J. Indian Dietetic Association Volume 40, No.2, pp. 1-7, 2017

COMPARATIVE STUDY OF NUTRITIONAL STATUS AMONG THE CIRRHOTIC PATIENTS WITH AND WITHOUT ASCITES

MEHAR JAMIL
(Research Scholar/intern) & PRIYANKA CHAUHAN (H.O.D.),
DEPARTMENT OF DIETETICS, BOMBAY HOSPITAL, INDORE

INTRODUCTION

CIRRHOSIS

Cirrhosis is a result of advanced liver disease. It is characterized by replacement of liver tissue by fibrosis (scar tissue) and regenerative nodules (lumps that occur due to attempted repair of damaged tissue). These changes lead to loss of liver function. Cirrhosis is most commonly caused by alcoholism, hepatitis B and hepatitis C, and fatty liver disease, but has many other possible causes. Some cases are idiopathic.

PATHOPHYSIOLOGY

The liver plays a vital role in synthesis of proteins (for example, albumin, clotting factors and complement), detoxification, and storage (for example, vitamin A). In addition, it participates in the metabolism of lipids and carbohydrates.

Cirrhosis is often preceded by hepatitis and fatty liver, independent of the cause. If the cause is removed at this stage, the changes are still fully reversible.

The pathological hallmark of cirrhosis is the development of scar tissue that replaces normal parenchyma. This scar tissue blocks the portal flow of blood through the organ therefore disturbing normal function. Recent research shows the pivotal role of the stellate cell, a cell type that normally stores vitamin A, in the development of cirrhosis. Damage to the hepatic parenchyma (due to inflammation) leads to activation of the stellate cell, which increases fibrosis and obstructs blood flow in the circulation. In addition, it secretes TGF-β_1, which leads to a fibrotic response and proliferation of connective tissue. Furthermore, it secretes TIMP 1 and 2, naturally occurring inhibitors of matrix metalloproteinase's, which prevents them from breaking down fibrotic material in the extracellular matrix.

The fibrous tissue bands separate hepatocyte nodules, which eventually replace the entire liver architecture, leading to decreased blood flow throughout. The spleen becomes congested, which leads to hypersplenism and increased sequestration of platelets. Portal hypertension is responsible for most severe complications of cirrhosis.

Chronic Alcoholism

Chronic alcoholism is the leading cause of cirrhosis. Drinking too much alcohol can cause

the liver to swell, which over time can lead to cirrhosis.

Chronic Viral Hepatitis

Hepatitis C causes the liver to swell, which over time can lead to cirrhosis. About one in four people with chronic hepatitis C develop cirrhosis. Chronic hepatitis B and hepatitis D also can cause cirrhosis.

Nonalcoholic steatohepatitis (NASH)

Fat build up in the liver that is not caused by alcohol use, is nonalcoholic steatohepatitis (NASH). NASH can cause the liver to swell and can lead to cirrhosis. People with NASH often have other health issues including diabetes, obesity, high cholesterol, coronary artery disease and poor eating habits.

Genetic diseases

some genetic diseases can lead to cirrhosis. These diseases include Wilson disease, hemochromatosis, glycogen storage diseases, Alpha-1 antitrypsin deficiency, and auto-immune hepatitis.

