



FATTY LIVER ON USG CORRELATION WITH BMI

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ABSTRACT The fatty liver disorder is one of the adverse case scenarios impacting the ages and health factors of senior individuals. The following study included survey analysis of 100 patients of different age groups, but all of them were above 18 years of age. NAFLD and NASH are the two most fatal disorders emerging from liver tissue degradation. Here, the inclusion and exclusion methodology is being adopted such that potential candidates can only be focused upon and experimented. The methodology section will include a routine survey of the echo-texture of the morphological aspect of the liver tissue. Hepatic environment will be prioritized and focused upon with the diagnosis of a hepatic steatosis with a characteristic sonographic feature. It is associated with obesity with an increasing level of cholesterol in the body, thus damaging the tissues of the fatty liver of the patients. Additionally, the level of triglycerides also increases thus makes the situation much more fatal for the suffering ones. The fatality is thus majorly found because of the increment of the level of the found triglycerides within the patient's body.

KEYWORDS : NASH (nonalcoholic steatohepatitis), NAFLD (Non-Alcoholic Fatty Liver Disease), fatty liver

INTRODUCTION

The following report included the correlation techniques and strategies of USG with the BMI analysis procedures upon fatty liver. It has been observed that the NASH (nonalcoholic steatohepatitis) and NAFLD (Non-Alcoholic Fatty Liver Disease) are the two different spectrums of the disorders of the fatty liver. These are different health disorders having no such appropriate symptom syndromes. The abundance of such health-related disorders has been significantly increasing in both Asian and Western countries. Among the nation's fatal disease list, NAFLD is now being considered as one of the serious health issues. The occurrence of the fatty liver cases in India is now increasing at an alarming rate of 15-30%. The ratio is quite similar to the ones observed for the inheritance of the people of Western countries. Furthermore, it has been observed that major incidents of NAFLD are comparatively mild and have a relatively benevolent impact over time. The continuing effect of these fatty liver cases are found to be much adverse upon the patients and can often leads to liver failure, fibrosis, cirrhosis and hepatocellular carcinoma.

Initially, patients such from the NAFLD disorders are found to have less or no symptom at all. The foremost symptoms included the sensation of fullness, sickness, tiredness and exhaustion. Henceforth it can be concluded that Megalohepatia is one of the major physical outcomes for majority of the patients suffering from NAFLD disorders.

Research aims and objectives

The following research aims "to evaluate and assess the results of the ultrasonography of the fatty liver. Along with evaluating the lipid profile of the patient suffering from fatty liver disorders and detailing the physical observation of the patients too."

MATERIALS AND METHODS

The targeted audience here were the patients suffering from fatty liver disorders for 6 months. The designatory approach has been focused upon a non-interventional observational analysis of the prospective measurement of the liver tissues. Both inclusion and exclusion criteria's need to be followed such that the desired samples could be evaluated and prospective results could be simultaneously observed including a sample size of approximately 100 patients.

Inclusion criteria

- Patients above 18 years were preferred.
- There should not be any history of alcohol consumption for both male and females and if consumed, the quantity should be less than

30gm/day for males and 20gm/day for females.

- The desired patients need to register themselves before the initiation of the diagnosis studies.
- More focus is being imparted to such patients only who are already having a lipid profile in the concerned biochemical institution.

Exclusion criteria

- Patients should not be forcefully taken.
- Any patient should not be aged less than 18 years.
- There should not be a presence of diffused or focal lesion of masses in the liver.
- The patients having congenital liver disorders or any such metabolic disorders were excluded off.

Statistical analysis:

The scanner used for the analysis techniques of the patients was of Philips HD 11 incorporating 2-5 MHz trans-abdominal ultrasound features [1]. It has been observed that the water soluble gel used for analyzing such patients would be considered as a coupling agent for the overall reaction mechanism. Before the initiation procedure, all the steps and schedules need to be pre-stated to the patients such that they could themselves decide whether or not they want to be a part of the observation procedure. The role of the transducers used is to analyze and visualize the focused structures within the abdomen in the right portion of the body [2].

