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ORIGINAL ARTICLE**FREQUENCY OF NON-ALCOHOLIC FATTY LIVER DISEASE (NAFLD) IN DIABETIC ASIAN PATIENTS**

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ABSTRACT

Objective: To see the frequency and biochemical changes in diabetes patients with NAFLD.

Methodology: It is a cross-sectional study, conducted at Indus Medical College Hospital, Tando Muhammad Khan. One hundred patients of either sex having type 2 diabetes mellitus attending diabetic out-patient were included in the study. A pre-designed study pro-forma was filled with relevant investigations and clinical assessments were carried out in all cases. All the patients underwent abdominal ultrasonography. Data were entered in SPSS-20 and analyzed.

Results: Out of 100 diabetic patients, 51% were males and 49 % were females. The mean age of patient was 46 years with ranges from 45 to 67 years of age. Out of 100 patients, 51 had fatty liver on ultrasound diagnosis, with 32 (67.1%) were males and 19 (32.2%) were females. Fatigue was present in 48 (52.1%), generalized weakness in 49 (53.26%), heaviness right upper abdomen in 20 (58.82%) and pain right upper abdomen in 19 (44.18%) of fatty liver patients. Corresponding figure in Non Fatty Liver Patients were 44 (47.74%), 43 (46.74%), 14 (41.18%) and 12 (35.30%), respectively. Itching was noted in 15 (60.00%) patients of

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fatty liver while it was 24(55.82%) in non-fatty liver patients. Serum triglyceride level was more than 160 mg/dL in 47 (92.15%) patients of fatty liver while serum cholesterol level more than 200mg/dL was seen in 24 (47.05%). Aspartate aminotransferase (AST) more than 35 U/L was noted in 7 (13.72%), alanine aminotransferase(ALT) more than 40 U/L was noted in 6 (11.76%) fatty liver patients while serum albumin and serum bilirubin were within normal range in all fatty liver and non-fatty liver patients.

Conclusion: Non-alcoholic fatty liver disease (NAFLD) is more commonly seen in Type-2 diabetic patients. Serum triglyceride and serum cholesterol are significantly raised in NAFLD patients. Raised ALT and AST was not a common finding in our NAFLD study patients. Diabetic patients having heaviness or pain right upper abdomen with raised serum triglycerides and cholesterol should be more closely observed for NAFLD and liver complications.

Keywords: Non-alcoholic fatty acid liver disease, diabetes mellitus, frequency, Asian.

INTRODUCTION

NAFLD is associated with wide range of spectrum of disease, ranging from the fairly kind one-off hepatic steatosis (HS) to the other damaging tribulations of non-alcoholic steatohepatitis (NASH), hepatic fibrosis, and cirrhosis. ⁽¹⁻³⁾ NAFLD is diagnosed when other liver diseases are excluded. For the diagnosis of NAFLD there are different modalities are available that includes labs testing, imaging or and definitive diagnosis by liver biopsy. ⁽⁴⁻⁵⁾

The clinical and financially viable burden of NAFLD own grow to be evident and are likely to growth abruptly in the advent decades as a upshot of the amplified dominance and incidence of stoutness of two factors; obesity and diabetes. In general population the prevalence of NAFLD is about 25% and the

prevalence of NASH is about 6.5%. Due to this high prevalence of NAFLD and NASH currently, the second most common indication of liver transplantation is NASH all round the world. NAFLD also associated with higher chances of cardiac morbidity and mortality worldwide. ^(3, 6-8)

NAFLD and type 2 diabetes mellitus are meticulously coupled phenomena. NAFLD may be painstaking as a hepatic manifestation of metabolic syndrome. In distinction to the acquaintance about NAFLD and class 2 diabetes, in attendance are imperfect and never the same facts on NAFLD commonness in patients with type 1 diabetes mellitus. Type 1 diabetes and type 2 diabetes mellitus prove foremost pathophysiological differences, but split dependable similarities as acceptably. Hyperinsulenemia and insulin resistance usually present in both type of diabetes. ⁽⁹⁾ Obesity, a well-known NAFLD hazard aspect openly correlated to type 2 diabetes and insulin resistance, is appropriate further prevalent in the type 1 diabetes populace. Taking these similarities and addition in the main extensive time exposure to in both types of diabetes mellitus, the spectrum of NAFLD and its long-term squeal might be clinically pertinent in patients with type 2 diabetes as well.