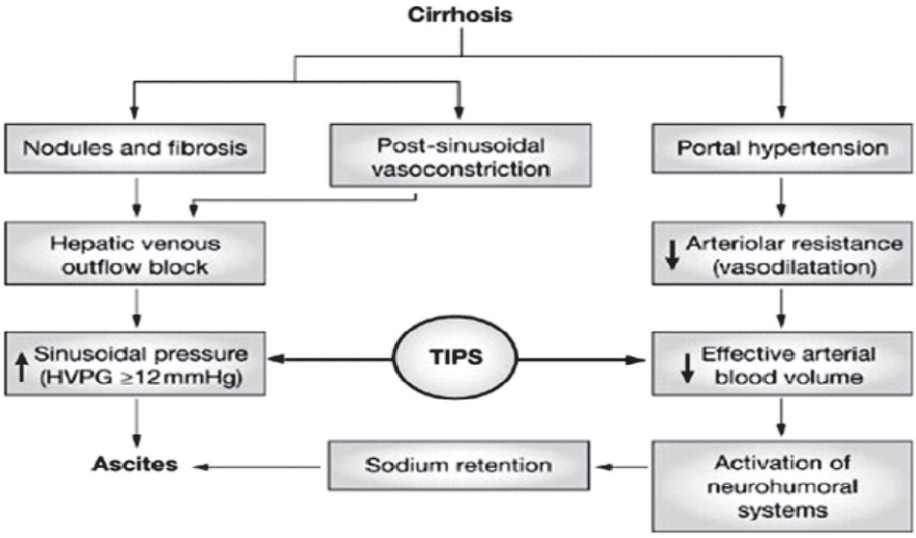
COMPLICATIONS OF CIRRHOSIS

❖ **ASCITIES**

Salt restriction is often necessary, as cirrhosis leads to accumulation of salt (sodium retention). Diuretics may be necessary to suppress ascities.

ASCITIES:

Ascities (fluid retention in the abdominal cavity) is the most common complication of cirrhosis. It is associated with a poor quality of life, increased risk of infection, and a poor long-term outcome. Other potentially life-threatening complications are hepatic encephalopathy (confusion and coma) and bleeding from esophageal varices. Cirrhosis is irreversible, and treatment usually focuses on preventing progression and complications.



Ascities is a gastroenterological term for an accumulation of fluid in the peritoneal cavity. The medical condition is also known as **peritoneal cavity fluid**, **peritoneal fluid excess hydro peritoneum** or more archaically as **abdominal dropsy**. Although most commonly due to cirrhosis, severe liver disease or metastatic cancer. Diagnosis of the cause is usually with blood tests, an ultrasound scan of the abdomen, and direct removal of the fluid by needle or paracentesis (which may also be therapeutic). Treatment may be with medication (diuretics), paracentesis, or other treatments directed at the cause.

LAB FINDINGS

The following findings are typical in cirrhosis:

- Thrombocytopenia - typically multifactorial. Due to alcoholic marrow suppression, sepsis, lack of folate, sequestering in the spleen as well as decreased thrombopoietin.
- Aminotransferases - AST and ALT are moderately elevated, with AST > ALT.
- Alkaline phosphates - slightly elevated but less than 2-3 times the upper limit of normal.
- Gamma-glut amyl transferase –Typically much higher in chronic liver disease from alcohol.
- Bilirubin - elevate as cirrhosis progresses.
- Albumin - levels fall as the synthetic function of the liver declines with worsening cirrhosis.
- Prothrombin time - increases since the liver synthesizes clotting factors.
- Globulins - increased due to shunting of bacterial antigens away from the liver to lymphoid tissue.
- Hyponatremia
- Leucopenia and neutropenia
- Coagulation defects.
- Imaging- it includes MRI, USG, CT scanning
- Endoscopy

TREATMENT

No treatment will cure cirrhosis or repair scarring in the liver that has already occurred. But treatment can sometimes prevent or delay further liver damage. Lifestyle changes as giving up alcohol, dietary modification and avoidance of unnecessary and harmful medicine can be done as a part of the treatment. But in some cases surgery is needed to be done for the treatment of the complications of cirrhosis.

LIVER TRANSPLANT

Receiving a liver from an organ donor (liver transplant) is the only treatment that will restore normal liver function and cure portal hypertension. A liver transplant is usually considered only when liver damage is severe and threatening your life.

GIVING UP ALCOHOL

If you are diagnosed with cirrhosis, it is extremely important that you stop drinking alcohol completely, even if alcohol was not the

cause of your cirrhosis. If don't stop, liver damage may quickly become worse.

CHANGING YOUR DIET

If your body is retaining fluid, the most important dietary change you need to make is to reduce your sodium intake. You do this by reducing the amount of salt in your diet. People with liver damage tend to retain sodium. This can make fluid buildup in your belly (ascities).

AVOID HARMFUL MEDICINE

Some medicine should be used carefully or not taken by people who have cirrhosis. For example, acetaminophen can speed up liver damage. Aspirin and other NSAIDS increase the risk of variceal bleeding and ascities. Also certain prescription medicines used to treat other conditions may be harmful if you have cirrhosis.

HYPOTHESIS : Dietary intake of cirrhotic patient is different from ascitic patient.

