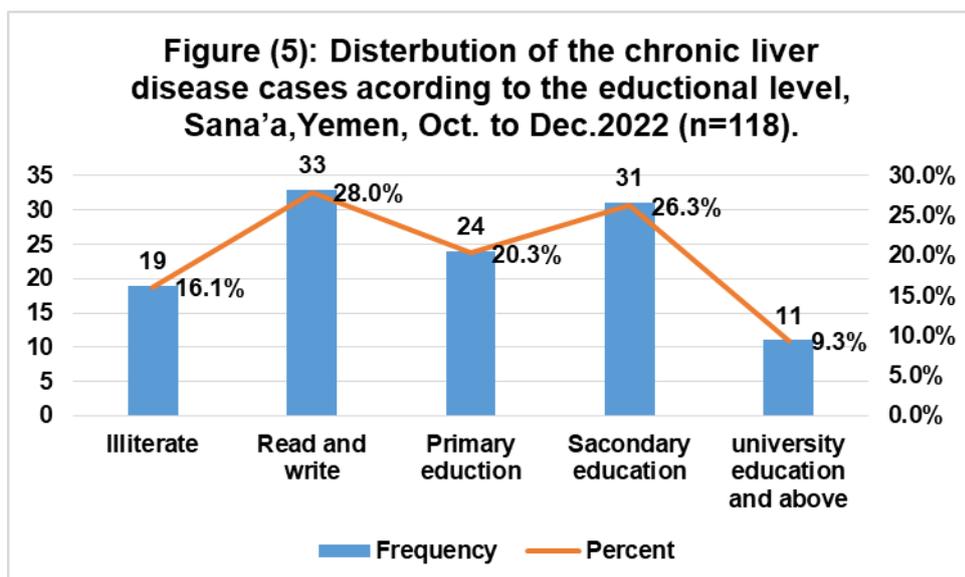


For the marital status the majority were married 94 (80%) and just 1 (0.7%) was widow figure (4).

Figure (4): Disterbution of the chronic liver disease cases acording to the marital status Sana'a,Yemen, Oct. to Dec.2022 (n=118).



In disterbution of the educational level only 11 (9.3%) had university education and above.



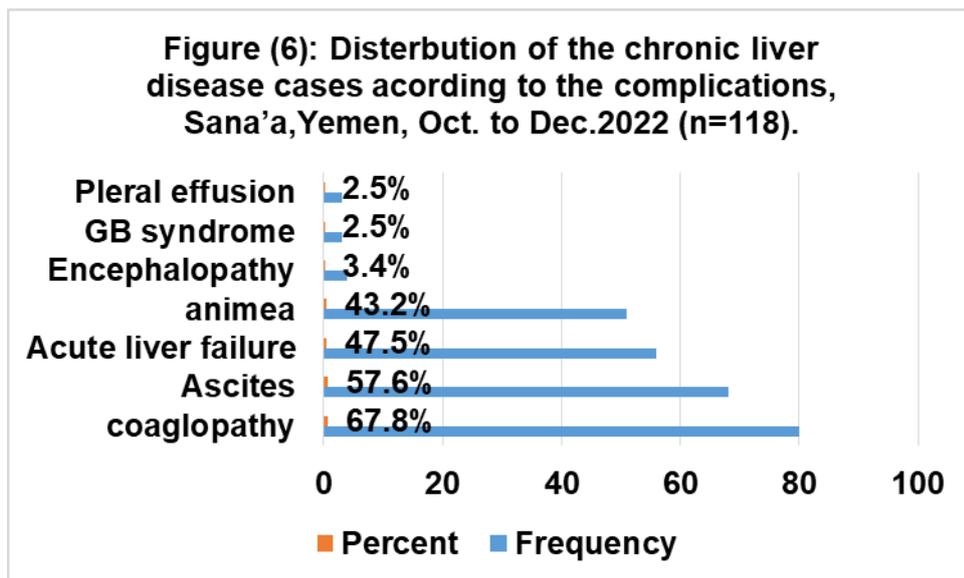
The most common liver disease was; autoimmune hepatitis 45(38.1%), followed by non-alcoholic fatty liver disease 37 (31.4%), total viral hepatitis 20(17%) and Vascular disease 5 (4.2%). schistosomiasis similar to neoplastic hepatitis accounted for 4 (3.4%) for each, while Wilson disease, and Biliary diseases were 2 (1.7%) and 1 (0.9%), respectively. details are presented in table (1).

