International Science and Technology Journal
المجلة الدولية للعلوم والتقنية
Volume 29 العدد
April 2022 إبريل
المجلة الدولية للعلوم والتقنية
ISTJ

Different Diagnosis of Jaundice in Adult Patients at Bayda Medical Center Hospital in Libya

Amena. A. Abdulrazeg[1].Ebtesam S Abd-Elrazeq[2]. Asma.Saleh.W.El-Mabrok[3]. Wadad S.S.Fadel [2]

[1]Higher Institute Of Science and Technology, Cyrene
[2]Medical Laboratories Department of Higher institute of Science And Technology, El -Beyda-Libya
[3]Faculty of Science, Derna University

amenaalaker@gmail.com

Abstract:

Jaundice can be an indicator of significant underlying disease. It is caused by elevated serum bilirubin levels in the unconjugated or conjugated form. The evaluation of jaundice relies on the history and physical examination. The main aim of this article was to determine the incidence and prevalence of disease in the two groups compared. In this cross-sectional study, during the period from 2014 to 2019, the collection of data was based on the Medical Care Unit (MCU) at Al-Bayda medical center (AMC) in Libya. Among this study, the prevalence of jaundice in aged ≥20 years was (173) 17.59 %. The sex distribution of jaundice cases aged ≥20 years was 60.1156% (104) women and 39.8843% (69) men. In the majority of patients, the incidence caused over all patients was in-hepatic jaundice (67.056%). This included hepatitis 33/173 (19.07%), in which the female was 21.97% and the male was 16.04%, and liver cirrhosis 83/173 (47.97%), in which the female was 49.50% and the male was 45.67%. In addition to the second factor, which was post-hepatic jaundice, 18.49% over all, the third factor was pre-hepatic jaundice, 14.45%.

Key words: Jaundice, Hemolytic Anemia, Liver Cirrhosis, Pancreatic Diseases, Hepatitis, Gall Stone.

1. Introduction

Jaundice, or icterus, describes the yellow appearance of the skin and eyes resulting from elevated plasma bilirubin, a degradation product of hemoglobin. The symptom (or sign) of jaundice can arise from several diseases, including benign and malignant ones [1]. It arises either from increased production or reduced excretion of bilirubin. The bilirubin may be conjugated or unconjugated, depending on the disease process [2]. Pre-hepatic jaundice may result from overproduction of bilirubin (as in haemolysis) or reduced conjugation (as seen in Gilbert's syndrome). Conjugated or un-conjugated bilirubin leads to elevated levels of bilirubin [3]. Hepatic causes of raised bilirubin include cirrhosis, viral, autoimmune or drug-induced hepatitis, or extensive replacement of the liver by metastases [4]. Extra-hepatic cholestasis may be due to obstruction of the bile duct by stones, or primary malignancy (pancreatic or cholangiocarcinoma), and is typically associated with elevated conjugated bilirubin [5]. Clinically, jaundice becomes apparent when bilirubin levels are 40 μmol/l, which is two to three times the normal value, depending on the laboratory's selected reference range [6]. The incidence of clinically apparent jaundice in primary care has not been described, although experience suggests it is relatively rare. Of 107 patients referred, biliary malignancy was present in 30 cases, common bile duct stones in 26 and alcohol-related liver disease in 9 patients. Viral or drug-induced hepatitis and autoimmune liver disease were present in 15 cases, with Gilbert's syndrome in 2 and congestive cardiac failure in 1. Three other UK studies have addressed the subject, though all identified participants from routine laboratory tests. In a Welsh study [8], 121 participants with a bilirubin of > 120 μmol/l were investigated:

probable causes of the jaundice were identified from hospital records, supplemented by communication with GPs where necessary. Only 4% of the cohort was wholly managed within primary care. The most common causes were malignancy (35%), sepsis/shock (22%), common bile duct stones (13%), and cirrhosis 8%.An incorrect or no diagnosis was found in 19% of patients. In the English study, the entry criterion was abnormal liver function (not necessarily jaundice), and similar methods were used to identify relevant investigations. One hundred and fifty-seven (18%) of the patients were not under hospital review and had incomplete investigations. These patients were offered repeat testing, and only diagnoses in this subgroup were reported. Of the 157 retested patients, 97 (62%) were diagnosed with conditions requiring hospital intervention or follow-up, including alcoholic liver disease, inherited chronic liver disease, and hepatitis (both viral and autoimmune) [9]. A Scottish study retrospectively investigated patients' outcomes following liver function testing in primary care, finding only 1.15% with serious liver disease. However, patients who had a bilirubin of > 35 μmol/l (i.e. those who would be clinically jaundiced) were specifically excluded from the study [10]. A Bristol study investigated that 277 patients had at least one record of jaundice between January 1 2005 and December 31 2006. Ninety-two (33%) were found to have bile duct stones; 74 (27%) had an explanatory cancer-pancreatic cancer 34 (12%), cholangio-carcinoma 13 (5%) and other diagnosed primary malignancy 27 (10%). Liver disease attributed to excess alcohol explained 26 (9%) and other diagnoses were identified in 24 (9%). Sixty-one (22%) had no diagnosis related to the jaundice recorded [11]. Other studies have originated in secondary care, with acute and chronic parenchyma disease, malignant obstructive jaundice, and a gallstone being the major causes [12]. When GPs were asked their view of the likely causes of jaundice, gallstones, malignant biliary obstruction,

and viral hepatitis were identified most frequently, followed by cirrhosis and liver metastases [8]. The aim of this study was to study the prevalence and causes of jaundice in people over 20 years old at Al-Bayda Medical Center in Libya.

2. Materials And Methods

2. 1. Identification of the Study Population

This study is based on data obtained from the Medical Care Unit (MCU) at Al-Bayda Medical Center (BMC), Al-Bayda City, from 2014 to 2019. The collected data will be used to identify the problem using Excel.

2. 2. Serum Testing To Identify the Various Causes Of Jaundice

First-line serum testing in a patient presenting with jaundice should include a complete blood count (CBC) and determination of bilirubin (total and direct fractions), aspartate transaminase (AST), alanine transaminase (ALT), glutamyl transpeptidase, and alkaline phosphatase levels. A CBC is useful in detecting hemolysis, which is indicated by the presence of fractured red blood cells (schistocytes) and increased reticulocytes on the smear. AST and ALT are markers of hepato-cellular injury. They can be less helpful in patients with chronic liver disease because levels can be normal or only slightly elevated when there is little liver parenchyma left to damage. Acute viral hepatitis may cause the levels of ALT to rise by several thousand units per liter. Drug levels greater than 10,000 U per L are typically found in patients with acute liver injury caused by another source (e.g., drugs [acetaminophen] or ischemia) [3]. Patients with acute alcoholic hepatitis have AST and ALT levels that rise to several hundred units per liter. With alcohol-induced damage, the ratio of AST to ALT is usually greater than 1, whereas

infectious causes of hepatitis typically cause greater elevations in ALT than in AST [12]. Alkaline phosphatase and -glutamyl transferees are markers for cholestasis. As bile obstruction progresses, the levels of these two markers rise several times above normal [3]. Depending on the results of the initial tests, further serum tests or imaging studies may be warranted. The second-line serum investigations may include tests for hepatitis A IgM antibody, hepatitis B surface antigen and core-antibody, hepatitis C antibody, and autoimmune markers such as antinuclear, smooth-muscle, and liver-kidney microsomal antibodies. An elevated amylase level would corroborate the presence of pancreatitis when this condition is suspected based on history or physical examination [13].