METHODOLOGY : For the purpose of Data collection all the patients were introduced with the Tool i.e. a self-made questionnaire known as "EPNAS" (eating pattern and nutritional assessment schedule) including quality of life measurement questions. Aim of the study was to determine the dietary intake differences between the cirrhotic and ascitic patients. 30 patients from the gastroenterology department of the Bombay hospital, Indore who have liver profile test details were included in the study. A non-probability sampling technique i.e. purposive sampling had been used in the sample selection. With EPNAS general details were collected using interview method. Subjects were divided into two categories i.e. 23 subjects were cirrhotic patient and 7 were ascetic patients. Subjects included in the study were already suffering from chronic liver disease and were on medications. The EPNAS total score were calculated for both the categories. Their dietary intake was determined by using FFQ(food frequency questionnaire) and was compare with each other.

EATING PATTERN AND NUTRITIONAL ASSESSMENT SCHEDULE (EPNAS):

The EPNAS is based on some major factors which show their direct effect on health profile and condition of the subject, which includes dietary habits, eating pattern, complaints, biochemical analysis, salt intake, alcohol consumption, food frequency table etc. the participants had given details about their specific attitude, feeling and behavior related to eating preferences.

Factors covered in EPNAS and their analysis:

The EPNAS was designed to specifically collect data for the various quantitative aspects of nutrition. The EPNAS was analyzed to give results in terms of quantitative factors.

The EPNAS consisted of four sections, which are as follows:

I. **PERSONAL PROFILE:** Includes name, age, height and weight of participants. In the analysis of collected data, information from this section has been utilized to calculate the BMI of participants and find out the age wise distribution of cirrhosis and ascites.

II. **WORK PROFILE:** Includes occupation, hours worked in a day, type of activity

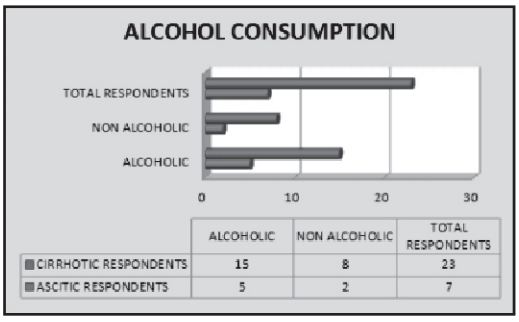
(sedentary, standing, manual or heavy), information from this section has been utilized to analyze the effect of work schedule of participants on their health. As it is well established that people with sedentary lifestyle are at a greater risk and its co-morbidities. All the factors thus included in this section form assessment of a risk factor related to the disease.

III. **MEDICAL PROFILE:** Includes record of liver profile parameters and details of the CBC report. Information in this section has been utilized to study the liver health status, status of ascitic and effect of elevation or depression in liver panel parameters on the former, and other presenting liver complaints and history.

IV. **DIETARY PROFILE:** Includes information about the kind of diet followed and a food frequency questionnaire consisting of foods from various food groups and its consumption by participants in a week. Also the amount of salt consumed by participants has been included in this section as water accumulation forms an important factor in ascites. Data from this section has been utilized to assess the dietary habits, nutrition intake and corresponding nutritional status of the respondents.

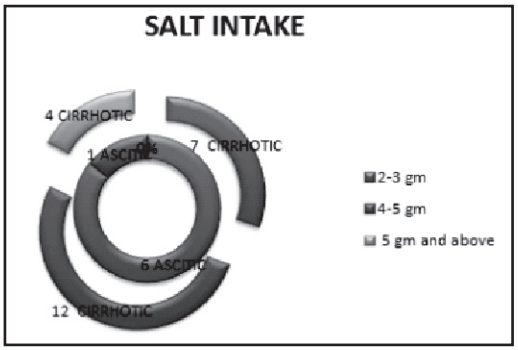
GRAPHS :

ALCOHOL CONSUMPTION OF WHOLE SAMPLE



	ALCOHOLIC	NON ALCOHOLIC	TOTAL RESPONDENTS
CIRRHOTIC RESPONDENTS	15	8	23
ASCITIC RESPONDENTS	5	2	7

DIALY SALT INTAKE OF THE RESPONDENTS



RESULT

Cirrhotic patient shows no difference with ascitic patient in dietary intake consumption Hence, H_0 **1.1** Dietary intake of cirrhotic patient is different from ascitic patient is **rejected**. There is only a difference of salt intake between both the groups.