Table (1): Etiological causes of chronic liver disease for patients admitted into the medical wards in the governmental referral hospitals, Sana'a, Yemen, Oct. to Dec.2022 (n=118).

Causes of chronic liver disease	Frequency	Percent
Autoimmune	45	38.1%
Non-alcoholic fatty liver disease	37	31.4%
HBV	10	8.5%
HCV	8	6.8%
Vascular disease	5	4.2%
schistosomiasis	4	3.4%
Neoplastic	4	3.4%

HAV	2	1.7%
Wilson disease	2	1.7%
Biliary diseases	1	0.9%
TOTAL	118	100.0%

Figure (6) illustrates complications among diagnosed chronic liver diseased patients.



DISCUSSION

Cirrhosis is the most important cause of mortality and morbidity universal. It is considered as a leading cause of mortality and morbidity across the world [9]. The majority of patients were males (74.6%), (Figure 1). Male dominance in the current study is similar to that reported by Yakubu and Maiyaki [24], where the incidence of cirrhosis is 80.5% (1/4) more among males than females. The difference is due to increased exposure to risk factors for liver disease such as hepatitis B and cigarette smoking. In addition, hormonal factors such as low levels of estrogen in males and high levels in women (a powerful antioxidant) tend to protect women, and estrogen suppresses hepatic fibrosis by reducing stellate cells [25].

Most of our patients were adults and less than 2.5% of our total patients were children under 19 years of age, and the disease center was at > 50 years (24.9%) (Figure (2)). This finding is

similar to the epidemiology of hepatitis where adults predominate in all causes except for hepatitis A virus infection where infection is prevalent in children [26]. The mainly common causes of liver disease in the current study were AIH (38.1%), followed by non-alcoholic fatty liver disease (NAFLD) (31.4%), total viral hepatitis A,B,C 20(17%) (Table 1). The current results differ from those reported by Sepanlou et al.,[27] Asrani, et al.,[28] in the global burden of liver disease where the most common causes of disease are NAFLD (59%), followed by HBV (29%), HCV (9%), and alcoholic liver disease (ALD) (2%) and autoimmune hepatitis, accounting for only 1% of cases. Recent studies in Yemen near the site of the current study revealed the prevalence of hepatitis B virus from 1 to 20%, and hepatitis C ranges from 2 to 5% [29, 30, 31, 32]. Worldwide, there are 257 million persons living with chronic hepatitis B. With no appropriate managing, just about 20% die early due to liver failure or hepatocellular carcinoma. It is predictable that just 11% of sufferers know of their infection, and 17% of them only receive treatment [33]. Sexual transmission, vertical transmission, and hospital transmission (use of contaminated blood products, or medical equipment) are the major routes of spread [26, 30, 33, 34, 35]. Childhood acquisition presents the main risk factor of chronic Hepatitis B virus infection: 80% to 90% of infections gained in the firstly year of life and 50% to 60% of hepatitis B virus infections previous to the age of 6 years result in chronic HBV variation, <5% of infections change to chronic hepatitis B infection when acquired during adulthood [36]. Universal vaccination of children is key to reducing the burden of hepatitis B. The World Health Organization (WHO) officially recommended the inclusion of the hepatitis B vaccine in universal immunization programs for children in 1992. Ever since, the campaigns of vaccination have already had an effect since rates of chronic hepatitis B infection in childhood have fallen from 4.7% in the pre-period of vaccination to 1.3% in 2015[36]. The Americas obtained hepatitis B vaccine coverage of 90% among children under one year of age - the minimum set by the World Health Organization in 2015 [28, 37,38].

