Indian J.Sci.Res.3(1) : 37-41, 2012

DISTRIBUTION OF NUTRIENT INTAKE AMONG THE SUBJECTS OF NON-ALCOHOLIC FATTY LIVER DISEASE IN LUCKNOW DISTRICT

PORNOOR SIRAJ[a1], N. KOHLI[b], V. K. SRIVASTAVA[c] AND S. M. NATU[d]

[a]Department of Radiodiagnosis, Chhatrapati Shahuji Maharaj Medical University (KGMU), Lucknow, U.P., India
E-mail: purnoorsiraj@gmail.com
[b]Department of Radiodiagnosis, Chhatrapati Shahuji Maharaj Medical University (KGMU), Lucknow, U.P., India
E-mail: drneerakohli@gmail.com
[c]Integral Institute of Medical Science and Research, Integral University, Lucknow,U.P., India
E-mail: vinods51@hotmail.com
[d]Department of Pathology, King George Medical University (CSMMU), Lucknow, U.P., India
E-mail: natupatho@sify.com

ABSTRACT

The study was conducted with the objectives to assess prevalence of Non-alcoholic fatty liver disease (NAFLD) and Correlate nutrient intake with demographic profile of subjects. The present study was carried out at the Department of Radiodiagnosis, Chhatrapati Shahuji Maharaj Medical University, Lucknow. It included all individuals aged between 20-60 years, undergoing ultrasound of any part of the body. Total 300 subjects were screened by Purposive Sampling Technique. A pretested questionnaire was used as tool, which included: General Information and Nutritional information. The prevalence of NAFLD was 25.3 percent. Most of the subjects were males, between 46-55 years and from urban area in cases. Energy, protein and fat intake was significantly higher in cases as compare to controls ($p<0.0001$). In all age groups intake of all nutrient were significantly higher ($p<0.01$) in cases as compared to controls. The nutrient intake was significantly ($p<0.0001$) higher in males in both cases and controls. These were also in females of cases as compared to controls. The nutrient intake was significantly ($p<0.0001$) higher in rural and urban subjects of cases as compared to controls. So it can be concluded that nutrient intake of cases was higher in all demographic profiles of subjects.

KEYWORDS: Non-alcoholic fatty liver disease, Prevalence, Nutrient intake Demographic profile

Non-alcoholic fatty liver disease (NAFLD) is a common condition characterised by excess of fat in liver which ranges from simple steatosis to steatohepatitis, cirrhosis and hepatocellular carcinoma (HCC) in the absence of excessive alcohol intake (Farrell and Larter, 2006). Metabolic syndrome and conditions associated with it like diabetes, obesity and dyslipidemia are predisposing factors of NAFLD (McCullough, 2006). NAFLD is becoming a major public health problem due to rising incidence of obesity and type II diabetes (Yoon et al., 2006). The overall prevalence of NAFLD is 15 to 40% in western countries while 9-40% in Asian countries (Farrell and Larter, 2006). There is increase in incidence of DM, obesity and insulin resistance in India in last two decades (Mohan et al. ,2006; Misra and Vikram, 2004**).** Hence it is logical to expect increase in incidence of NAFLD in India. There is limited data on the prevalence of NAFLD from India (Singh et al. ,2004; Duseja and Chawla, 2005).

The community prevalence of NAFLD in India varies from 5% to 28% (Duseja et al., 2004, Madan et al., 2004). Urbanization and associated changes, such as sedentary life style and fat rich diet, and a higher inherited tendency for diabetes mellitus makes Indians more prone to metabolic syndrome or insulin resistance and its manifestations such as NAFLD and non-alcoholic steatohepatitis (NASH) (Misra et al. ,2004; Duseja et al., 2010).

MATERIALS AND METHODS

The present cross sectional study was carried out at the Department of Radiodiagnosis, Chhatrapati Shahuji Maharaj Medical University (Earlier King George Medical University), Lucknow. In this study included all individuals undergoing Ultrasonography (USG) examination of any part of the body, aged between 20-60 years. A sample of 300 subjects was screened by purposive sampling technique. USG examination was used for the detection of NAFLD. Any individual who was subjected to alcohol consumption was excluded for the study. A written consent was taken from all subjects.

The tool selected for data collection was questionnaire; it includes general information of subjects like name, age, sex, place of residence and nutrient intake was collected through 24 hours dietary recall method.

[1]**Corresponding author**

Statistical analysis was done by using SPSS (15.5 version). The study was conducted from July 2009 to June 2010.

RESULTS AND DISCUSSION:

Among the 300 screened subjects 76 (25.3%) cases had NAFLD. In which 15 percent belonged to grade-1 and 10 percent belonged to grade-2, whereas only one (0.3%) subject found with grade-3 (Fig.1).

Table-1 shows the distribution of demographic profile of study subjects. About one third (30.4%) belonged to age group between 25-35 years and 24.1% belonged to 36-45 years in the control group. However, 36.8% were between 46-55 years in cases. More than half (54.5%) were males and 45.5% were females in control group. About half (51.3%) were males and 48.7% were females in cases. There were 59.4% from urban area and 40.6% were from rural areas. However, 61.8% were from urban areas and 38.2% were from rural areas in cases.