3. Results

3.1 Sex Distribution

A total of 980 cases aged over 20 years, from the Medical Care Unit (MCU) were included in the study, according to the data collected. As shown in Figure1, 173 (17.59%) of the cases were confirmed to have jaundice, compared to the remaining 807 (82.34%) cases that were suspected but not confirmed to have jaundice. Overall, the sex distribution of jaundice cases aged over 20 years was 60.1156% (104) women and 39.8843% (69) men, as shown in Figure 2.

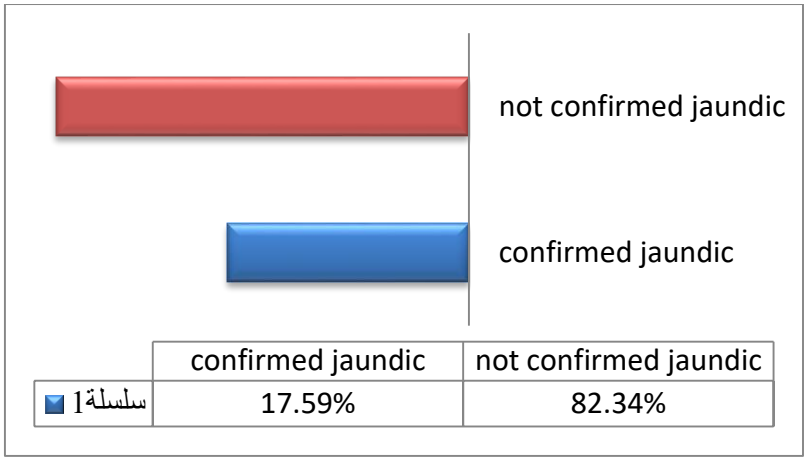


Figure (1). The Prevalence of Jaundice among (N=980)

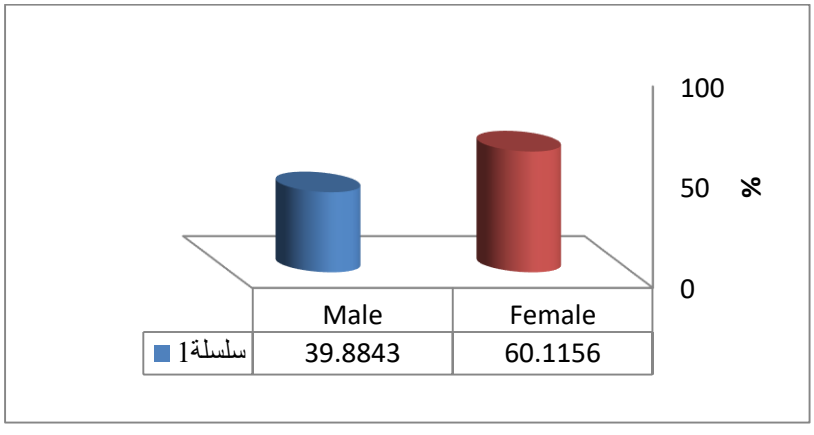


Figure (2). Sex Distribution among patients with jaundice (N = 173)

The main diseases are in-hepatic jaundice (liver diseases (116/173), 67.056%) shown in figure (3-a), its hepatitis 33/173 (19.07%), liver cirrhosis 83/173 (47.97%), post-hepatic jaundice (32/173) 18.49% shown in figure (3-b), pancreatic diseases (07.514%), and gall stone (10.98%), and pre-hepatic jaundice included In hematology

diseases, hemolytic anemia is 25/173 (14.45%) as shown in figure (3-c).

