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BIOCHEMICAL PROFILE AND VARIOUS TREATMENT MODALITIES OF PATIENTS WITH NON-ALCOHOLIC STEATOHEPATITIS (NASH)

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ABSTRACT

Introduction: Non-alcoholic fatty liver disease (NAFLD) is an increasingly recognized condition that may progress to end stage liver disease. Aim: The objective is to study the biochemical profile and various treatment modalities in patients of non-alcoholic steatohepatitis (NASH). Material and Methods:The present study was carried out on 60 patients of NASH over a period of one year at Pathology Department of GMC, Jammu which is a tertiary care centre. All patients with NASH were screened for various risk factors associated with NASH. Detailed history was taken and thorough clinical examination was done. Results: out of 60 patients, 28(46.66%) were males and 32(53.32%) were females. 85% of the patients were in the age group of 31-70 years. Conclusion: In the present study it was found that obesity, hyperlipidemia and diabetes mellitus were significantly associated with the NASH.

KEY WORDS : non-alcoholic steatohepatitis, obesity, liver function test, diabetes mellitus

Introduction: Non-alcoholic fatty liver disease refers to wide spectrum of liver damage ranging from simple steatosis to steatohepatitis, advanced fibrosis and cirrhosis. Steatohepatitis represents only a stage within the spectrum of non-alcoholic fatty liver disease [1]. Ludwig et al introduced term nonalcoholic steatohepatititis to describe liver disease that is histologically indistinguishable from alcoholic hepatitis but occurs in persons who do not consume excess alcohol [2]. NAFLD is defined as fat accumulation in liver exceeding 5% to 10% by weight. Inherent to defining NAFLD and NASH is threshold at which steatohepatitis become alcohol related. Many centers accepts upper limit of 20-40 gm/day in men and 20gm/day in women [3]. NAFLD is found in 70% of obese and 35% of lean patients. NASH is found in 18.5% of obese and 2.7% of lean patients. There is even distribution of NASH among men and women.

9 (32.14%)

Material and Methods: The present work is a hospital based cross-sectional study that included 60 patients of NASH registered with GMC, Jammu for a period of one year. All patients with NASH were screened for various risk factors associated with NASH. Detailed history was taken and thorough clinical and biochemical profile was done. Required investigations were done such as HB, TLC, DLC, Blood sugar, Renal function tests, Complete liver tests, Serum lipid profile, Viral markers (HBs Ag and Anti HCV) and ANA were done. Ultrasound abdomen for hepatobiliary system was done to diagnose the patients of NASH.

Inclusion criteria:

1. Ultrasonographically proved fatty liver
2. Deranged liver function tests
3. No significant alcohol intake i.e. <20gm/day
4. Absence of other relevant liver disease.

Exclusion criteria:

1. Daily alcohol intake i.e. >20gm/day
2. Use of amiodarone, steroids, tamoxifen, methotrexate or high dose estrogen
3. Jejunal bypass or extensive small bowel resection
4. Other known liver disease
5. Malignancy.

Results: A total of 60 patients enrolled in our study. The present study entiled "Biochemical Profile and Various Treatment Modalities of Non-alcoholic Steatohepatitis (NASH)" was undertaken at GMC, Jammu which is a tertiary care centre. The observations made in the study are as under:

Table 1: Age and Sex distribution:

Age group in	Females		Females		Total	
	No.	Percentage	No.	Percentag	No .	Percentag
10-30	5	8.33	2	3.33	7	11.66
31-50	17	28.33	16	26.66	33	55.0
51-70	6	10.0	12	20.0	18	30.0
>70	0	0.0	2	3.33	2	3.33
Total	28	46.66	32	53.32	60	100

Out of 60 patients, 28 were males and 32 were females. Majority of patients were in the group of 31-50 years (55%) followed by that in 51-70 years (30%). Thus, 85% of the patients were in the age of 31-70 years.

Table 2: Body Mass Index:

Body Mass Index	No. of patients	
	Male	Female
18.5 – 24.9	4(14.28%)	5(15.62%)
25-29.9	8(28.56%)	15(46.87%)
30-34.9	14(50.02%)	12(37.51%)
35-39.9	2(7.14%)	0
Total	28(100%)	32(100%)

Table 3: Liver Function Tests

Tests	No. of patients	
	Male	Female
Increased Serum Bilirubin	13	14
Increased AST	24	27
Increased ALT	28	29
AST: ALT > 1	2	3
Increased Alk.PO4	6	4
Total*		

Table 4: Fasting Blood Sugar

Fasting blood sugar	No. of patients	
	Male	Female
< 100		
100-125	9 (32.14%)	14 (43.75%)
≥126	9 (32.14%)	5 (15.62%)
AST: ALT > 1	10 (35.72%)	13 (40.63%)
Total	28 (100%)	32 (100%)

Table 5: Associated Risk Factors

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Risk factors	No. of patients	
	Male	Female
Obesity	16	12
Hyperlipidemia	17	13
Diabetes mellitus	10	13
Total*		

*The numbers don't add upto 60 since more than one signs and symptoms were present in single patient.

