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ISCHEMIC HEART DISEASE;
ASSOCIATION OF NON-ALCOHOLIC FATTY LIVER DISEASE

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ABSTRACT… Objectives: To find the correlation between the non-alcoholic fatty liver disease (NFALD) and ischemic heart disease. **Study Design:** Retrospective cross-sectional study. **Period:** May 2014 to Nov 2014. **Setting:** CPE Institute of Cardiology. **Material and methods:** One hundred and thirty five participants were incorporated in the study. In Group I; patients were with NAFLD and in group II; patients were without NAFLD. Data was Analyzed using SPSS V20 software. **Results:** Mean age in NAFLD group was 52.0±02.6 years and in without NAFLD 53.0±1.89 years. There were 73.2 % males in NAFLD group. Incidence of Family history and diabetes was higher in NAFLD group. The incidence of carotid artery stenosis was 4 (9.7%) in NAFLD group versus 6 (6.3%) in without NAFLD group. we also found a significantly higher incidence of triple vessel and left main stem disease in NAFLD group, it was 34 (80.87%) and 3 (7.31%) in NAFLD group versus 9 (9.7%) and 2 (2.12%) in without NALD group respectively. Conclusion: Non-alcoholic Fatty liver Disease has a strong correlation with ischemic heart disease.

Key words: Non-alcoholic Fatty Liver Disease, Ischemic Heart Disease.

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INTRODUCTION

Nonalcoholic fatty liver disease (NAFLD) has now become a most frequent liver related disorder.[1] It may rise as a result of metabolic complications.[2] The prevalence of this disease has now been doubled within the last two decades. NAFLD patients showed that 1-5% developed cirrhosis[3,4] while up to 39% patients of NAFLD developed fibrosis within a decade.[5] Death rate is 13-45% with a mean follow up period of 8-11 years and coronary artery disease is responsible for 25-28% of all these deaths.[6] It is also said that patients suffering from NAFLD are also at the risk of ACS because metabolic disorders can also be a risk factor for ischemic heart disease so IHD can occur in patients of NAFLD.[7,8] Biopsy investigations have revealed that the severity of NAFLD is associated with early development of atherosclerosis thus increasing the risk of early age IHD.[2,8] So we directed this study in patients who came in our institution for CABG to see is there any correlation of NAFLD with coronary artery disease.

MATERIALS AND METHODS

One hundred and thirty five (135) patients who underwent CABG surgery at CPE Institute of Cardiology from May 2014 to Nov 2014 were selected for this study. The study was retrospective in nature. These patients were examined through ultrasonography for diagnosis of NAFLD.

We divided the patients into 2 groups. In Group I (n=41), patients who were confirmed to have NAFLD and in group II (n=94): patients without NAFLD.

Data was entered and analyzed using SPSS V20 software. Age was presented in mean±standard deviation. While percentage and number was used to present all other variables.

RESULTS

Mean age of the patients with NAFLD was 52.0±02.6 years and without NAFLD was 53.0±1.89 years. There were 73.2 % males in NAFLD group and 80.8% males in without NAFLD

group. Family history was positive in 26.8% patients in NAFLD group versus in 15.9% patients in without NAFLD group. Hyper-Cholesterolemic patients were present in 19 (20.2%) patients in Non-NAFLD group versus 5 (12.2%) in NAFLD group. On carotid Doppler study, we found a higher incidence of carotid artery stenosis in NAFLD group. The incidence of carotid artery stenosis was 4 (9.7%) in NAFLD group versus 6 (6.3%) in without NAFLD group. On angiographic examination we also found a significantly higher incidence of triple vessel and left main stem disease in NAFLD group, it was 34 (80.87%) and 3 (7.31%) in NAFLD group versus 9 (9.7%) and 2 (2.12%) in without NAFLD group respectively (see Table-I). So NAFLD group was associated with more severe coronary artery disease and carotid artery disease as compared to patients without NAFLD.

Variable	NAFLD Group (%)	Non-NAFLD (%)
Number of Patients	41 (30.3)	94 (69.7)
Male (%)	30 (73.2)	76 (80.8)
Family history (%)	11 (26.8)	15 (15.9)
Hypertension (%)	17 (41.5)	29 (30.8)
Diabetes mellitus (%)	20 (48.8)	23 (24.4)
Gall stones (%)	1 (2.4)	6 (6.4)
Hyper-Cholesterolemia (%)	5 (12.2)	19 (20.2)
Carotid artery plaques (%)	10 (24.4)	18 (19.1)
Carotid artery stenosis (%)	4 (9.7)	6 (6.3)
Smoking (%)	13 (31.7)	37 (39.3)
Severity of IHD		
Single vessel disease (%)	2 (4.8)	10 (10.6)
Two vessel disease (%)	2 (4.8)	73 (77.65)
Three vessel disease (%)	34 (80.87)	9 (9.6)
Left main stem disease (%)	3 (7.31)	2 (2.12)

Table-I. Demographic and Angiographic data of Participants.

DISCUSSION

Various western studies showed evidence of IHD in patients of NAFLD than in controls. Targher et al reported that NAFLD is a strong prognosticator of cardiac disease in diabetic patients.[9] Ischemic heart disease is now considered to be an independent risk factor of mortality and morbidity in NAFLD individuals. These patients also have carotid artery thickness and raised arterial calcium scores.[1,10] The reason for NAFLD may be high insulin resistance and decreased endothelial function due to depletion of nitric oxide release from endothelial cells.[11,12] Visceral fat, even in normal weight patients or slightly overweight patients may lead to atherosclerosis.[13] Liver fat content is associated both with hepatic and peripheral insulin resistance.[11] Gastaldelli et al showed that presence of fatty liver assessed by fatty liver index is significantly associated with increased CAD risk and reduced sensitivity of insulin in non-diabetic people.[14]

We found 30.3% incidence of NAFLD in patients of IHD. While some other studies found 45.8 to 46.7% incidence of NAFLD in IHD patients.[1,15] The incidence of NAFLD was significantly less in our studies as compared to these studies. We found that NAFLD was linked with coronary artery disease from this it can be concluded that there is a strong correlation between NAFLD and coronary artery disease.

The main limitation of this study was the patients included in this study were already referred by cardiologists for surgery because of advanced disease. Therefore association between less significant disease and NAFLD could not be determined.

CONCLUSION

Non-alcoholic Fatty liver Disease has a strong correlation with ischemic heart disease.

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PREVIOUS RELATED STUDY

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AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Dr. Zaigham Rasool Khalid	Conceived, Designed and did statistical analysis & editing of manuscript.	
2	Dr. Naseem Ahmed	Did data collection and did review and final approval of manuscript	
3	Dr. Farhan Ali Rizvi	Did data collection and did review and final approval of manuscript	
4	Dr. Mirza Ahmad Raza Baig	Data analysis, did review and helped in final approval of manuscript	