Immunization rates in other regions including Yemen are still lagging, where HBV coverage for children is no more than 50%. Barriers in these areas include vaccine availability and delays in healthcare delivery as the majority of deliveries in these areas occur outside the hospital[36 – 39]. The prevalence of hepatitis C was stable with declines in some areas from 2000 to 2015, mainly due to improved screening of blood products [29,34]. Several modern trends are alarming to the increasing burden of hepatitis C. First, in the world there are more

infections (for example, 1.75 million in 2016) diagnosed annually than with successful treatment [36]. Second, use again of non-sterile medical equipment and absence of blood screening programs are enduring problems in many regions, such as Yemen [40, 41], Pakistan, India and parts of Southeast Asia [36].

In the current study, the rate of nonalcoholic fatty liver disease (NAFLD) was the second cause (31.4%) (Table 1). This rate is slightly higher than the global prevalence where the prevalence of non-alcoholic fatty liver disease is 24%, which is similar to 30% in the Middle East and South America [42]. Up to 59% of NAFLD cases are of the nonalcoholic steato-hepatitis (NASH) phenotype, a major subtype of the disease with a risk of fibrosis progressing to cirrhosis. Even though there are no direct signs of nonalcoholic steato-hepatitis, type 2 diabetes and obesity are potent clinical risk factors for the development of fibrosis, and their trends at the population level provide approaching into disease trends [43]. Obesity rates have raised in all counties of the world since 1975. However, despite obesity prevalence rates of less than 5%, China and India account for a very large proportion of global obesity due to their large populations. Russia, Mexico and Egypt also have the highest absolute numbers of obese adults [44], but in Yemen no official data is available but in general the observed obesity rates have increased in Yemen in the past twenty years. There was a significant rate of schistosomiasis as a cause of liver disease in the current study (Table 1). The eggs of *S. mansoni* (the intestinal schistosomiasis endemic in Yemen) migrate to the liver resulting in fibrosis in 4 to 8% of persons with chronic infection, especially those with severe long-term infection. This condition can be divided into two distinct stages: inflammatory hepatic schistosemiasis (an early inflammatory reaction) and chronic hepatic schistose-miasis. The most widespread species that cause this form are *S. japonicum*, *S. mansoni*, and *S. mekongi*. In addition, hepatitis viral infection is common in schistosomiasis endemic areas with hepatitis B or hepatitis C, and hepatitis C infection is associated with faster liver decline and worse outcomes. Hepatofibrotic schistosomiasis caused by *S. mansoni* frequently develops in about 5-15 years, while it may take less time for *S. japonicum* [44].

In the current study, no alcoholic liver disease (ALD) was found. When alcohol is considered a major cause and a cofactor, alcohol is responsible for 30% to 50% of cirrhosis-related deaths globally [45, 46]. Accurate estimates of ALD in Yemen and globally are difficult to establish because the diagnosis is based on people self-report of alcohol consumption, in contrast to viral hepatitis, which can be determined based on objective tests. As an alternative,

annual per capita alcohol consumption, which is in a straight line related to the burden of ALD at the population level, is utilized as an indicator of disease trends and all of this information is not available or present in Yemen.

CONCLUSION AND RECOMMENDATION

The current findings show that autoimmune hepatitis was the most common cause among chronic liver diseases in Sana'a city, Yemen; In light of this, health education and public awareness about hepatitis virus screening tests and schistosomiasis screening and treatment is the primary preventive strategy to be considered. Health education and public awareness about hazard of Hepatitis A, B and c virus (HBV) and increase the vaccination coverage to reduce the morbidity and mortality . Non-alcoholic fatty liver disease (NAFLD) is likely to increase in Yemen. So screening for chronic liver disease (CLD) in the general population and NAFLD in high-risk groups is key to targeting prevention and treatment strategies. Therefore, more studies need to be done to identify risk factors. Liver disease and the consequent cirrhosis of the liver are considered a public health problem in Yemen because it is a major cause of mortality and morbidity. Other studies needed to identifying the risk factors and Yemen trend.

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