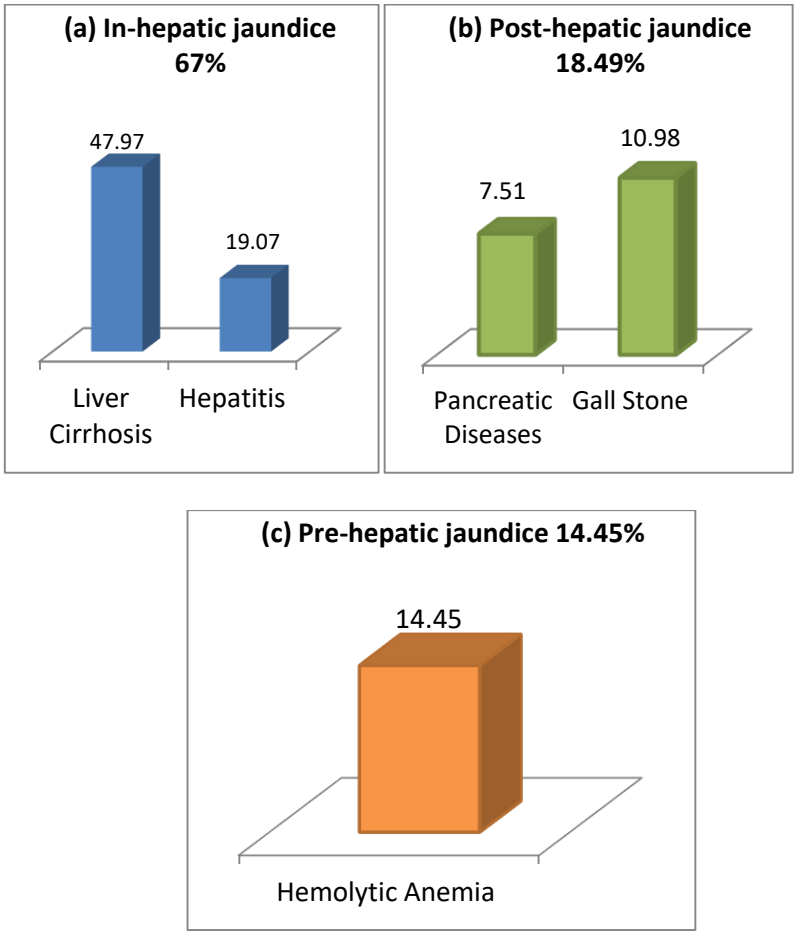


Figure (3). The Causes of Jaundice among 173 Patients

3.2 The Distribution of Jaundice Causes by Age and Sex among 173 Patients

The majority of patients in the Medical Care Unit (MCU) at Al-Bayda Medical Center (BMC) in Libya were aged 20 to 90 years old, according to data collected from 173 cases. The prevalence of disease was 21.39 percent at the age of 61–70 years old, and 14.72 percent at the age of 31–40 years old, depending on age distribution.

The same percentage (14.45%) was found in the 20–30 age groups. There were 14.72, 14.45 percent, 13.82, 12.76, 12.02, and 9.32 percent, respectively, at the ages of (60–51), (9–81), (50–41), and (80–71). Figure 4 shows that, with the exception of those aged 20 to 50, liver cirrhosis was the most common disease among the elderly.

