International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2022): 7.942

The Value of Blood Urea Nitrogen in the Prediction of Risk of Cardiovascular Disease

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Abstract: ***Blood urea nitrogen is a test that measure the amount of urea nitrogen found in blood. The liver produces urea as a waste product of the digestion of protein. Studies have demonstrated that higher BUN level is associated with adverse outcome in patient with cardiac problems***

Keywords: Blood urea nitrogen, cardiovascular diseases, high density lipoprotein, triglycerides, very low density lipoprotein

1. Introduction

Blood urea nitrogen (BUN) is a medical test that measures the amount of urea nitrogen found in blood .The liver produces urea as a waste product of the digestion of protein. Urea is made in liver and passed out of body in the urine. A BUN test is done to see how well the kidney is working. Urea is formed by the liver and carried by the blood to the kidneys cause BUN to accumulate in the blood as glomerular filtration rate (GFR) drops. BUN is a marker of neurohumoral activity. Cardiovascular disease (CVD)is a global public health problem associated with adverse outcomes with economic development and the change of lifestyle, the incidence of CVD is rising rapidly. CVD is a general term for conditions affecting the heart or blood vessels. It's usually associated with a buildup of fatty deposits inside the arteries and an increased risk of blood clots. It can also be associated with damage to arteries in organ such as brain, heart, kidney and eyes and renal function, and thus, can reflect the **pathophysiological** process of CVD. Studies have demonstrated that a higher BUN level is associated with adverse outcomes in patients with cardiac problems.

2. Methods

Blood samples collected in cardiac medicine department and separated to serum by standard methods. Determination of blood Total cholesterol(TC), triglycerides(TG), high density lipoprotein (HDL) -cholesterol, low density lipoprotein (LDL)-cholesterol, serum creatinine and serum urea were performed using calorimetric methods, Very low density lipoprotein (VLDL)- cholesterol was determined following formula VLDL-cholesterol = TG÷5

3. Result

Blood urea nitrogen found to be increased in patient with CVD when compared with healthy controls. Total cholesterol, VLDL-cholesterol, LDL -cholesterol and Triglycerides of patient with CVD in both genders found to be significantly is found to be decreased. The serum total cholesterol levels were between 210-345mg/dl (285 ± 40.57) in patient with CVD and 130-193mg/dl (153±22) in normal healthy control group.

The serum HDL cholesterol levels were between 23-38.9 mg/dl (28.53 ± 13.93) in patient with CVD and controls. HDL- cholesterol of patients found to be decreased .The serum LDL cholesterol levels were between 144-260.3mg/dl (178±22.2) in patient with CVD and 72-136.4mg/dl (107±19.49) in normal healthy control groups. The serum VLDL-cholesterol levels were between 35.3-59mg/dl (39.2±4.01) in patient with CVD and 23-33.1mg/dl (28.5±2.6) in normal healthy control groups.

The serum triglyceride levels were between 86-280mg/dl (191.6±27.09) in patient with CVD and 100-146mg/dl (132.9±7.34) in normal healthy control groups. The serum urea levels were between 22-86.9 mg/dl (63.1± 11.13) in patient with CVD and 25-44.9mg/dl (39.9±3.49) in normal healthy control groups. The blood urea nitrogen levels were between 10-40.6mg/dl(29.45±5.2) in patient with CVD and 11.6-20.9mg/dl (18.6±1.63) in normal healthy control groups.

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The serum creatinine levels were between 1.07-4.02mg/dl (2.18±0.73) in patient with CVD and 0. 92-1.18mg/dl (1.08±0.05) in normal healthy control groups.

4. Conclusion

The biomarker potential of using various lipids fractions for predicting risk of cardiovascular disease (CVD) is controversial. We therefore compared the lipid profiles, including serum total cholesterol (TC), low-density lipoprotein cholesterol (LDL), high-density lipoprotein cholesterol (HDL) and triglycerides (TG), in CVD patients. The level of HDL in serum is inversely related to the incidence of CVD. When the HDL cholesterol is decreased with increase in TG, leads to the chance of heart disease.

In the study we concluded that Blood urea_nitrogen_(BUN) is a risk factor for CVD.

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