Various treatment modalities: 16 patients followed regularly and remained under close supervision and were evaluated after 6 month of treatment. They were asked to cut down the intake of fats and avoid red meat. They were asked for daily brisk walking for one hour each in the morning and evening. Out of 60, 56 patients were prescribed vitamin E 800 IU/day and 4 patients were put on metformin 500mg/day. After six month, they were re-evaluated and it was found that their raised enzymes reduced markedly.

Discussion: Present study was undertaken in 60 patients to assess the biochemical profile and various treatment modalities of patients with non-alcoholic steatohepatitis. Out of which 28 (46.66%) were males and 32 (53.32%) were females. Maximum patients were in the age group of 31-50 years (55%) followed by that in 51-70 years (30%). Thus 85% of the patients in the age group of 31-70 years.

In the present study it was found that obesity, hyperlipidemia and diabetes mellitus were significantly associated with the NASH.

Table 6: showing various variables of patients with NASH (n=60)

Variables	Mean	Range
1. Age (y)	44	22-75
2. Sex Female (%)	32%	
3. Anthropometric Data		
Obesity (%)	46%	
Overweight (%)	39%	
Lean (%)	15%	
4. Body weight	75.3 kg	56-110 kg
5. BMI	29.18	20.0-39.9
6. Waist circumference		
Men > 102 cm Women > 88 cm	10/28 (35%) 25/32 (78%)	
7. S.Bilirubin	1.4	0.5-8.2
8. AST	73.21	28-285
9.ALT	102.35	33-240
10.Alk Po4.	97.75	59-176
11.Glucose tolerance	v.	
Diabetes Mellitus Impaired Glucose Fasting	23/60 (38.3%) 14/60 (23.3%)	
12.Hyperlipidemia	30/60 (50%)	

In our study 46.6% (28/60) patients were found to be obese and 38.3% (23/60) were found to be overweight. Thus total of 84.9% (51/60) patients had BMI >25. 9 (15%) patients were found to have BMI <25. Lee in (1989) demonstrated in his study that 69% patients with NASH were obese[4]. Bacon et al (1994) in their study that 39% patients of NASH were obese [5]. Angulo et al (1999) found in their study that 60% of patients with NASH were obese [6].

In our study 50% (30/60) patients were found to be hyperlipidemic. Out of 30, 16 patients had raised VLDL, 9 patients had raised triglycerides and 5 patients had raised both VLDL and triglycerides.Ludwig et al (1980) in their study found that 67% of patients of NASH were hyperlipidemic [7]. Diehl et al (1988) in their study found that 20% of patients of NASH were hyperlipidemic [8] whereas Bacon et al (1994) in their study found 21% of patients of NASH to be hyperlipidemic [5]. Angulo et al (1999) demonstrated that 27% patients of NASH were hyperlipidemic [6].

In our study of 38.3% (23/60) patients were found to be diabetic. Ludwig et al (1980) found 50% of patients of NASH to be diabetic [7]. In the study conducted by Powell et al (1990), 36% of patients of NASH were found to be diabetic [8]. Bacon et al (1994) demonstrated that 21% of patients were diabetic [5]. Angulo et al (1999) found 28% of patients of NASH to be diabetic [6].

Author	n	Mean age	Female %	Diabetes %	Obesity %	Hyperlipidemia %
Ludwig	20	54	65	50	90	67
Diehl	39	52	81	55	71	20
Lee	49	53	78	51	69	Not repoted
Powell	42	49	83	36	95	81
Bacon	33	47	42	21	39	21
Matteoni	132	53	53	33	70	92
Angulo	144	51	67	28	60	27
Our study	60	44	53	38	46	43

Out of 60 patients only 16 patients followed regularly and remained under close supervision, they were asked to cut down the intake of fats and avoid red meat. They were asked for daily brisk walking for one hour each in the morning and evening. 56 patients were put on vitamin E 800 IU/day. 4 patients were put on metformin 500mg/day. But the patients put on metformin left the study on their own because they were told by someone that metformin is used to decrease blood sugar. All patients were asked for regular follow up but only 16 patients completed study. They were evaluated at the end of six months and it was found that there was marked symptomatic and biochemical improvement.

Table 7: showing various parameters evaluated before and after treatment showed significant improvement

	Before treatment	After treatment
Mean weight (kg)	75	62
Mean S.Bilirubin	2.02	0.94
Mean AST	100.7	40.7
Mean ALT	150.3	60.7
Mean Alk PO4	104.6	88.25

CONCLUSION: In the present study it was found that obesity was present in 46.6% cases whereas 50% patients were hyperlipidemic. 38% patients were suffering from diabetes. It was found that there was marked symptomatic and biochemical improvement in those who were on strict dietary control and on regular follow up.

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