NAFLD usually occurs in all age group of patients but are more common in age group of between 40 to 60 years. 80% of NAFLD patients are asymptomatic, 20% of patients present with generalised weakness, GI symptoms, abnormal LFTs or rarely stigmata of chronic liver disease. ⁽¹⁰⁾

The present study is designed to know the frequency and biochemical derangement in patients with Diabetes and NAFLD.

PATIENTS AND METHODS

This was a cross-sectional study done by using non-probable purposive sampling at Indus

Medical College Hospital, Tando Muhammad Khan. 100 diabetic patients were selected who came in outpatient department. After taking informed consent, a pre-designed pro-forma was filled. Patient with chronic hepatitis C and alcoholic were excluded from the current study. Complete history taking about symptoms and clinical examination of patient were also done. All the patients were gone through the ultrasound imaging. Lipid profile and LFTs along with chronic liver disease testing were performed to rule out the cirrhosis. The data were analysed by using SPSS version 20. For descriptive analysis, mean and standard deviation were calculated and for and for

categorical analysis frequency and percentage were calculated. Chi-square test was applied to know the significance of associated factors; p -value less than 0.05 was considered as significantly correlated.

RESULT

Out of 100 diabetic patients, 51 were males and 49 were females. The mean age of patient was 46 years with ranges from 45 to 67 years of age. Out of 100 patients, 51 had fatty liver on ultrasound diagnosis. 32 (67.1 %) were males and 19 (32.2 %) were females. Patients presented with different complains (Table 1) and abnormal LFTS (Table 2).

Table 1: Symptom in fatty and non – fatty liver patients (n=100)

Symptoms	Fatty liver patients	Non-fatty liver patients	P –value
Fatigue	48(52.1%)	44(47.74%)	0.77
Generalized weakness	49 (53.26%)	43 (46.74%)	0.78
Heaviness at RHC	20(58.82%)	14(41.18%)	0.01
Pain at RHC	19(44.18%)	12(35.30%)	0.23
Itching	15(60.00%)	24(55.82%)	0.21
Nausea	22(64.70%)	14(41.18%)	0.29
Anorexia	19(44.18%)	10(40.0%)	0.84

Table 2: Biochemical profile of fatty and non fatty liver diabetic patients

Investigation	Fatty liver patients (n=100)	Non-fatty liver patients (n=100)	P –value
Serum Triglycerides >150 mg/dl	47	39	0.65
Serum Cholesterol > 200mg/dl	24	18	0.18
Serum Alkaline Phosphate > 306 u/l	08	05	0.21
AST <35 U/L	07	04	0.23
ALT > 40 U/L	06	06	0.67

DISCUSSION

NAFLD is a common disease especially in Asian patients with diabetes and obesity. A recent study done in Japan in healthy individuals shows the prevalence rate of NAFLD is about 29%, in Italian study its around 20% and in general population of USA is also a 20%, but a study conducted by Luxmi et al ⁽¹¹⁾ in Pakistan shows the prevalence of NAFLD in diabetic patients is 60.8% and in Saudia Arabia study by Akber et al. ⁽¹³⁾ The incidence of NAFLD in diabetic patients is 55%.⁽¹²⁻¹³⁾

In present study the prevalence of NAFLD in diabetic patients is 51%. In our current study we used the ultrasounsography method to detect the fatty liver, which has poor sensitivity of detection of fatty liver if patient has fatty content less than 33%. So frequency could be high if we used liver biopsy, a definitive diagnostic tool in our study. Many studies shows that NAFLD patients are usually asymptomatic, but in current study the most common presenting complains of the patients is fatigue and generalized weakness that is account for about 52.1% and 53.2% respectively, but in our study all the patients were diabetic which can also present with same complains of symptoms. A study conducted by Wingkin et al. described the fatigue and pain in right hypochondrium is the most common presenting complain. In our study right hypochondrium is account for about 44.8%. That is thought due to stretching of liver capsule that is also correlated with the amount of fat present in the liver.

