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Original Research Article

A study of lipid profile in Meiteis and Tribals of Manipur

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ABSTRACT

Introduction and Objective: Dyslipidemia is one of the most important risk factor for development of cardiovascular diseases. Apart from lifestyle, genetics and demography also influences dyslipidemia. Management of dyslipidemia is based on risk factors stratification. There are studies showing that ethnicity plays a role in dyslipidemia. In this study we aim to compare the lipid profile between two major ethnic groups of Manipur, the Meiteis and the Tribals.

Materials and Methods: A retrospective cross-sectional study was conducted on 4,575 subjects who had their lipid profile tested in the Clinical Biochemistry Laboratory, RIMS, Imphal from September 2013 to August 2018. Statistical analysis was done using SPSS version 21.

Results: The study population consists of 83.9% Meiteis and 16.1% Tribals with equal sex distribution in both groups. The mean ± SD of lipid parameters (in mg/dl) in the study population were 156.61 ± 105.93 (TG), 181.11 ± 54.71 (TC), 114.85 ± 45.50 (LDL-C) and 44.86 ± 16.28 (HDL- C). 52.9 % of the total study population had low HDL-C levels. HDL- C was significantly lower in the Tribals compared to Meiteis.

Conclusion: This study showed that HDL- C was lower in the Tribal population.

1. Introduction

Dyslipidemia results from an abnormality in the metabolism of lipid.[1] It is manifested by either an increase in the amounts of serum total cholesterol, triglycerides, low-density lipoprotein, very low-density lipoprotein and/or decrease in levels of high-density lipoprotein.[2] Patients may not have any symptoms even if they have an abnormal level of lipid profile. However, they are at a high risk for developing various cardiovascular diseases. The causes of dyslipidemia may be primary (genetic) or secondary (lifestyle and others).[3] Management of the condition requires the assessment of various risk factors.

Manipur is a state in Northeast part of India with a population of 2,855,794.[4] Manipur is home to many ethnic groups, the majority of which is a clan known as the Meiteis who make up 53% of the population. The Kukis and Nagas[5] who are further comprised of multiple tribes make up the rest of the other major clans of the region. In the state, there are 33 recognized scheduled tribes (ST) and they constitute about 34.41% of the total population.[6] The Nagas and the Kukis are commonly grouped together as Tribals. The lifestyle and eating habits of the different tribes are similar to each other but differs to a certain extent from that of the Meiteis.

Numerous other studies have compared the lipid profile in many health conditions such as diabetes mellitus and hypertension.[7] Other studies compared the lipid profile status between population belonging to urban and rural setting.[8] There are also studies done showing that ethnicity plays an important role in dyslipidemia.[9] However, there are very few studies on comparison of lipid profile levels between different ethnic groups in India. With this background, this study was conducted to compare the lipid profile levels between two ethnic groups of Manipur.

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2. Materials and Methods

2.1. Study design and study population

This retrospective study was conducted in the Department of Biochemistry, Regional Institute of Medical Sciences, Imphal after approval from Research Ethics Board, RIMS. The lipid profile levels of 4575 patients that were tested in the Clinical laboratory, Department of Biochemistry from September 2013 to August 2018 (5 years) were evaluated.

2.2. Inclusion criteria

Meiteis and Tribals of Manipur aged 18 yea rs and above, males and females irrespective of their medical status were included.

2.3. Exclusion criteria

Subjects <18 years or with any incomplete information regarding ethnicity were excluded.

2.4. Data collection

Secondary data were collected from the records of Clinical Biochemistry Laboratory.

2.5. Operational definition

Ethnicity was based on the name and title of the patient.

In this study, dyslipidemia was defined as per the guidelines of The National Cholesterol Education Program (NCEP). Hypercholesterolemia is defined as a serum total cholesterol levels of more than or equal to 200mg/dl. Hypertriglyceridemia implied serum triglyceride levels ≥ 150 mg/dl, High LDL cholesterol - LDL cholesterol levels ≥130 mg/dl and Low HDL cholesterol meant HDL cholesterol levels <40 mg/dl for men and <50 mg/dl for women.[10]

2.6. Statistical analysis

The data collected was analyzed using the SPSS version 21. Numerical variables were analyzed to obtain Mean±SD. Categorical variables were expressed as percentages. Continuous variables were compared by Student's t test and the differences in proportion were analyzed by the chi square test. A p value <0.05 was considered significant.

3. Results

Our study included 4575 adults, out of which 83.9 % were Meiteis and 16.1% were Tribals. There was equal sex distribution in both the study groups.

Table 2 compared the mean±SD of the lipid profile parameters in the different ethnic groups that are being compared. We find that though the Tribals have a higher mean level of TC, TG and LDL-C than that of the Meiteis, the differences were not statistically significant. However, the Tribals had a statistically significant lower HDL-C than the Meiteis.

The study population was divided into six different age groups (Figure 1). A majority (25.2 %) of the total study population belonged to the age-group between 50-59 years.