The methodology section will include a routine survey of the echo-texture of the morphological aspect of the liver tissue. Hepatic environment will be prioritized and focused upon with the diagnosis of a hepatic steatosis with a characteristic sonographic feature. Additionally, the found characteristic are alteration of the vascular modification of the entailed veins of the portal nerves, depletion and weakening of the sound-reflection ability of the tissues in a deeply installed area. Henceforth it can be concluded that the liver tissue incorporates the capability of reflecting particular sound waves.

RESULTS:

Table 1: Age-wise classification of patients

Age group	Frequency	Percent	Valid Percent	Cumulative Percent
< 37	14	14.0	14.0	14.0
38 - 47	23	23.0	23.0	37.0
48 - 57	31	31.0	31.0	68.0
> 58	32	32.0	32.0	100.0
Total	100	100.0	100.0	

The above table illustrates the age-group wise distribution of the patients. As derived from the above figure, people less than 52 years of age are highly preferable for the analysis procedures. Henceforth it can be concluded that the fatty liver disorders are mainly subjected to the patients of older time. With time and adversities, one's liver can effectively get damaged and thus ultrasonography will be required for the curing processes [3]. Furthermore, a very less number of patients were there who were suffering from such disorders at a young age. The last cumulative frequency corresponds to 100 % and this showcases the efficiency and the accuracy of the results gathered.

Table 2: Gender-wise distributions

		Gender		Total
		M	F	
grade	Grade I	26	22	48
	% of Total	26.0%	22.0%	48.0%
	Grade II	25	16	41
	% of Total	25.0%	16.0%	41.0%
	Grade III	5	6	11
	% of Total	5.0%	6.0%	11.0%
Total	% of Total	56	44	100
		56.0%	44.0%	100.0%

The above figure illustrates the gender-wise distributions of the patients in different grades during the survey procedures. As derived from the above table, both the genders have got similarly impacted and influenced by such alterations. However, the adversities caused in the male body are concluded to be somewhat higher than that of the females [4]. Henceforth it can be concluded that in the gender-wise distribution format, the male ratios and their related adversities causing factors are simultaneously higher than that of the females.

Table 3: Symptom-wise distributions

Symptom	Frequency	Percent	Valid Percent	Cumulative Percent
No	34	34.0	34.0	34.0
Yes	66	66.0	66.0	100.0
Total	100	100.0	100.0	

The above table represents the symptom-wise distributions of the patients. As derived from the above figure, symptoms are generated as per the grade of the patients encountered. It has been observed that the patients suffering from lower grades such as grade 1 and grade 2 are initially non-symptomatic, however the ones suffering from a higher grade of infection are more fatal to the adversities. Furthermore, the cumulative frequency at the end of the table shows 100% of the results formed and thus signifies the accuracy of the survey conducted by the researcher.

DISCUSSION

The following study incorporated a total of 100 patients suffering from fatty liver disorder and are viewed under ultrasonography. Initially, the fatty liver was segmented into three different grades based upon the results of the ultrasonography. The simultaneous grading was done on the basis of multiple characteristics such as: enhanced echogenicity of the liver tissue, increased liver complexity and comparison with the kidney tissues, the portal veins got vascularly blurred. Here, the inclusion and exclusion methodology is being adopted such that potential candidates can only be focused upon and experimented. The methodology section will include a routine survey of the echo-texture of the morphological aspect of the liver tissue. Hepatic environment will be prioritized and focused upon with the diagnosis of a hepatic steatosis with a characteristic sonographic feature [6]. Henceforth it can be concluded that the physical and lipid profile layer of the patients provided a simultaneous correlation between them and the multiple segments of the graded fatty liver are done independent of the observable and the biochemical parameters of the surrounding environment.