The nutrient intake of the subjects is depicted in Table-2. Energy, protein and fat intake was significantly higher in cases as compared to controls ($p<0.0001$).

Table-3 reveals the nutrient intake correlation with the subject's age. The energy intake was significantly higher in all the age groups in cases as compared to controls ($p<0.01$) except for the age group of 25-35. However, protein intake was insignificantly higher in cases as compared to controls in the age below 25 years. The fat intake was also significantly higher in all age groups.

Table-4 shows the nutrient intake taken by the subjects by their sex. The nutrient intake was significantly ($p<0.0001$) higher in males, between cases and controls. This was also true in females of cases as compared to controls.

Relation between nutrients intake with place of residence of subjects is shown in table- 5. The nutrient intake was significantly ($p<0.0001$) higher in rural and urban subjects of cases as compared to controls.

CONCLUSION

The overall prevalence of NAFLD was 25.3 percent. Most of the cases were found among age between 46-55 years, male sex and in urban area. Overall nutrient intake was higher in cases as compare to control. Whereas nutrient intake was higher in all age group of cases, nutrient intake was higher for male sex in both cases and controls. In both rural and urban areas nutrient intake of cases is higher than controls.

Figure 1: Prevalence of NAFLD

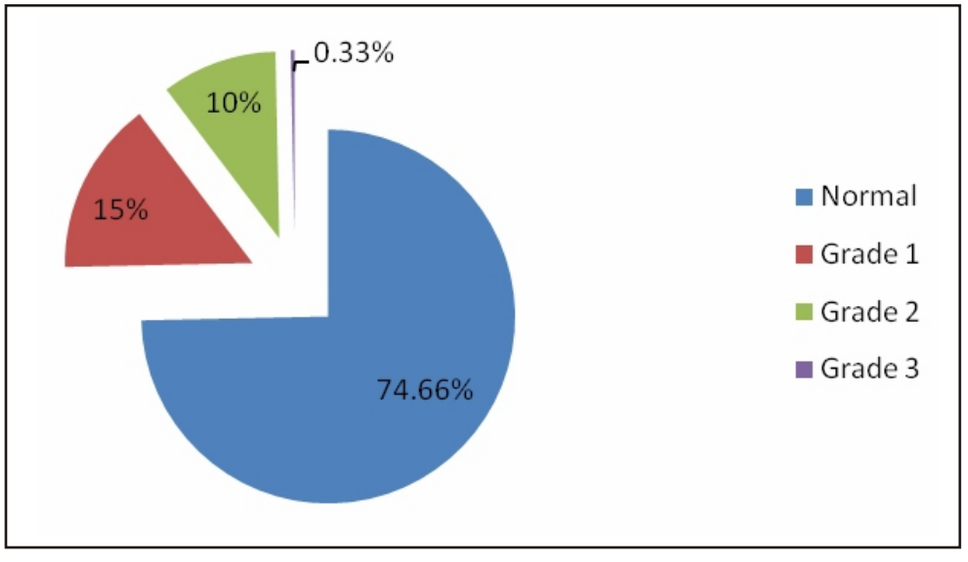

Table 1: Distribution of study subjects by their demographic profile

Indicator		Cases (n=76)		Controls (n=224)		χ^2, p=value
		No.	%	No.	%	
Age	<25	3	3.9	47	21.0	36.20, <0.001*
	25-35	11	14.5	68	30.4	
	36-45	17	22.4	54	24.1	
	46-55	28	36.8	37	16.5	
	>55	17	22.4	18	8.0	
Sex	Male	39	51.3	102	45.5	0.76, 0.38
	Female	37	48.7	122	54.5	
Place of Residence	Rural	29	38.2	91	40.6	0.14. 0.70
	Urban	47	61.8	133	59.4	

*Significant

Table 2: Nutrient intake of the study subjects

Nutrient	Cases (n=76)	Controls (n=224)	t and p=value
	Mean±sd	Mean±sd	
Energy	3182.63±836.98	2120.1975±1033.66	8.10, <0.0001*
Protein	88.50±22.22	61.89±16.23	0.01, <0.0001*
Fat	113.92±51.31	55.96±29.39	12.07, <0.0001*