4. Discussion

As per the NCEP-ATP III criteria, certain important things need to be kept in mind when interpreting the lipid status of different groups of population.[11] Special care need to be given to certain features that are peculiar to different ethnic groups. Meshkini M et al in their study showed that ethnicity was a strong predictor of serum lipids except LDL-C which was significantly determined by dietary fat intake.[12] In a study by Ujcic-Voortman et al, HDL- C levels were lower in Turkish when compared to Moroccan and Dutch population.[13] Our retrospective study found that 52.9% of the total study population had low levels of HDL-C which is consistent with the findings from other studies that showed that Asian Indians have a lower HDL-C level which is a unique pattern of dyslipidemia.[14] African Americans have a more favorable lipid profile when compared with European Americans, yet, African Americans have an increased risk of CVD mortality.[15] Various interethnic differences may play a role in the development and identification of diseases. One of the explanations given for this influence on the levels of HDL-C and triglycerides was the differences in enzyme activities or lipoprotein metabolism.[16]

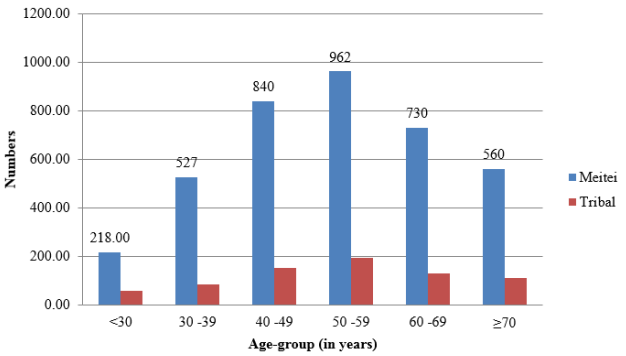

Fig. 1: Distribution of Meitei and Tribals according to age-group

Table 3 showed that the levels of TC, LDL-C and HDL-C were all higher in females with statistically significant differences (p-value of 0.00).

Our study found that the HDL-C levels were significantly lower in the Tribal population than in the Meiteis of Manipur. These two groups belong to the same Mongoloid race.[17] Their traditions and cultural habits are different from each other. The Tribals usually settle in the hill areas and the

Table 1: Age and gender distribution of the study population

Variables	Meitei	Tribal	Combined
Age (years)*	52.51 ± 14.76	52.40 ± 14.40	52.49 ± 14.86
Male, n (%)	1918 (50.0)	375(50.8)	2293 (50.1)
Total, n (%)	3837(83.9)	738(16.1)	4575(100)

* mean±SD

Table 2: Mean±SD of total cholester ol, total triglycerides, LDL-C and HDL-C among different ethnicity

Lipid parameters	Total (N=4575)	Ethnicity		p value
		Meitei (N=3837)	Tribals (N=738)	
TC	181.11 ± 54.71	180.76 ± 53.57	182.91± 60.29	0.329
TG	156.61 ± 105.93	155.96 ± 107.23	159.95 ± 98.92	0.385
LDL	114.85 ± 45.50	114.60 ± 44.14	116.18 ±52.03	0.349
HDL	44.86 ± 16.28	45.08 ± 16.30	43.69 ± 16.16	0.034*

*Significant p-value

Table 3: Mean±SD of lipid parameters according to gender

Variables	Gender	Mean±SD	p-value
TG	Male	155.64 ± 110.93	0.535
	Female	157.58 ± 100.67	
TC	Male	171.85 ± 55.79	0.00**
	Female	190.41 ± 51.97	
LDL-C	Male	108.19 ±44.89	0.00**
	Female	121.55 ± 45.14	
HDL-C	Male	42.62 ± 16.03	0.00**
	Female	47.10 ± 16.22	

**Highly significant p-value

Meiteis in the valley. Despite rice being the staple food of both the groups, their food cooking habits varies to a certain extent. The effect of lifestyle and cultural habits have a stronger influences on metabolic disorders than those from genetic factors.[13] However, with globalization, the lifestyle of these two ethnic groups are almost similar with more Tribals settling down in the valley.

In the present study, the levels of TC and LDL-C were also found to be significantly raised in females and HDL-C significantly lower in males. Majority (13.4%) of our study population consists of females in the age-group of 50-59 years. Estrogen, having hypocholesterolemic effect is decreased in postmenopausal women and hence the increase levels of TC and LDL-C. Elderly females tend to have higher HDL-C level as compared to elderly males.[14] A study conducted by Li Z et al also found that women have significantly higher levels of HDL-C than men.[15]

There are certain limitations in our study. Firstly, secondary data were collected and analyzed in our study. We could not collect the dietary and medical history of the study subjects which could have a profound effect on the lipid parameters. However, the strength of our study was the large number of study subjects.

5. Conclusion

In this study, we found lower HDL-C in Tribals compared to Meiteis of Manipur. A prospective study is recommended to compare the lipid parameters between these two ethnic groups of Manipur taking into consideration various other variables that can affect the lipid profile levels to confirm our findings.

6. Source of funding

None.

7. Conflict of interest

None.

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