It is established that diabetes mellitus through insulin resistance leads to increased free fatty acid load to the liver consequently high triglyceride synthesis and increased secretion of triglyceride rich very low density lipoprotein by the liver. Hypertriglyceridemia is strongly correlated with NAFLD and our study also supports this. Serum triglycerides were raised

in 92.15% of fatty liver patients. Similarly serum cholesterol was raised in 47.05% of patients. The study by Luxmi et al ⁽¹¹⁾ also reported raised serum triglyceride level in patients with fatty liver and same is the result from our study. ⁽¹³⁻¹⁵⁾ In our study level of serum alkaline phosphatase raised in 15% patients although few studies are suggestive that alkaline phosphatase only raised in old age women. ALT and AST are also higher in many studies but in our current study ALT were raised in 7 (13.6%) and AST in 6 patients (11.7%) respectively. Normal ALT level has also been reported in others studies, a study conducted by Mofrad ⁽¹²⁾ reported that histological spectrum is not significantly different in patients with raised or normal ALT.

CONCLUSION

Non-alcoholic fatty liver disease (NAFLD) is more commonly seen in Type-2 diabetic patients. Serum triglyceride and serum cholesterol are significantly raised in NAFLD patients. Raised ALT and AST is not a common finding in our NAFLD study patients. Diabetic patients having heaviness or pain right upper abdomen with raised serum triglycerides and cholesterol should be more closely observed for NAFLD and liver complications.

References

1. Jarvis H, Craig D, Barker R, Spiers G, Stow D, Anstee QM et al. Metabolic Risk Factors and Incident Advanced Liver Disease in Non-Alcoholic Fatty Liver Disease (NAFLD): A Systemic Review and Meta-Analysis of Population-Based Observational Studies. *PLoS Med.* 2019; 17(4):e1003100.
2. Oliveira CP, Sanches PL, Abreu-Silva EO, Marcadenti A. Nutritional and Physical Activity in Nonalcoholic Fatty Liver Disease. *Journal of Diabetes Research.* 2016;1-16.

3. Motta BM, Grander C, Gogele M, Foco L, Vukovic V, Melotti R et al. Microbiota, Type 2 Diabetes and Non-Alcoholic Fatty Liver Disease: Protocol of an Observational Study. *J Transl Med.* 2019;17:408-412.
4. Filipovic B, Forbes A, Tepes B, Dumitrascu DL. Nonalcoholic Fatty Liver Disease. *Canadian Journal of Gastroenterology and Hepatology.* 2018;1-2.
5. Neuschwander-Tetri BA. Non-Alcoholic Fatty Liver Disease. *BMC Med.* 2017; 15:45-54.
6. Vries MD, Westerink J, Kaasjager KH, Valk HW. Prevalence of Nonalcoholic Fatty Liver Disease (NAFLD) in Patients with Type 1 Diabetes Mellitus: A Systemic Review and Meta-Analysis. *The Journal of Clinical Endocrinology & Metabolism.* 2020;105(2):1-12.
7. Byrne CD, Targher G. NAFLD: A Multisystem Disease. *Journal of Hepatology.* 2015;62:547-564.
8. Younossi ZM. Non-Alcoholic Fatty Liver Disease – A Global Public Health Perspective. *Journal of Hepatology.* 2019;70:531-544.
9. Kelly N, Wattacheril J. Nonalcoholic Fatty Liver Disease: Evidence-Based Management and Early Recognition of Nonalcoholic Steatohepatitis. *The Journal of Nurse Practitioners.* 2019; 15:622-626.
10. Maurice J, Manousou. Non-Alcoholic Fatty Liver Disease. *Clinical Medicine.* 2018;18(3):245-250.
11. Luxmi S, Sattar RA, Ara J. Association of Non-Alcoholic Fatty Liver with Type 2 Diabetes Mellitus. *JLUMHS.* 2008:188-193.
12. Erickson SK. Nonalcoholic Fatty Liver Disease. *J Lipid Res.* 2009;50 (Suppl): S412-S416.
13. Alswat K, Aljumah AA, Sanai FM, Abaalkhail F, Alghamdi M, Al-Hamoudi WK et al. Nonalcoholic Fatty Liver Disease Burden-Saudi Arabia and United Arab Emirates, 2017-2030. *Saudi J Gastroenterol.* 2018;24:211-219.
14. Rahid A, Zafar S, Bashir A, Bakht K, Bhalli AU. Presence of Non-Alcoholic Fatty Liver Disease in Patients of Uncontrolled and Controlled Type 2 Diabetes Mellitus. *Pak Armed Forces Med J.* 2019;69(4):822-825.
15. Ghani RA, Saqlain M, Zafar MM, Jabeen S, Naqvi SMS, Raja GK. Identification of Metabolic Risk Phenotypes Predisposing to Non-Alcoholic Fatty Liver Disease in a Pakistani Cohort. *Pak J Med Sci.* 2017;33(1):121-126.