Research Article

Comparative Analysis of Lipid Profile of Individuals with and Without Caries

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ABSTRACT

The aim of the study is to compare and contrast the lipid profile of healthy patients and patients with dental caries. The objective of the study is to study the various changes that take place in the lipid profile and also study the effect that they have on the caries in the oral cavity. Lipid profile or lipid panel is a panel of blood tests that serves as an initial broad medical screening tool for abnormalities in lipids, such as cholesterol and triglycerides. The food intake plays a major role in normal functioning of our body. It has an effect on physiology and the dental health of the patients. By comparing the lipid profiles of both healthy patients and patients with dental caries we can study the associated role of lipids and cholesterol in dental caries. Dental caries is one of the most common problems to be encountered with in India and the world over. The various causes of dental caries have to be researched and studies so that preventive measures can be taken.

Keywords: Lipid profile, dental caries, oral cavity.

INTRODUCTION

The most prevalent oral infectious diseases are dental caries. The relation between diet and nutrition and oral health and disease can best be described as a synergistic 2-way street. Diet has a local effect on oral health, primarily on the integrity of the teeth. According to the American Dietetic Association "nutrition is an integral component of oral health…'. Oral health and nutrition have a synergistic relation. [2] Many factors in addition to sugars affect the caries process, including the form of food or fluid, the duration of exposure, nutrient composition, sequence of eating, salivary flow, presence of buffers, and oral hygiene.[2]

The food intake plays a major role in normal functioning of our body it has an effect on physiology and the dental health of the patients. most significant effect of nutrition on teeth is the local action of diet in the mouth on the development of dental caries and enamel erosion. There is convincing evidence, collectively from human intervention studies, epidemiological studies, animal studies and experimental studies, for an association between the amount and frequency of free sugars intake and dental caries.[2]

In Most developing low-income countries, the prevalence rate of dental caries is high and more than 90% of caries is untreated. Despite a low mortality rate associated with dental diseases, they have a considerable impact on self-esteem, eating ability, nutrition and health both in childhood and old age. Teeth are important in enabling consumption of a varied diet and in preparing the food for digestion. In modern society, the most important role of teeth is to enhance appearance; facial appearance is very important in determining an individual's integration into society. Teeth also play an important role in speech and communication. [2]

Dental decay also results in tooth loss, which reduces the ability to eat a varied diet. Dental caries occurs due to demineralisation of enamel and dentine (the hard tissues of the teeth) by organic acids formed by bacteria in dental plaque through the anaerobic metabolism of sugars derived from the diet.[2] By comparing the lipid profiles of both healthy individuals and individuals with dental caries we can study the associated role of lipids and cholesterol in dental caries.

MATERIALS AND METHODS

Study Groups

2 study groups comprised of 20 patients in each group aged between 18 to 82 years. The first study group comprised of 12 females and 8 males in the and 9 females and 11 males in the second group. The first study group comprised of subjects with dental caries and the second study group comprised of individuals without dental caries.

Collection of Sample

The fasting blood sample collection was done in the morning from 8-9.30 am. The blood samples were collected and send to the lab so that the serum lipid profile parameter values could be estimated using a semi auto analyzer.

Analysis of Lipid Profile

Cholesterol was calculated using cholesterol oxidase. HDL was calculated using direct measure PEG Polyethylene

Glycol-Modified. Triglycerides was calculated by Enzymatic glycerol phosphate oxidase (GOP) and Peroxidase (POD). LDL, VLDL ratio was calculated using calculation method. SIEMENS Dimension RxL Max Automated Random Access Clinical Chemistry Analyzer was used.

RESULTS AND DISCUSSION

The mean total cholesterol concentration was found to be 178 mg/dl (table 1) for Individuals with dental caries where as for the Individuals without dental caries had 215 mg/dl (table 1) as their mean total cholesterol level. The mean triglyceride level for Individuals with dental caries was 102 mg/dl (table 1) but the mean value for Individuals without dental caries was found to be 134 mg/dl (table 1) . The mean value of HDL in dental caries Individuals 46 mg/dl (table 1) and for normal Individuals it was 54 mg/dl (table 1) . The mean LDL value for dental caries Individuals is 112 mg/dl (table 1) and normal Individuals is 143 mg/dl (table 1) and VLDL value for dental caries Individuals is 21 mg/dl (table 1) and that of normal Individuals is 30mg/dl (table 1). An independent test was done on the data collected.

