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LIPID PROFILE IN CHRONIC RENAL DISEASE

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ABSTRACT

The present study is concerned with the evaluation of lipid profile in patients with chronic renal disease (CRD). The study included 60 patients with recognized CRD, while the other 60 were patients with no evidence of CRD (healthy controls). All were evaluated for fasting lipid profile. Blood samples were collected and analysis of the levels of lipid profile was carried out using a kit method on Microlab 300. The results revealed a significant increase level of serum triglycerides, LDL and cholesterol whereas, decreased HDL level in patients with chronic renal disease as compared to the healthy controls. It is concluded that prompt assessment of the chronic renal disease patients for unfavorable lipid profile as early preventive measure for development of cardiovascular diseases and to impede the progression of chronic renal disease

Keywords: Chronic renal disease, Lipid Profile, Microlab 300

INTRODUCTION

Chronic renal disease (CRD) is rapidly developing as a significant health concern. The Chronic renal disease cases are highly susceptible to infections because of overpowering uremia, which is destroys immunity and increases the risk of microbial

attack. Chronic renal disease cases have risk for developing cardiovascular disease with a higher prevalence of dyslipidaemias (or hyperlipidaemia) than the healthy individuals **[1, 2]**. In another study targeted population of Sindh was reported with wide spread prevalence of hyperlipidemia and hypertension as a risk factor for cardiovascular diseases, and higher rate mortality due to these cardiovascular pathologies **[3]**. These facts provoked us to conduct this study on chronic renal disease patients, to investigate the risk of cardiovascular incident in CRD **[3]**. Depending on the target population, the cause of renal disease, the degree of reduction in glomerular filtration rate (GFR) and the type of lipid abnormalities and the cardiovascular disease (CVD) risk varies. In CVD cases, the occurrence of CRD is associated with an increased risk of recurrent cardiovascular diseases [**4]**. Moreover, most patients with CRD before developing renal failure die from CVD **[5]**. Even cases with mild renal insufficiency found to be associated with increased risk of cardiovascular diseases **[6, 7]**. In addition, subjects on dialysis reported with 10 to 20 times more CVD mortality rates than the healthy individuals [**8]**. The facts shows the significance of screening in all cases of CRD for hyperlipidaemia and manage them properly as a very high risk cases of CVD [**2]**.

Hyperlipidaemia itself or as a co-morbidity with hypertension can leads to deterioration in renal physiology. Hyperlipidaemia is well known as an etiology for glomerulo-sclerosis and are frequent renal pathology [**9, 10]**. Further, increased risk of ischemic cardiac problems, chronic rejection, altered graft function and mortality were observed in post-transplant hyperlipidaemia cases **[11, 12]**. Several studies reported dyslipidemias as high risk factors for developing renal failure **[9, 10, 13, 14]**. Dyslipidemias develops following altered renal physiology **[14]**. Usual findings in unfavorable lipid profile are an elevated level of triglycerides and low-density lipoprotein (LDL), a decreased level of high-density lipoprotein (HDL) and increased oxidation of LDL **[15**].

MATERIALS AND METHODS

The case group was selected from patients admitted or visiting the Urology unit at LUMHS City and Jamshoro Hospital for dialysis or medical treatment. Ten mL blood samples from CRD and healthy control subjects were collected and serum was separated and immediately levels of the lipid profile were analyzed using a kit method on Microlab 300.

Excel and SPSS.17 were used for data analysis.

RESULTS

This study reported a high incidence of dyslipidemia in patient with chronic renal diseases. In patients with chronic renal disease significantly increased Cholesterol, Triglyceride and LDL levels whereas decreased levels of HDL as compared to the healthy controls. **(Table 1 and Figure 1)**.

Table 1: Lipid profile in Patients with Chronic renal disease and healthy controls

Lipid profile	CRD Patients	Controls
Cholesterol (mg\dL)	105.3±22.5	67.5±6.5
Triglyceride (mg\dL)	75.04±21.1	32.02±11.1
LDL (mg\dL)	82.4±11.2	50.1±9.3
HDL(mg\dL)	19.2±5.4	30.2±5.1

