A prospective study on risk factors of hyperlipidemia in a tertiary care hospital in Palakkad

Mohammed Shameem, Krishna Thulasi, J, Naveen James, Sachin P.S & D.R.Kiran

INTRODUCTION
Cardiovascular diseases (CVD) are the number one cause of death globally with low and middle income countries being affected disproportionately [1, 2]. Mortality due to CVD was estimated to be around 16 million [3, 4]. Morbidity compared to mortality due to CVD was about 8 times higher [1, 3]. Thus it is clear that survivors of non fatal CVD events pose a greater disease burden. According to projections for year 2030 the largest increase in number of deaths from CVD will occur in South-East Asia region [2]. According to World Health Organization (WHO) the “negative effects of globalization, rapid unplanned urbanization and increasingly sedentary lives” are fuelling the rapid development of the burden of CVD in low and middle income countries [1]. People of lower socio economic positions are often more vulnerable to the rapidly growing CVD epidemic and they tend to fall sick and die earlier [1]. Since the proportion of people with lower socio economic standards is generally higher in low and middle income countries the burden on the families and societies caring for these people is a great challenge. CVD epidemics in these countries will also slow down the social and economic growth as well [1]. A higher proportion of working age people die in India, Brazil and South Africa in contrast to USA and Portugal due to CVD which emphasizes the effect on the family economics [5]. India is estimated to suffer the biggest loss in productive life years due to CVD in the 35-64 year age group [6]. The combined effect of loss of productive years of life and the burden of chronic diseases on the society and the individual will be made worse by the fact that the world is ageing fast and that about 70% of the elderly live in low and middle income countries [7].

Modifiable risk factors for CVD include abnormal lipids, hypertension, diabetes, tobacco smoking, abdominal obesity, general obesity, psychological stress, insufficient physical activity, harmful use of alcohol and unhealthy diet [1, 8, 9]. According to WHO tobacco smoking, unhealthy diet, insufficient physical activity and harmful use of alcohol may act as the primary lifestyle risk factors which give rise to a large proportion of the disease burden [1]. In the multinational INTERHEART study it was estimated that 9 risk factors (smoking, history of diabetes or hypertension, abdominal obesity, psychosocial stress, little fruits and vegetables, no alcohol intake, little exercise, and raised plasma

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Abnormal blood lipids is a major cause of mortality due to CVD [1]. They include raised cholesterol, low high density lipoprotein (HDL) cholesterol, raised low density lipoprotein cholesterol (LDL) and raised triglycerides [10,11,12]. The ratio of total to HDL cholesterol is a predictor of CVD risk [13, 14]. Raised cholesterol is a problem faced by people of both developing and developed nations. Close to one third of ishemic heart disease is attributable to raised cholesterol [1].

Methodology
A Prospective observational study, conducted in Karuna Medical College Vilayodi, Chittur – Palakkad, a 500 bedded multi speciality tertiary care teaching hospital located in rural India. The duration of this study was 6 months from November 2016 to April 2017. The study data were collected based on the inclusion and exclusion criteria,

Inclusion criteria:
- Patients diagnosed with cardiovascular diseases.
- Patients in the age group 30-70 years.
- Patients willing to participate in the study.

Exclusion criteria
- Patients who are not diagnosed with cardiac diseases.
- Pregnant woman and breast feeding mothers are excluded.

Patient informed consent was obtained/ collected from patient to assess the data from patient case sheet and confidentially was strictly maintained with respect to all data obtained from patients included in the study. The sources of data used in this study were medical records, from which data were entered in a structured data collection form. The patients registered at the centre were subjected to routine laboratory test(s). A detailed history was taken including details regarding age, sex, date of diagnosis, education details, social history, past medical and medication history, laboratory reports, medication chart, diet management and diabetes related complications at the enrolment. The aim of the study was to monitor the risk factors of hyperlipidemia among the study population.