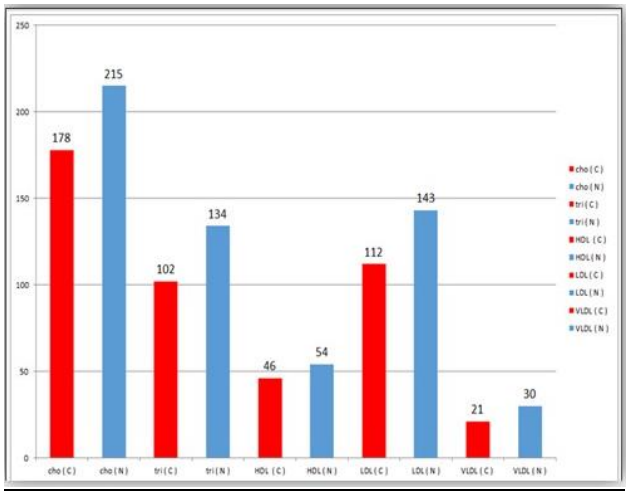

Table 1

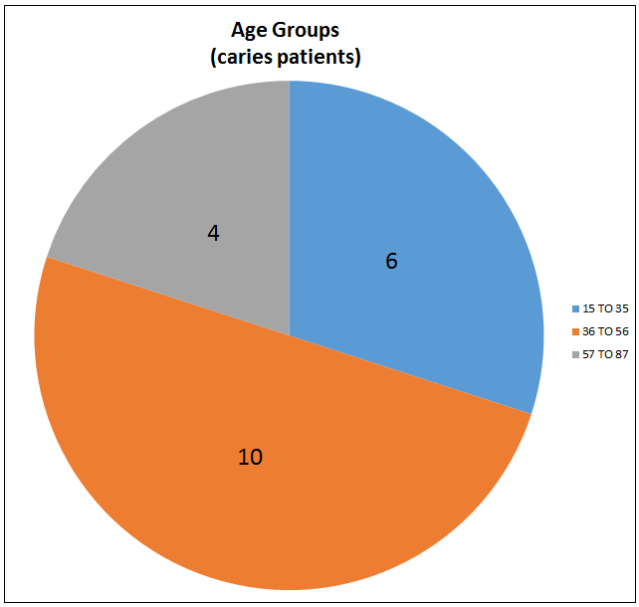

Figure 1

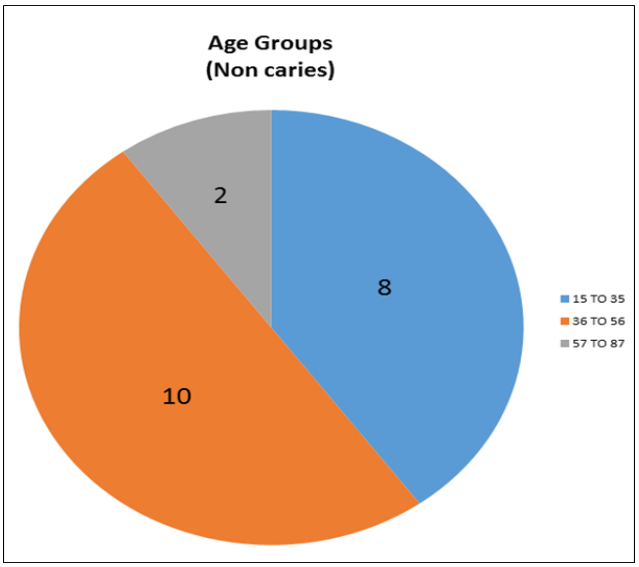

Figure 2

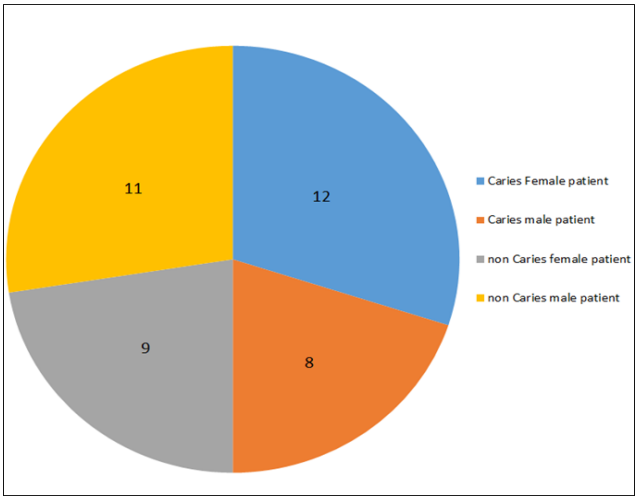

Figure 3

When viewing the data, it showed that individuals who didn't have caries had a higher cholesterol value compared to individual with dental caries. Individuals without caries didn't have any diet restrictions so they could eat what ever they wanted and so there was no balanced diet which would be of the one main reasons for their cholesterol values to be high, there was no significant difference in the lipid profiles of the individuals based on the sex.

The main cause for this result could be because the individuals with dental caries were informed to consume diets with low amounts of fats and lipids in them since these could aggravate their caries even more. Your body is a complex machine. The foods you choose and how often you eat them can affect your teeth and gums too. If you consume too many sugar-filled sodas, sweetened fruit drinks or non-nutritious snacks, you could be at risk for tooth decay. Tooth decay is the single most common chronic disease, but the good news is that it is entirely preventable. Fluoride is an important preventive agent against dental caries and more efforts are needed to ensure that the majority of populations are exposed to

optimum fluoride concentrations in water and that fluoride toothpastes are available.[2]

Research into effective means of delivering optimum exposure to fluoride should continue. It is important to note that many countries that are currently undergoing nutrition transition do not have adequate exposure to fluoride. There is no strong evidence of a clear relationship between oral cleanliness and levels of dental caries192. The Health Education Authority in England concluded that 'although caries cannot develop without the presence of plaque, plaque removal by tooth brushing cannot in itself be advocated for caries prevention. Normal brushing inevitably leaves some plaque in fissures and in other stagnation sites where caries occurs and plaque rapidly begins to reform on cleaned tooth surfaces.[2] While tooth brushing is important for maintaining gingival health, numerous studies have failed to establish a clear association between tooth brushing and caries incidence. However, brushing with a fluoride toothpaste is the most important method for delivering fluoride to the tooth surface. [2]

What people eat is affected by many complex variables including socioeconomic status, the cost of food, the industrialization of agriculture, the location of food outlets, and the effects of advertising and marketing ..The poor and the disadvantaged have been described as being disproportionately affected by diet-related diseases, such as caries, and advocates suggest they could benefit from government intervention to decrease availability of sweetened beverages by imposing a tax on such foods. [3] In line with the dietary goals for the prevention of all major diet-related chronic diseases, a diet that is high in fruits, vegetables and wholegrain starchy foods and low in free sugars and fat is likely to benefit many aspects of oral health including prevention of caries.[4]

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