Observation on oxidative stress, liver function of subjects in various socio-economic and nutritional status

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Abstract

Problem statement: In this study initially an attempt has been taken to draw the demography of alcoholic and non-alcoholic liver disease. With the help of anthropometry and biochemical investigation, an attempt has been made to give an idea on nutritional status of the patients. Malnutrition refers to under nutrition, over nutrition and nutrient deficiency. The distribution of the malnutrition occurs in a society due to different public health outcomes and policy formulation. Body mass index (BMI) is the main indicator of malnutrition. Low social status and poor social relationship are strong determinants of poor health. **Methods:** It was performed on unselected patients(outdoor) with diagnosis of different kinds of liver disease, who were attending in this institution (M.G.M Medical College and L.S.K Hospital,)The adult patients (50) were included for this study. They were aged 18- 65 yrs. **Results:** Results are expressed; it has been observed that BMI decrease in ALD and Cirrhosis in Comparison to normal and in Malnutrition II in comparison to normal showed a depressed value. Biochemical parameters – LFT, MDA, GSH value were compared both case and control group and statistical analysis were calculated by the help of SPSS software. **Conclusion:** Malnutrition in the condition that develops when the body does not get the right amount of the vitamins, minerals and other nutrients in need to maintain healthy tissues and organ function. Malnutrition is a health problem with multiple facets. The ecological factors related to malnutrition are conditioning influences. Socioeconomic practices, food production, health services, mother education and type of family. Nutritional disorders can affect any system in the body and senses of sight, taste and smell. They also produced anxiety, changes in mood, abnormalities and organ malfunction followed by illness and death.
Keywords: BMI, Malnutrition, ALD, PEM, MAMC, Cirrhosis, Hepatitis

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INTRODUCTION

New discoveries and observations at the bench of basic scientists continue to be transformed into practical tools for diagnosis and treatment of liver disease. Liver is the key organ which performs a number of vital and varied functions including synthesis, metabolism, excretion, storage and immunological it is also takes an important role on lipid metabolism. Alcoholic liver disease is one of the most serious medical consequences of long terms alcohol abuse. In this study initially an attempt has been taken to draw the demography of alcoholic and non-alcoholic liver disease. With the help of anthropometry and biochemical investigation, an attempt has been made to give an idea on nutritional status of the patients. The human subjects are the outdoor patients of our institution who are commonly residing on the surroundings are maximally under nutrition human subjects. So, in this study the looking is also given on the subject of low socioeconomics and under nutrition condition. It has been observed that under nutrition particularly protein deficiency enhances the oxidative stress and so ameliorate liver damage. Protein energy malnutrition (PEM) is a serious, often lethal disease affecting children[1]. It

common to low income countries, where 25 % of children may be affected[2].

There are several condition that may lead to dietary insufficiencies which includes : (1) Poverty (2) Infections (3) Acute and Chronic illnesses (4) Chronic alcoholism (5) Ignorance and failure of diet supplementation (6) Self-imposed dietary restriction (7) Other causes : Additional causes of malnutrition include gastrointestinal diseases and mal absorption syndromes, genetic diseases, specific drug therapies.[3,4]

METHODS

Study Place

It was performed on unselected patients (outdoor) with diagnosis of different kinds of liver disease, who were attending in this institution (M.G.M Medical College and L.S.K Hospital,)

Study Design

A prospective, descriptive clinical study. Body mass index **(BMI)** was performed on all the patients using the following formula : **weight (Kg) / height (meter)**. Other anthropometric measurements was Midarm Muscle Circumference **(MAMC)** which was measured on the right arm , Calculated by the formula **MAMC (cm) = MAC – [3.1415 x TSF (cm)].** The triceps skinfold **(TSF)** was calculated as the mean of three measurements using the large skinfold calliper midway between the acromion and the tip of olecranon.

Biochemical Investigation

Blood were collected from each individual by vein-puncture and were allowed to clot at room temperature for one hour. Clotted blood was centrifuged at 3000 rpm for 15 minutes and separated serum to used for biochemical tests- LFT (Total Bilirubin, Direct Bilirubin, SGOT, SGPT, Alkaline Phosphates, Total protein, Albumin,) MDA, and GSH.