RESULTS AND DISCUSSION
There are many risk factors associated with coronary heart disease and stroke. Some risk factors, such as family history, cannot be modified, while other risk factors, like high blood pressure, can be modified with treatment. Normal triglyceride levels vary by age and sex. But if you have heart disease or diabetes you are likely to have high levels. High levels of triglyceride combined with high levels of LDL cholesterol speed up atherosclerosis increasing the risk for heart attack and stroke.

Table 1 Gender distribution

<table>
<thead>
<tr>
<th>Gender</th>
<th>No. of Patients (n =101)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>62</td>
<td>61.4%</td>
</tr>
<tr>
<td>Female</td>
<td>39</td>
<td>38.6%</td>
</tr>
</tbody>
</table>

Among the total number of patient, 61.3% (n=62) of patients were male and 38.6% (n=39) of patients were female. Gender-wise distribution shows that males are more prone to hyperlipidemia.

Fig 1. Age distribution
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The maximum number of patients affected hyperlipidemia are from the age group of 61 – 70 years (53.5%), followed by the age group 51 – 60 years (27.7%), and the age group 41 – 50 years (15.8%) whereas Hari Babu R et al., (2012) shows the maximum number of hyperlipidemic patients from the age group 41-60 years.

Table 2. Social History of the study population

<table>
<thead>
<tr>
<th>S No.</th>
<th>Social History</th>
<th>No. of Patients</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Alcohol only</td>
<td>05</td>
<td>05.0</td>
</tr>
<tr>
<td>2</td>
<td>Smoking only</td>
<td>10</td>
<td>09.9</td>
</tr>
<tr>
<td>3</td>
<td>Alcohol &amp; Smoking</td>
<td>20</td>
<td>19.8</td>
</tr>
<tr>
<td>4</td>
<td>Non-Alcoholic &amp; Non-Smoker</td>
<td>66</td>
<td>65.3</td>
</tr>
</tbody>
</table>

Social history plays a major role in the management of hyperlipidemia. In this study population 65.5% (n=66) of patient were non-alcoholic and non-smoker which include 39 female patients, 19.8% (n=20) of the patient are smoker and drinking any form of alcohol, followed by 9.9% (n=10) of patients are smoker and 5% (n=5) of patients are drinking any form of alcohol.

Table 3. Dietary Habits of the study population

<table>
<thead>
<tr>
<th>Diet</th>
<th>No. of Patients</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetarian Diet</td>
<td>13</td>
<td>12.9</td>
</tr>
<tr>
<td>Mixed Diet</td>
<td>88</td>
<td>87.1</td>
</tr>
</tbody>
</table>

Among the study population, 87.1% (n=88) of the participants followed a mixed diet which included fried fish & chicken, prawn, egg, soups etc. whereas 12.9% (n=13) followed a vegetarian diet including green leafy vegetables, cereals, pappads etc. Mixed diet is a major risk factor for hyperlipidemia.

Table 4. Co-morbid Diseases status

<table>
<thead>
<tr>
<th>Co-morbid Diseases</th>
<th>No. of Patients</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertension</td>
<td>56</td>
<td>55.4</td>
</tr>
<tr>
<td>Diabetes Mellitus</td>
<td>43</td>
<td>42.6</td>
</tr>
<tr>
<td>Stroke</td>
<td>26</td>
<td>25.7</td>
</tr>
<tr>
<td>IHD</td>
<td>42</td>
<td>41.6</td>
</tr>
</tbody>
</table>

Among the study population, 55.4% (n=56) participants were having co-morbid condition of hypertension followed by DM with 42.6% (n=43). Ischemic Heart Diseases and Stroke were the other common co-morbid conditions observed for the study population with 41.6% (n=42) and 25.7% (n=26) respectively.

CONCLUSION

Hyperlipidemia is a major risk factor for cardiovascular disorders. Cardiovascular disorders are the leading cause of death. Hyperlipidemia has high mortality and morbidity because it is the major risk factor for developing stroke and cardiovascular disorders. Hyperlipidemia is very common in upper class society due to resting lifestyle and lack of exercise. Life style counselling improves the lifestyle of the study population which shows more adherences to the therapy.

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CONFLICT OF INTEREST

No conflict of interest.

REFERENCE

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