There is an association between hypertension, non-alcoholic fatty liver, and diabetes mellitus. Diabetic patients commonly have fatty liver and heart problems.

Objective: To evaluate the adverse effects of diabetes on the liver, and to determine the association between diabetes and metabolic associated fatty liver disease using Computed Tomography.

Methods: It was a cross-sectional study conducted on 50 diabetic patients using convenient sampling method. The research was carried out in CT Department of Radiology of Tertiary care hospital in Gujranwala, Pakistan. Males and females between the ages of 30-80 who had undergone abdominal CT scans were included in this study. A written consent form was also signed by patients. This study was conducted over 4 months from December 2021 to March 2022. Data were entered and analyzed using SPSS version 20.0.

Results: The current study revealed that male diabetic patients have more chances to have non-alcoholic fatty liver disease 33(66%) than females 17(34%). The diabetic patients of in senior age group (50-60) years were most commonly affected by 27(54%) with metabolic-associated fatty liver disease. According to findings diabetic patients frequently had fatty liver disease 22(44%) and fatty liver disease along with cardiovascular disease was 11(22%). Some other findings with less occurrence of non-alcoholic fatty liver disease were hypertension and hyperlipidemia 7(14%).

Conclusion: In conclusion, diabetic patients are more common to be related with fatty liver disease. There was strong connection between diabetes mellitus and fatty liver disease. Elderly patients are more commonly affected.

Diabetes mellitus is defined as disturbances in carbohydrates, lipids, and protein metabolism because of abnormalities in production of insulin or action of insulin in addition to chronic hyperglycemia. Almost 90% to 95% are affected by Type-2 diabetes mellitus [1]. Previous research has linked diabetes to an increased threat of chronic liver disease and metabolic associated liver disease [2]. In 2015, there were an estimated 400 million confirmed cases of diabetes worldwide. The number of confirmed Type-2 diabetes mellitus cases is hope for to reach 640 million by 2040 [3]. In individuals with metabolic associated fatty liver disease, diabetes mellitus type-2 raises the danger of liver-related mortality rate by 22 times. On the other hand, fatty liver disease can increase the chances of death in diabetes patients. A community-based study of Type-2 diabetic patients found that those with metabolic associated liver disease had higher risk of mortality than those without any metabolic diseases [4]. However, 30%-60% of Type-2 diabetes patients have metabolic liver disease [5]. Endangerment for liver diseases in patients of diabetes are age, gender, dyslipidemia, metabolic disorders and increased weight [6]. A strong correlation between diabetes and non-alcoholic metabolic liver disease indicates that 80 to 90% of diabetes patients will
Liver Changes in Type-2 Diabetes Mellitus Patients using Computed Tomography

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Liver changes in type-2 diabetes mellitus patients using computed tomography. Obesity and a sedentary lifestyle are two variables that extend the chance of diabetes. To avoid diabetes-related disorders such as non-alcoholic hepatic disease maintain a healthy lifestyle consisting of nutritious food, activity, and body weight.

METHODS

It was a cross-sectional study conducted on 50 diabetic patients using convenient sampling method. The research was carried out in CT department of radiology of tertiary care hospital in Gujranwala, Pakistan. Males and females between the ages of 30-80 who had undergone abdominal CT scans were included in this study. A written consent form was also signed by patients. This study was conducted over 4 months from December 2021 to March 2022. Data were entered and analyzed using SPSS version 20.0. Abdominal CT scan were performed using TOSHBA CT scan Machine.

RESULTS

Table 1 is showing 50 diabetic patients that includes 33(66%) males and female 7(34%). Males are more prone to develop liver diseases.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>17</td>
<td>34.0</td>
</tr>
<tr>
<td>Male</td>
<td>33</td>
<td>66.0</td>
</tr>
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<td>Total</td>
<td>50</td>
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</tr>
</tbody>
</table>

Table 1: Frequency distribution of gender of diabetic patients

Table 2 shows that diabetic patients of senior age group (50-60) years are most commonly affected 27(54%) with non-alcoholic fatty liver. Minimum frequency of patients is 7(14%) in the age group of (70-80).

<table>
<thead>
<tr>
<th>Age Groups</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-40 years</td>
<td>16</td>
<td>32.0</td>
</tr>
<tr>
<td>50-60 years</td>
<td>27</td>
<td>54.0</td>
</tr>
<tr>
<td>70-80 years</td>
<td>7</td>
<td>14.0</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 2: Frequency distribution of age group in diabetic patients

Table 3 shows the findings that the diabetic patients frequently had fatty liver 22(44%), fatty liver disease along with cardiovascular disease was 11(22%). Some other findings with low occurrence of metabolic fatty liver disease were hypertension and hyperlipidemia 7(14%). Only 2(2%) of patients are affected with renal failure, fatty liver, stroke, only 2(2%) affected with malignant abdominal mass. The patients affected with malignant liver disease, cirrhosis are 2(2%), 2(2%) affected with hypertension and dyslipidemia and only 2(2%) affected with obesity, hypertension and fatty liver. Diabetic patients most commonly have fatty liver disease and hypertension as compared to non-diabetic patients.
Diabetes mellitus patients were more commonly affected with metabolic hepatic disease. A previous study also concluded no association between diabetes mellitus patients and diabetic patients [27]. In current research, men more likely to have fatty liver diabetes mellitus Type-2 than women. Metabolic fatty liver disease is commonly found in people with diabetes mellitus, and it's linked to a major organ damage and metabolic disorders. Fatty liver largely influences diabetes co-morbidities and outcomes when type 2 diabetes is present (hepatic and cardiovascular). This study proved that there is ethenic correlation in between the fatty liver disorders and heart disorders in a sample of type-2 diabetic individuals in our investigation.

**REFERENCES**


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