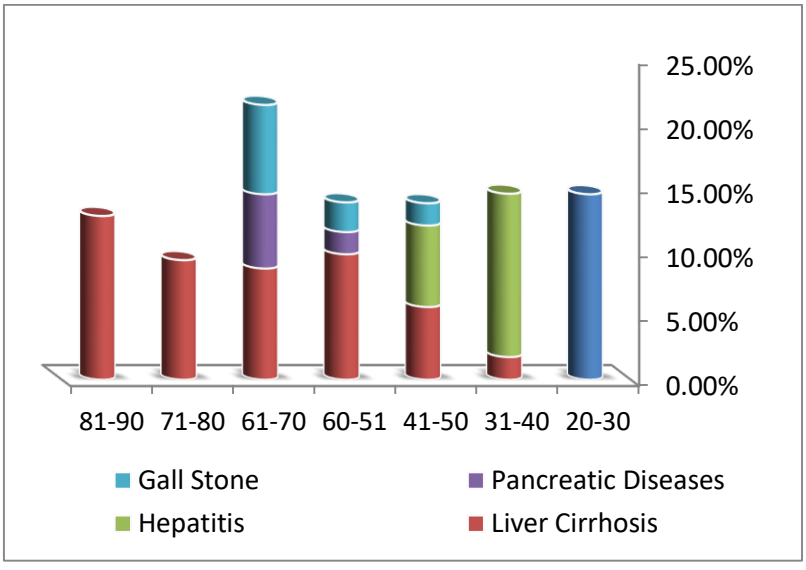
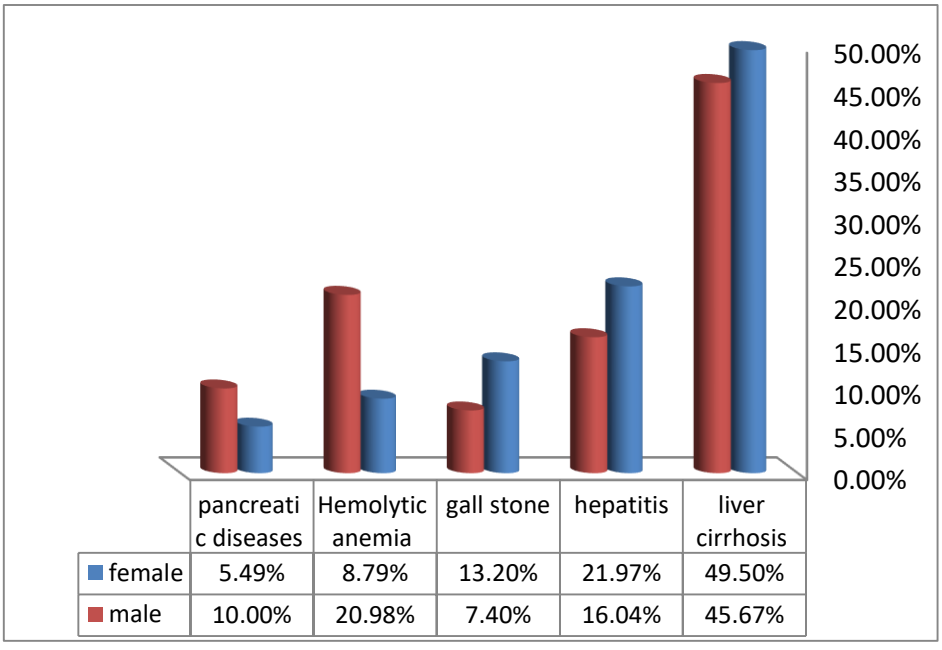


Figure (4). The Distribution of Jaundice Causes by Age among 173 Patients

Figure 5 shows that during the collected data, liver cirrhosis was the most common disease in both female and male jaundice, accounting for 49.5 percent and 45.67 percent, respectively, followed by hepatitis, which accounted for 21.97 percent of female jaundice, and gallstones, which accounted for 13.2 percent of female jaundice. Female jaundice induced by hemolytic anemia and pancreatic disorders caused 8.79 percent and 5.49 percent of the cases, respectively. The data gathered reveals the other major cause of male jaundice. Hemolytic anemia is 20.98 percent, hepatitis is 16.04

percent, pancreatic diseases are 10.0 percent, and gallstones are 7.40 percent.



	pancreatic diseases	Hemolytic anemia	gall stone	hepatitis	liver cirrhosis
female	5.49%	8.79%	13.20%	21.97%	49.50%
male	10.00%	20.98%	7.40%	16.04%	45.67%

