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Original Article

Chronic Liver Disease: Liver Cirrhosis and Diagnostic Features

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ABSTRACT

Chronic Liver diseases can cause liver cirrhosis, a late stage when the normal liver tissue becomes scar tissue, irreversibly damaging liver. **Objective:** To determine the causes of liver cirrhosis in different patients using computed tomography (CT). **Methods:** It is a cross-sectional study conducted in the Radiology Department of Private Hospital Gujrat, Pakistan from 1, August 2022 to 30, November 2022. Abdominal non-contrast CT of the patients was performed in a supine position. A sample size of 82 patients has been calculated via a convenient sampling technique using a mean approach from previous related articles. Patients with renal stones on CT KUB were excluded. The data was analyzed using SPSS version 26. **Results:** Liver cirrhosis seen to be more common in men 65(79.3%) than women 17(20.7%). Liver cirrhosis is seen to be more common at the age of 30-39years 51(62.2%), followed by 40-49years 29(35.4%), and 18-29years 2(2.4%). Most common cause of liver cirrhosis is hepatitis C 39(47.6%). The most common symptom in liver cirrhosis is loss of appetite 34(41.5%), followed by weight loss 23(28.0%). The most common finding is a change in liver volume 33(40.2%), followed by coarse liver 26(31.7%). **Conclusions:** Liver cirrhosis is seen commonly in men in the age range of 42 to 54 years. The most common symptoms of liver cirrhosis are loss of appetite followed by weight loss. One of the best modalities to rule out chronic liver disease specifically liver cirrhosis is CT scan.

INTRODUCTION

When cirrhosis reaches a late stage, normal liver tissue is replaced with scar tissue, irreversibly damaging the liver. The liver's healthy functioning is maintained by scar tissue [1]. Cell healing comes next, and the end outcome of the repair process is tissue scarring. Cirrhosis in its advanced stages is fatal. Liver dysfunction develops over time as a result of liver cirrhosis [2]. The patient has the end-stage liver disease when the liver eventually starts to decompensate. The liver functions to process the diet and medications and normal function of creating protein get decreased by scarring. And when the time passes, with age the risk of GI bleeding and hepatocellular carcinoma become high risk, which also leads to portal hypertension in some patients. Interferon therapy can help extend enough liver function in instances of cirrhosis when the liver is still adjusting, especially in those brought on by hepatitis C virus infection. Determining each patient's stage of cirrhosis and closely monitoring the course of the illness is therefore crucial [3]. According to estimates, one in 400 Americans has cirrhosis of the liver. The people aged 45 to 54, who make up around 1 in 200 of the population, are most likely to have cirrhosis. Cirrhosis is the sixth leading cause of death in the US for those aged 25 to 64, and it results in over 26,000 fatalities each year [4, 5]. Some common symptoms of cirrhosis are drinking alcohol for a long time, hepatitis virus, diabetes, obesity, and drug injection with sharing needles. Hepatic cirrhosis is not cancer but cirrhosis affects the majority of those with liver cancer. You run a higher chance of developing liver cancer if you have cirrhosis [6]. Hepatitis B and C frequently result

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in cirrhosis, which increases the risk of liver cancer in those who have them. Cirrhosis, which raises the risk of liver cancer, can result from any cause of liver illness [7]. Even if one person is having liver cirrhosis, there is no need to seek emergency medical attention [8]. But as cirrhosis worsens, more scarring develops, and liver function keeps deteriorating. Liver failure may eventually develop into a life-threatening condition [9]. Early signs of cirrhosis include loss of appetite, fatigue or weakness, nausea, fever, and a sudden drop in weight [10, 11]. Simple bleeding and bruises, skin or the whites of your eyes having a yellow tint, rough skin, edema (swelling) in your ankles, foot, and legs, fluid accumulation in your abdomen, urine with a brownish or orange tint, stool with blood in it, confusion, brain fog, memory loss, and personality changes are other more well-known symptoms of cirrhosis that start to appear as liver function declines [12-14]. The Child-Pugh classification is used clinically in the evaluation of the severity in liver cirrhosis for the patients with CLD and its consequences includes radiologic examination heavily. In these individuals, computed tomography (CT) is more frequently employed, and in some limited circumstances, MRI, where indicated. A few authors have looked at using MRI to grade the severity of cirrhosis, but no study has compared CT and MRI for this purpose so far [15, 16]. This study sought to evaluate the use of abdominal CT for assessing the degree of cirrhosis owing to viral hepatitis. During a physical examination, a doctor will look for the following signs and symptoms of cirrhosis and Imaging examinations show the internal anatomy of liver [17, 18]. These tests can also show how much scarring you have, how much fat is in your liver, and how much fluid is in your abdomen. The liver's stiffness and fat content are determined by a specialized ultrasound procedure called transient elastography. An endoscopic retrograde cholangiopancreatography and/or upper endoscopy may be recommended in order to check for bile duct issues as well as varices or bleeding in the esophagus, stomach, or intestines [19-22]. This study determined the role of a CT scan in assessing liver cirrhosis. CT is a non-invasive, three-dimensional modality that is used to assess a patient's liver changes at a very large scale. There will be no superimposition of the organs in this modality and a detailed image will be obtained.