Statistical Analysis

Comparison of changes were made with the help of SPSS, t-test was calculated on the basis of mean and standard error of mean. Significance was considered at the level of $p<0.01$. Comparison was made between normal control to other group.

RESULTS

It has been observed in ALD and Cirrhosis in comparison to normal and in Malnutrition II in comparison to normal showed a depressed value. In MAMC, Cirrhosis showed a significant ($p<0.01$) depressed value in comparison to control. Malnutrition II showed a depressed MAMC value in compare to control. A depressed value of albumin observed in ALD ($p<0.001$), hepatitis and cirrhosis in comparison to normal, Bilirubin showed enhanced value in ALD ($p<0.001$), cirrhosis ($p<0.01$), hepatitis and Malnutrition II in compare to normal. From this investigation it has been observed that in alcoholic liver disease a elevated value of MDA occurs in comparison to other hepatic disease and normal subjects. GSH showed and depressed value in case of alcoholic liver disease simultaneously. Catalase showed depressed value in comparison to normal human subjects. In the subject who have low calorie, have shown an elevated MDA content. Depressed pattern has been observed in case of GSH. This facts corroborate that oxidative stress occur maximally in alcoholic liver disease and low nutritional intake subject which hampered the enzyme picture.
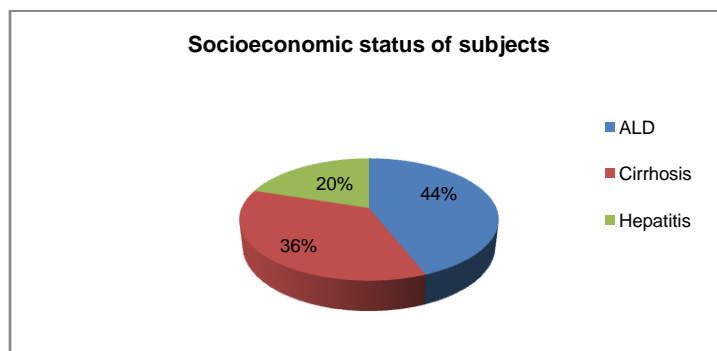

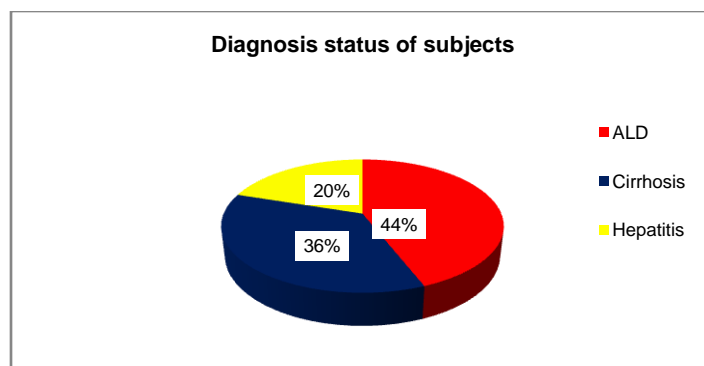**Figure 1:** Showed socioeconomic status of subjects

Figure 2: Diagnosis status of subjects

CONCLUSION

This institution is the drainage of the patients of a wide area. At the initial stage an attempt has been made to know the idea about the frequency of liver disease of the study fields were maximally belongs the low socioeconomic status and illiterate. It is a preliminary study, from this preliminary study; it has been observed that maximum patients are suffering from alcoholic liver disease. From anthropometric studies and clinical picture these subjects are found to be suffering from malnutrition. In low energy intake subjects the damage is high. Oxidative stress, which damages the cell by the generation of free radicals, is an important part of the pathogenesis of disease besides the etiological factors. Malnutrition, pollution etc. Also enhances the oxidative stress and may be a cause of liver damage. This study indicate that oxidative stress occur maximally in ALD and low energy consumed subjects. It may be cause of liver damage of these subjects.

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