*Significant

Table 3: Distribution of nutrient intake of study subjects by their age

Age	Cases	Controls	t and p value
	Mean±sd	Mean±sd	
Energy			
<25	3059.00±1147.82	2147.94±66.66	2.15, 0.04*
25-35	3169.64±1110.69	2165.11±1654.07	1.94, 0.06
36-45	3047.65±849.20	2116.27±570.84	5.18, <0.0001*
46-55	3348.36±687.36	2109.47±487.98	8.50, <0.0001*
>55	3074.88±805.96	1911.96±684.04	4.61, 0.001
Protein			
<25	81.00±39.15	64.78±18.16	1.40, 0.17
25-35	86.55±27.33	59.59±14.12	5.04, <0.0001*
36-45	85.71±25.85	62.59±17.51.	4.21, <0.0001*
46-55	93.88±16.19	62.96±11.54	8.99, <0.0001*
>55	85.04±21.45	58.69±21.92	3.59, 0.001
Fat			
<25	138.67±94.11	61.69±33.17	3.43, 0.001*
25-35	117.73±62.65	53.26±25.22	6.08, <0.0001*
36-45	111.23±55.36	60.09±31.45	4.80, <0.0001*
46-55	118.66±45.50	51.55±20.98	7.94, <0.0001*
>55	101.96±43.60	47.88±39.26	3.86, <0.0001*

*Significant

Table 4: Distribution of nutrient intake of study subjects by their sex

Sex	Cases	Controls	t and p value
	Mean±sd	Mean±sd	
Energy			
Male	3283.8±860.8	2277.5±532.4	8.36, <0.0001*
Female	3076.0±809.0	1988.7±1301.6	4.80, <0.0001*
Protein			
Male	91.9±21.9	65.6±11.3	9.35, <0.0001*
Female	85.0±22.3	58.8±18.9	7.05, <0.0001*
Fat			
Male	115.8±53.8	56.8±25.1	8.87, <0.0001*
Female	111.9±49.2	55.2±32.7	8.14, <0.0001*

*Significant

Table 5: Distribution of nutrient intake of study subjects by their residential place

Place of Residence	Cases	Controls	t and p value
	Mean±sd	Mean±sd	
Energy			
Rural	2884.6±938.5	2121.2±1489.9	2.60, 0.01*
Urban	3366.6±718.0	2119.5±540.0	12.43, <0.0001*
Protein			
Rural	81.4±24.1	60.6±15.0	5.55, <0.0001*
Urban	92.9±20.0	62.8±17.0	9.95, <0.0001*
Fat			
Rural	95.9±48.2	43.3±23.0	7.98, <0.0001*
Urban	125.0±50.5	64.6±30.2	9.75, <0.0001*

*Significant

REFRENCES

Duseja A., Bhansali A., Bhadada S., Jain P., Dhiman R.K. and Chawla Y., 2004. Nonalcoholic fatty liver disease in Subjects with recent onset type 2 diabetes mellitus (abstract). J Gastroenterol Hepatol, **19** Suppl: A 402.

Duseja A. and Chawla Y., 2005. Nonalcoholic fatty liver disease in India. How Much? How Soon. Trop Gastoenterol., **26**: 1-3.

Duseja A., Sharma B., Kumar A., Kapil S., Das A., Dhiman R.K. and Chawla Y.K., 2010. Nonalcoholic fatty liver in a developing country is responsible for significant liver disease. Hepatology., **52**: 2248-9.

Farrell G.C. and Larter C.Z., 2006. Nonalcoholic Fatty Liver Disease: from Steatosis to cirrhosis. Hepatology., **43**: S00-S112.

Madan K, Batra Y, Panda SK, Dattagupta S, Hazari S, Jha JK and Acharya SK., 2004. Role of polymerase chain reaction and liver biopsy in the evaluation of Subjects with asymptomatic transaminitis. Implications in diagnostic approach. J. Gastroenterol. Hepatol., **20**: 1291-9.

McCullough A.J., 2006. Thiazolidinediones for nonalcoholic steatohepatitispromising but not ready for prime time. N. Engl. J. Med. , **355**: 2361-3.

Misra A. and Vikram N.K., 2004. Insulin resistance syndrome (metabolic syndrome) and obesity in Asian Indians: evidence and implications. Nutrition., **20**: 482-91.

Mohan V., Deepa M., Deepa R., Shanthirani C.S, Farooq S., Ganesan A. and Datta M., 2006. Secular trends in the prevalence of diabetes and impaired glucose tolerance in urban South India: the Chennai Urban Rural Epidemiology Study (CURES-17). Diabetologia., **49**: 1175-8.

Misra A., Vikram N.K., Arya S., Pandey R.M., Dhingra V., Chatterjee A., Dwivedi M., Sharma R., Luthra K., Guleria R. and Talwar K.K., 2004 High prevalence of insulin resistance in postpubertal Asian Indian children is associated with adverse truncal body fat patterning, abdominal adiposity and excess body fat. Int J Obes Relat Metab Disord., **28**: 1217-26.

Singh S.P., Nayak S., Swain M., Rout N., Mallik R.N., Agrawal O., Meher C. and Rao M., 2004. Prevalence of nonalcoholic fatty liver disease in coastal eastern India; a preliminary ultrasonographic survey. Trop Gastroenterol., **25**: 76-9.

Yoon KH, Lee JH, Kim JW, Cho JH, Choi YH, Ko SH, Zimmet P and Son HY., 2006. Epidemic obesity and type 2 diabetes in Asia. Lancet., **368**: 1681-8.