Henceforth it can be concluded that the classification and segmentation of the fatty liver and its simultaneous measurement of the physical and lipid profiles has been independently measured and assessed with each of the significant biochemical and physical factors.

Among the 100 patients, it has been observed that the 48 patients were identified and detected under grade 1, 41 patients were diagnosed under grade 2 and the remaining 11 patients were analyzed under grade 3. The male and female numbers were taken 56 and 44 respectively.

All the patients were above 18 years of age, however 63 of them were above 48 years and the remaining 37 were below it.

Pain, fatigue, nausea and malaise were found to be the common symptoms for approximately 66% of the patients. Additionally, 50% of them were symptomatic for grade 1 disorders, while the grade 2 and grade 3 constituted 78% and 90% of fatty liver disorder symptoms respectively. Thus, it can be concluded the different grades of the fatty liver disorders are found to be variedly effective for its multiple causes and henceforth their sequential outcomes are quite different from each other [7].

Standard deviations of the triglycerides were found to be 26,41.4 & 18.53 the average of all the grades taken together. Henceforth it can be concluded that for better outcomes of the ultrasound feature of the fatty liver disorders, the triglycerides need to be balanced out simultaneously, it not only adversely impacts the exotic liver tissue areas but also affects the overall metabolism of the body too. This increasing level of the triglycerides have thus enhanced the lipid content of the body. Along with triglycerides, HDL also plays a much significant approach in deciding the fatty liver of the concerned patients. In all such adverse cases, radiologists play a much significant role in understanding the overall behavioral forums and understanding the level of damage entailed by a particular liver tissue [8].

Thus, clinical trials need to be performed alongside in order to understand the related effectiveness of the disorders of the patients. This particular study focuses upon the grading of the fatty tissue of the liver on ultrasonography and thus streamlining the results with the physical profile of the patients and their entailed lipid contents. It has been observed that multiple grades of the fatty liver have been analyzed and based upon the grades, multiple conclusive results can be formed out. Additionally, with the increment of the grades of the liver content, simultaneous triglycerides amount and lipid profile varies. As demonstrated by Dhuma *et al.*, there were 70 patients 47%, 10% and 43% patients incorporating a grade of 1,2 and 3 fatty liver disorder respectively. Triglycerides was the prime factor which has been known to increase its presence by 45.71% within the patients, HDL was observed to be significantly reduced by 62.85% and LDL was finally observed to get increased by 34.28% of the overall patients suffering from fatty liver disorders. Thus, the concerned study evaluates the study significantly correlate with the positive correlation and p-value thus was observed to be less than 0.0001.

Additionally, an evaluation by Abhijeet sen *et al.* suggested that there were 385 patients suffering from fatty liver were having a body mass index increasing in the order of 55.6, 58.3 and 100% within the patients having a grade 1,2 and 3 fatty liver disorder.

CONCLUSION

Henceforth it can be concluded that the increasing grades of the fatty liver disorders abnormally shows higher lipid content within the patients. Majorly, correlation was found within the presence of triglycerides and HDL levels. Additionally, correlation was found between grading of the Cholesterol and LDL levels.

The study also revealed the fact that NAFLD disorders are simultaneously increasing with time now a day. In adverse conditions, it can further lead to cirrhosis, hepatocellular carcinoma, fibrosis and much more. Thus, among all the surgical processes, liver biopsy is one of the most potential ones, however rare and life threatening. Henceforth, ultrasonography is quite useful and non-painful for the patients for preventing them against fatty liver disorders.

Liver biopsy is a painful and invasive procedure with rare, but potentially life-threatening complications like bleeding and is prone to sampling errors and therefore grading of liver by ultrasonography is easy and sensitive. In a resource constraint nation, Ultrasonography qualifies as an appropriate technology tool which is highly sensitive for detection of fatty liver and grading it and also has an advantage of being an inexpensive, non-invasive and free of radiation hazards modality. It qualifies as an invaluable screening tool for detection of NAFLD.

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