METHODS

It is a cross-sectional study conducted in the Radiology Department of Private Hospital Gujrat, Pakistan. This study was held during the period of four months from 1, August 2022 to 30, November 2022. Data for this research was evaluated on a CT scan machine after informed consent from the patients. Abdominal non-contrast CT of the patients was performed in a supine position. A sample size of 82 patients has been calculated via a convenient sampling technique using a mean approach from previous related articles [15, 22]. This study was conducted on 82 patients with normal and abnormal abdominal CT findings. Patients with renal stones on CT KUB were excluded. The data interpreted and analyzed on SPSS 26.0.

RESULTS

A sample size of 82 patients has been calculated via a convenient sampling technique using a mean approach from previous related articles. This study was conducted on 82 patients with normal and abnormal abdominal CT findings. Patients with renal stones on CT KUB were excluded. Figure 1 shows the age of the patients. The age of the patients is categorized into three groups. Liver cirrhosis is seen to be more common at the age of 30-39 years 51(62.2%), followed by 40-49years 29(35.4%), and 18-29 years 2(2.4%).

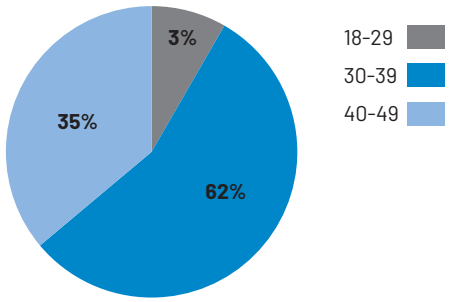

Figure 1: The age of the patients

Figure 2 shows the gender of the patients. Most of the patients diagnosed with liver cirrhosis on CT were male 65(79.3%) while females were only 17(20.7%). Liver cirrhosis is seen to be more common in men than women.

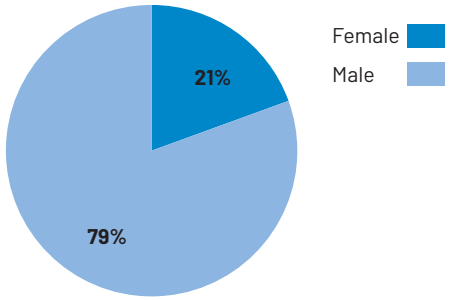

Figure 2: The gender of the patients

Table 1 shows the causes of liver cirrhosis in patients. Most common cause of liver cirrhosis is hepatitis C 39(47.6%), followed by alcoholic liver disease 17(20.7%), hepatitis B 14(17.1%), fatty liver disease 10(12.2%), and other 2(2.4%).

Causes	n (%)
Hepatitis b	14 (17.1%)
Hepatitis c	39 (47.6%)
Alcoholic liver disease	17 (20.7%)
Fatty liver disease	10 (12.2%)
Other	2 (2.4%)
Total	82 (100%)

Table 1: Causes of liver cirrhosis

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Table 2 shows the findings of liver cirrhosis on CT in patients. The most common finding is a change in liver volume 33(40.2%), followed by coarse liver 26(31.7%), heterogeneous liver 13(15.9%), nodular liver surface 7(8.5%), and small PV diameter 3(3.7%).

Findings	n (%)
Coarse liver	26 (31.7%)
Heterogeneous liver	13 (15.9%)
Nodular liver surface	7 (8.5%)
Change in volume of the liver	33 (40.2%)
Small portal vein diameter	3 (3.7%)
Total	82 (100%)

Table 2: Findings of liver cirrhosis on CT

DISCUSSION

Liver dysfunction develops over time as a result of liver cirrhosis. The patient has end-stage liver disease when the liver eventually starts to decompensate. This cross sectional study was conducted to evaluate liver cirrhosis using CT scan, which is a non-invasive, three-dimensional modality causing no superimposition of the organs. The current study found that Liver cirrhosis is most commonly observed in the age group of 30-39 years as 51(62.2%) and majority of them were males such as 65(79.3%). A systematic review in 2014 by Bertolotti *et al*. included population-based and large cohort studies from three continents and studied more than 10 studies in which he formulated that only 1.2% of people under the age of 19 had FL, and the prevalence rose with age to a maximum of 25.6% in age groups beginning at 30 to 40 years. In that review, a multivariate analysis revealed a positive correlation between the prevalence of FL and a number of risk factors, including male gender, which is relates to the results of the current study [23, 24]. The current research reveals that the Liver cirrhosis in patients cause of liver cirrhosis is hepatitis C 39(47.6%), followed by alcoholic liver disease 17(20.7%), hepatitis B 14(17.1%), and fatty liver disease 10(12.2%). A similar study in United States by scagoline *et al.* in 2015 found that 633,323 individuals in United States had cirrhosis about 0.27%. Cirrhosis with diabetes, alcohol abuse, hepatitis C and B was co related , and cirrhosis was the fraction of 53.5% from mainly hepatitis C [25]. A recent seminar is published in 2021 on liver Cirrhosis the relevancy with our current results such as Cirrhosis is extremely common around the world and may result from a variety of factors, including obesity, NAFLD, excessive alcohol intake, hepatitis B or C , and autoimmune disorders [26]. Another common finding in the present study is a CT evaluation shows the change in liver volume and coarse liver due to chronic liver disease which is also supported by the Yeom et al in 2015 said that liver cirrhosis and its early morphological abnormalities such as changes in liver volume and coarse liver can be detected by computed tomography [27].

CONCLUSIONS

Liver cirrhosis is seen to be more common in men at the age of 42 to 54 years. One of the best modalities to rule out chronic liver disease specifically liver cirrhosis is CT scan.

Conflicts of Interest

The authors declare no conflict of interest

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