

ABSTRACT

Title: Detection and comparison of LDL receptor gene Apo B polymorphism in obese and non obese patients with suspected coronary heart disease .

INTRODUCTION

Overweight and obesity are risk factors for type 2 diabetes, heart disease, high blood pressure, and other health problems. An increased risk for ischaemic heart disease in young and middle-aged is high with elevated baseline fasting lipid measurements such as dense LDL-cholesterol with increased LDL level in blood.

The American Diabetes Association (ADA) standards of care for patients with diabetes, obese, hypercholesterolemia and other cardiovascular risk factors with a target high LDL cholesterol to be investigated early and prevention of heart diseases by counselling patients for life style modification [1].

The apolipoprotein B (APOB) is a major protein, plays a central role in lipid metabolism as the main protein component of very low-density lipoprotein (VLDL) and low-density lipoprotein (LDL).

Apo B production also could be tied to cholesterol synthesis. Obese patients are known to synthesize more cholesterol than normal, this, too, could stimulate production of apo B.

Familial hypercholesterolemia (FH) is characterized by severely elevated LDL cholesterol (LDL-C) levels that cause atherosclerotic plaque deposition in arteries and a markedly increased risk of coronary artery disease at an early age. The following factors such as extreme hypercholesterolemia, clinical history of premature coronary heart

disease (CHD) caused by plaque build-up and subsequent plaque rupture in the coronary arteries. findings on physical examination (xanthomas, corneal ,Family medical history ,Presence of a pathogenic variant in a gene known to be associated with FH.[2,3]

The APOB gene mutations analysis can be analysed by using PCR primers and restriction enzymes by PCR amplification technique .

REVIEW LITERATURE

Obesity is the major emerging health problem in young adults and adults (18 to 55 years) [4] worldwide. Early detection and prevention is needed in both developing and developed countries. Body mass index (BMI) is a simple index of weight-for-height that is commonly used to classify overweight and obesity in adults. It is defined as a person's weight in kilograms divided by the square of his height in meters (kg/m^2).

The WHO definition is:

- a BMI greater than or equal to 25 is overweight
- a BMI greater than or equal to 30 is obesity[5].

Obesity has a negative effect on health, being associated with cardiovascular disease, hypertension, and diabetes[6]. Obesity is also associated with adverse changes in plasma lipoprotein metabolism.

Various studies have shown an association between the APOB gene poly morphisms with lipoprotein subfractions (Total Cholesterol-TC, LDL-C, and Triglycerides -TG) and especially LDL(7,8). Asian Indians are prone to develop dyslipidemia and accelerated atherosclerosis. Genetic investigations of the Asian Indian populations established in

other part of the world show a correlation of APOB gene polymorphisms with hyperlipidemia. (9,10)

AIM AND OBJECTIVES

TO detect LDL gene polymorphism in young adult and middle aged adult (18 to 55) obese patients and comparing with non obese patients with suspected coronary heart disease.

Specific Objectives

- Screening and selection of obese and non obese (control) high risk metabolic disease patients with elevated LDL level.
- Detection of LDL gene polymorphism by Molecular Technique-Polymerase Chain Reaction

MATERIALS AND METHODS

Patient selection and Sample collection

Sample size

Total 100 patients. Among 100 patients age group from 18 to 55years, fifty obese patients and fifty non obese patients with Hypertention and Diabetes mellitus,Hyper cholesterolemia attending general medicine outpatient department in Karpaga Vinayaga institute of medical science,Kancheepuram District,Tamil Nadu.

After an informed consent, overnight fasting blood samples (10 ml in Ethylenediamine tetra acetic acid (EDTA) from patients will be taken,5ml for analysis of DNA and 5ml for Lipid profile automated analysis. The genomic DNA will extract from blood using the standard extraction kit method.Genetic analysis of APO B will be done using Polymerase Chain Reaction .

STUDY DESIGN

Observational study

STATISTICAL ANALYSIS

Statistical Package for the Social Sciences (SPSS) software will be used. Mean, SD, %, student 't' test and chi-square test at 5% level of significance.

INCLUSION CRITERIA

- Obese and non obese patients at the age group of 18 to 55 years (young adult and adult) both male and female
- Patients with history of hypertension, diabetes mellitus, hyper cholesterolism .

EXCLUSION CRITERIA

- Age less than 18 years and more than 55 years.
- Emergency care metabolic diseases patients

References

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KEYWORDS: LDL – receptor, Apo B gene, Lipid Profile, Polymorphism, BMI, Obese, Cardio vascular disease.