SUMMARY

Chronic Liver Disease is the most common type of liver disease such as ascites and cirrhosis. Lifestyle changes, medicines, and medical procedures can help prevent or treat Chronic liver disease. These treatments may reduce the risk of related health problems.

In cirrhosis the fibrous connective tissue replaces the functioning hepatic cells and appears as a firm fibrous mass with various nodules projecting from the surface. It is the most serious or final stage of liver injury and degeneration. Chronic alcoholism is considered

OVERALL INFERENCE:

FACTORS	ASCITIC PATEINT	CIRRHOTIC PATINET
No. of respondents	7	23
Age	Min.^{m}-35years Max.^{m}-65years	Min.^{m}-25years Max.^{m}-65years
BMI	20% normal 80% overweight	9% malnourished 35% normal 56% overweight
Type of activity	57% sedentary 43% standing	39% sedentary 44% standing 17% manual
Hemoglobin	1 has normal Hb 6 low Hb	5 has normal Hb 18 low Hb
Platelets	3 normal count 4 low count	8 normal count 15 low count
SGPT	5 normal 2 high levels	5 high levels 18 normal levels
SGOT	5 high 2 normal levels	18 high levels 5 normal
Alcohol consumption	71.42% (5) alcoholic 28.57% (2) non alcoholic	65.21% (15) alcoholic 34.78% (8) non alcoholic
Salt intake	86% consumes 3-4gm 14% consumes 4-5gm	17% consumes normal 31% consumes 4-5 gm 52% consumes 5-6 gm
Cereal intake	Daily *	Daily *
Pulses intake	Daily *	Daily *
Milk intake	Daily *	Only 20 respondent consume daily
Egg, fish, meat, chicken etc. consumption	2-4 times/week by 28% (2 respondent)	2-4 times/week by 47%
Roots and tubers intake	Daily or 2-4,5-6 times/week	Daily or 2-4,5-6 times/week
GLV's or other vegetables	Daily or 2-4,5-6 times/week	Daily or 2-4,5-6 times/week
Fruits consumption	2-4 or 5-6 times/week by 28% (2 respondents)	Daily by 17%(4) 21.73% (5) once a week Other respondents 2-4times/week
Sugar intake	Daily *	Daily *
Fats and oil consumption	Daily *	Daily*
Nuts and oilseeds consumption	once a week by 28% (2 respondents)	Only 30.43%(7 respondent) consumes depending upon the availability.

*portion size or quantity varies

to be the most common cause since alcohol and its metabolic products disturb liver metabolism and damage liver cells directly. Whereas Ascities is the most common complication of cirrhosis. It is a condition in which fluid accumulates in the peritoneal cavity of the body and sometimes edema may occur over the body.

For the purpose of Data collection all the patients were introduced with the Tool i.e. a self-made questionnaire known as "EPNAS". Aim of the study was to determine the dietary intake differences between the cirrhotic and ascitic patients. A total of 30 Chronic liver disease patients admitted at Bombay Hospital, and medical research centre, Indore who had details of liver profile test were selected for the comparative study. Out of these 23 patients were suffering from cirrhosis and remaining 7 were ascitic patients. The participants included were already suffering from Chronic liver disease and were on medication which is considered in the analysis of collected data.A non-probability sampling technique i.e. purposive sampling had been used in the sample selection. With EPNAS general details were collected using interview method. Subjects were divided into two categories i.e. 23 subjects were cirrhotic patient and 7 were ascetic patients. Subjects included in the study were already suffering from Chronic liver disease and were on medications. The EPNAS total score were calculated for both the categories. Their dietary intake was determined by using FFQ and the data has been analyzed.

CONCLUSION

The whole study gives me a lot of information and even directions for further study. There is no significant difference found between dietary intake of both the ascitic and cirrhotic group. Except there is a difference of salt intake found between both the groups i.e.82% in cirrhotic patient and 14% in ascitic patient which on the other side shows that excess salt consumption in cirrhotic condition can leads to peritoneal oedema or ascitis.

REFRENCES

1. Gauthier A, Levy VG, Quinton A, et al. Salt or no salt in the treatment of cirrhotic ascites: a randomised study. *Gut*. 1986; 27:705–709.
2. http://www.nutritionmd.org/health_care_providers/gastrointestinal/cirrhosis_nutrition.html
3. http://en.wikipedia.org/wiki/Cirrhosis