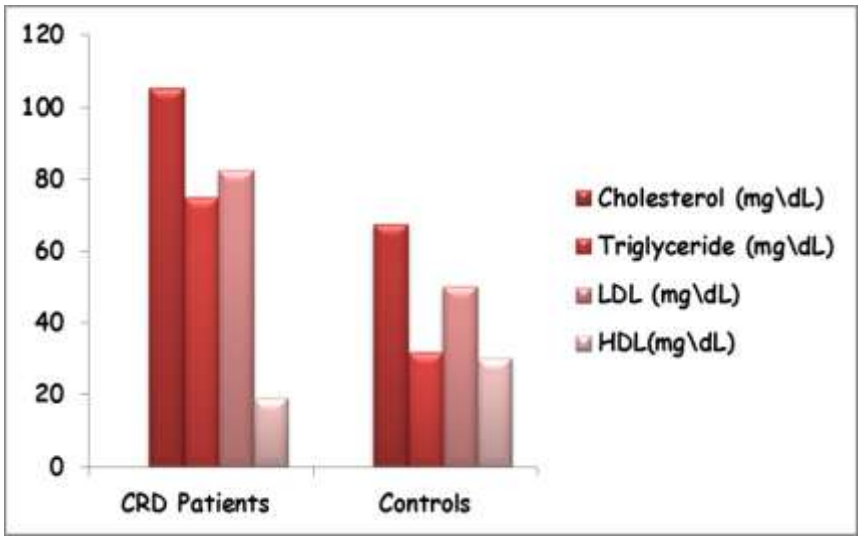

Figure 1: Lipid profile in Patients with Chronic renal disease and healthy controls

DISCUSSION

Cholesterol is most essential biometabolite contributes to health and quality of life as it maintains cellular integrity in human body. It is vital structural and function of body, especially of the myelin sheath, which insulate the axon from neuroelectrical conduction. It also contributes bile acids production in liver which are important for digestion of lipid and other wastes of the body. Furthermore, it contributes for the human immune system [**16]**. LDL carries cholesterol from the hepatic system to tissues. Its exaggeration can lead to harmful deposition of LDL. Increasing LDL buildup can the risk for atherosclerosis **[17, 18]**. Studies documented that HDL provide extra energy and more importantly it prevents arterial infractions. HDL counter acts LDL. HDL has a vital function as it takes the

cholesterol away from the tissues and back to the hepatic system. **[19, 20]**. Most of the lipids in the body are in form of triglycerides. Lipids can be formed in the body upon requirement from other biochemical such as glucose. Stored lipids contribute for the energy and hormone production in the body **[21-23]**. Chronic renal disease, a global health concern and is the major cause of morbidity and mortality in the developing nations in general and Pakistan in particular. Another study documented a general unfavorable profile of serum lipids in population of Sindh. Specific correlations were observed in chronic renal disease patients. The worst lipid profile was observed in CRD patients with high risk of CVD **[3]**.

Cases with CRD are at high risk for CVD and cerebral ischemic diseases. Moreover mortality rate of CRD patients are more frequently due to CVD than End stage renal disease. In several studies CRD is reported with high incidence of atherosclerosis and cardiovascular morbidity or mortality. In patients with CRF, many factors play part for the development of dyslipidemias which leads to premature atherosclerosis and cardiovascular disorder **[17]**. Chronic renal diseases mainly affect the metabolism of triglyceride and HDL [**18]**. Chronic renal disease patients with and without dialysis are on increased risk of development of unfavorable lipid profile, characterized by elevated triglycerides, elevated LDL and lowered HDL levels. Dialysis can effectively help to decrease the level of nitrogenous waste products but fails contribute for better lipid profile developed as result of CRD. Moreover, the patients on dialysis are still at risk to develop renal failure due to unclear harmful metabolites.

This study revealed that recommending lipid lowering therapies in chronic renal disease patients with hyperlipidemias for decreasing incidence of cardiovascular disease could help and will also preserve kidney physiology. A time to time follow up of lipid profile and lipoproteins can decrease the morbidity and mortality rate and will also help to improve the quality of life of CRD patients **[19]**.

It has been documented that hyperlipidaemia cause renal damage and leads to the renal failure **[24]**. Several studies reported that lipid abnormalities are connected with a deterioration of renal physiology. It is unclear that either dyslipidemias causes the reduction in renal function or abnormal renal function or hyperproteinuria leads to unfavorable lipid profile and renal physiology [**25]**.

In the present study results described significant hypercholesterolemia,

hypertriglyceridemia and hyper-LDL and hypo-HDL levels in patients with chronic renal disease as compared to the healthy controls. It is documented that there is a high risk of Cardio Vascular Disease even in the preliminary stages of chronic renal disease. This study emphasizes the need for prompt assessment of the chronic renal disease patients for unfavorable lipid profile as early preventive measure for development of cardiovascular diseases and to impede the progression of chronic renal disease.

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