Figure (5). The Distribution of Jaundice Causes by Sex among 173 Patients

4. Discussion

The data for this study was 980 cases gathered in the Medical Care Unit (MCU) of Al-Bayda Medical Center (AMC) in Libya between 2014 and 2019. During this period, the prevalence of jaundice in patients over the age of 20 was (173) 17.59%, whereas it was (807) 82.34% cases that were suspected but not confirmed to have jaundice. Other studies showed that 352 cases between 2004 and 2006 at Sun Yat-Sen Memorial Hospital, Guangzhou, China [2], and 732 cases over 5 years (1999–2003) at Wishard Memorial Hospital, Indiana, USA [14]. Our research concentrated on those over the age

of 20, which was the smallest age distribution ever conducted in the United Kingdom [2]. Otherwise, sex distribution in this study shows that the females were more than the males, which is similar to that from the study of Whitehead NW (2001) [7], and lower than that of Yu Z, 2012. Another study showed the map of causes of jaundice, and there was a list of causes of jaundice. Liver Cirrhosis was the major cause, accounting for 47.97%, followed by Hepatitis (19.07%), Pancreatic Diseases (7.514%), Gall Stones (10.198%), and Hemolytic Anemia (14.45%). The main causes of jaundice in 121 British cases in the study of Whitehead MW were malignancy (34.7%), sepsis (22.3%), and cirrhosis (20.7%). However, in 100 British jaundice cases investigated at Stobhill Hospital, Glasgow, in a study by Forrest EH, 2002, showed another trend of causes of jaundice in which alcoholic liver disease (ALD) was the predominant cause, followed by gall-stones and malignancy. The investigation into 732 new-onset jaundice cases at Wishard Memorial Hospital, Indiana, USA, showed sepsis had the highest incidence of jaundice, 22% [14]. It seems that the features of the jaundice map are different between study sites. In developed countries, sepsis is the predominant cause of jaundice. However, all three studies in developed countries did not mention the causes of pre-hepatic jaundice. The map of jaundice in our study at the Medical Care Unit (MCU) of Al-Bayda Medical Center (AMC) in Libya, included 3 phases: in-hepatic jaundice (67.056%), post-hepatic jaundice (18.49%), and pre-hepatic jaundice (14.45%), which is similar to the previous study that was done in 2007, showing the 3 phases: pre-hepatic 13.7%, in-hepatic 58.2%, and post-hepatic 22.8% [13]. In-hepatic causes were recorded as 67.056% in 173 cases at the Medical Care Unit (MCU). Hepatitis 19.07%, liver cirrhosis 47.97%, was the main causes of in-hepatic jaundice in our study.

5. Conclusions

The data for this cross-sectional study was collected between 2014 and 2019 at the Medical Care Unit (MCU) of Al-Bayda Medical Center (AMC) in Libya. In conclusion, jaundice is a common sign in adult in-patients administered at (AMC). The map of causes of jaundice was completed with all 3 phases: Pre-hepatic jaundice included hematology diseases, such as hemolytic anemia, 25/173 (14.45%). Hepatic jaundice (116/173, 67.056%), hepatitis (33/173, 19.07%), liver cirrhosis (83/173, 47.097%), and post-hepatic jaundice (32/173) 18.49% (Pancreatic Diseases, 07.514%), and Gall Stones (10.98%)Finally, liver cirrhosis is the highest disease case in female and male jaundice, which accounted for 49.5% to 45.67% of the collected data, followed by 21.97% of female jaundice caused by hepatitis and 13.2% of gallstones. Female jaundice caused by hemolytic anemia and pancreatic diseases was responsible for 8.79% and 5.49% of the cases, respectively. The collected data shows that the other main disease in male jaundice is Hemolytic anemia is 20.98%, 16.04% of hepatitis, 10.0% of pancreatic diseases, and 7.40% of gallstones. Adults over the age of 20 who have jaundice should get treatment in primary care, given the significant deal with jaundice cases because of the importance and intricacy of the disease's etiology.

6. Acknowledgements

The authors would like to acknowledge to all workers Al- Bayda Medical Center. We would like to thanks Dr. *Ali Bou Kader, Dr. Mousi Belhadj* and *Dr. Afaf* for helping us to collect data.

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