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SEVERITY OF METABOLIC SYNDROME IN PATIENTS SUFFERING FROM NONALCOHOLIC FATTY LIVER DISEASE

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Abstract:

Background and objective: *Non-alcoholic liver disease (NAFLD) is the common form of chronic Liver disease (CLD), and is abundantly increasing worldwide. The main objective of the study is to analyses the severity of metabolic syndrome in patients suffering from nonalcoholic fatty liver disease.* ***Material and methods:*** *This cross-sectional study was conducted in Shalimar Medical and Dental College Lahore, Pakistan during January 2019 to July 2019. The data was collected through non-probability sampling technique. The data was collected from 100 liver cirrhosis patients. The age range for this study was 20 to 60 years. Blood sample was collected for the serum analysis of liver enzymes.* ***Results:*** *In this study the data was collected from 100 patients with biopsy-proven NAFLD, a relationship between the severity of the metabolic syndrome and NAFLD was observed. The mean age of the patients were 45.67±3.56 years. The levels of ALT in patients was 258.2±91.73, 79.66±28.63, and 50.73± 8.4 respectively as compared to normal control (11±3.42). Aspartate aminotransferase levels were significantly raised in viral hepatitis, alcoholic liver disease and cirrhosis patients.* ***Conclusion:*** *It is concluded that high prevalence of NAFLD and elevated aminotransferases in obese adolescents with IR, and the implications for their health is concerning. The close associations between NAFLD and MetS support screening for other co-morbidities associated with MetS.*

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INTRODUCTION:

Non-alcoholic liver disease disease (NAFLD) is the common form of chronic Liver disease (CLD), and is abundantly increasing worldwide. Alcohol consumption is the common factor associated with fatty liver disease (FLD), although it is recently reported that FLD is not direct associated with alcohol consumption. The common risk factors associated with NAFLD are alcohol consumption, diabetes mellitus (DM) and hyperlipidemia [1].
NAFLD is the manifestation of metabolic syndrome, coexisting with dyslipidemia and endocrine resistance. The non- alcoholic liver disease (NALD), non-alcoholic steato hepatitis (NASH), are eventually related to liver cirrhosis (LC) [2]. The incidence and grade of NAFLD grading and its incidence differs widely with the population screening. The incidence of histologically defined NAFLD was 20 percent and 51 per cent in two separate research involving prospective liver donors [3].

Based on the population survey the incidence of NAFLD in South America is 31%, 32% in the Middle East, 23% reported in USA and 24% in Europe. A community-based incidence is 2008 reported 37.5% NAFLD in Sri Lankan female and recent research in 2017 reported 8.7% prevalence in adolescent of NAFLD in Sri Lankan population [4]. Apparently, due to different genetic makeup and environmental associated factors the Asian population having NAFLD had lower Basic Metabolic Index (BMI) than those in western countries [5].

The main objective of the study is to analyses the severity of metabolic syndrome in patients suffering from nonalcoholic fatty liver disease.

MATERIAL AND METHODS:

This cross-sectional study was conducted in Shalimar Medical and Dental College Lahore, Pakistan during January 2019 to July 2019. The data was collected through non-probability sampling technique. The data was collected from 100 liver cirrhosis patients. The age range for this study was 20 to 60 years. Blood sample was collected for the serum analysis of liver enzymes. Alanin aminotransferase (ALT) and Aspartate aminotransferase (AST) were assayed by Reitman and Frankel method. Gamma Glutamyl Transferase (GGT) was determined. Statistical analysis was done using SPSS for Windows version 17.0. Results expressed as mean ±SD). Comparison of variables between two groups performed with student t-test for continuous variables. The p values < 0.05 were considered statically significant.

A pathologist blinded to subject details scored liver biopsies, allotting a score from 0 to 4 for inflammation, steatosis, and fibrosis as previously described. For additional fibrosis assessment, all biopsies were stained with Masson's Trichrome, percent fibrosis was calculated in triplicate by microscopy and image analysis and data were expressed as mean percentages.

All the data were collected and analyzed using SPSS version 17.0.

RESULTS:

In this study the data was collected from 100 patients with biopsy-proven NAFLD, a relationship between the severity of the metabolic syndrome and NAFLD was observed. The mean age of the patients were 45.67±3.56 years. The levels of ALT in patients was 258.2±91.73, 79.66±28.63, and 50.73± 8.4 respectively as compared to normal control (11±3.42). Aspartate aminotransferase levels were significantly raised in viral hepatitis, alcoholic liver disease and cirrhosis patients. The levels being 157.80±67.8, 164±54.35, and 62±12.17 respectively as compared to normal control (13±3.54). Alkaline phosphatase levels were significantly raised in viral hepatitis, alcoholic liver disease and cirrhosis patients. Gamma glutamyle transpeptidase levels were significantly raised in viral hepatitis, alcoholic liver disease and cirrhosis patients.

Table 01: Level of all liver enzymes in liver cirrhosis

	Control	Viral Hepatitis	Alcoholic Liver	Liver cirrhosis
ALT	11.20±3.43	258.20±91.73	79.66±28.63	50.73±8.40
AST	13.00±3.54	157.80±67.81	164.00±54.35	62.13±12.17
ALP	36.20±9.54	208.00±54.40	180.33±33.30	116.00±11.98
GGT	26.73±4.02611	115.33±28.31	181.33±60.66	248.66±43.5

DISCUSSION:

An indicator that should make the clinician highly suspicious of alcohol-related liver injury is AST: ALT ratio of 2:1 or more. Gamma-glutamyl transferase (GGT) is another sensitive but non-specific marker for hepatic injury which cannot be used solely to diagnose alcohol-related hepatic insult. Currently, the best therapy for NAFLD is slow, progressive weight loss through dietary modification and exercise [6,7]. Approximately one pound per week is recommended, as more rapid weight loss may exacerbate NAFLD. The optimal diet for treating NAFLD has not been well established, though the importance of IR suggests that low glycemic diets may be beneficial. Most patients, especially adolescents, however, have little success with lifestyle modification, sparking interest in pharmacologic therapies for NASH. However, studies to date have been limited by lack of placebo control, open-label design, small sample size, and short duration of follow up [8].

The role of oxidative stress in the pathogenesis of NAFLD led to treatment trials of anti-oxidants. A small open label pilot study of 11 youth with NASH who were treated with Vitamin E for 2–4 months showed normalization of ALT [9]. Vitamin E monotherapy is also currently being studied thorough the NASH CRN TONIC trial. A small randomized trial of combined Vitamin E and C therapy in which all individuals received a tailored diet and increased physical activity failed to demonstrate any added benefit compared to lifestyle interventions alone [10]. A small pilot trial of betaine, a choline metabolite that increases S-adenosylmethionine levels, demonstrated improvements in aminotransferases, steatosis, and necro-inflammation in adult NASH patients [11].

CONCLUSION:

It is concluded that high prevalence of NAFLD and elevated aminotransferases in obese adolescents with IR, and the implications for their health is concerning. The close associations between NAFLD and MetS support screening for other co-morbidities associated with MetS.

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