

High lipemic serum: a case report

YP Paudel,¹ AK Kasyap,² A Shrestha¹ and R Baral³

¹Department of Biochemistry, ²Department of Medicine, ³Department of Pathology, KIST Medical College, Imadol, Lalitpur, Nepal

Corresponding author: Yadab Prasad Paudel, Lecturer and In-Charge, Department of Biochemistry, Kist Medical College, Imadol, Lalitpur, Nepal; e-mail: yppaudel@gmail.com

ABSTRACT

Hypertriglyceridemia is the condition in which the triglyceride level in the blood is elevated. Triglycerides (TGs) are the major source of energy stored in the body. In this case a 66 years old gentleman has consumed pork with alcohol. A milky white serum was observed due to high triglyceride level. However, he had no other lipid disorders. The increased triglyceride level was purely of dietary origin last night. The subject was perfectly fine with lipid profile and other biochemical investigations performed one week later.

Keywords: Alcohol, triglyceride, milky white serum, pork meat.

Hypertriglyceridemia is defined as an abnormal concentration of triglyceride in the blood. According to the National Cholesterol Education Program Adult Treatment Panel (NCEP ATP III) guidelines, a normal triglyceride level is < 150 mg/dl.¹ Hypertriglyceridemia may be primary or secondary in nature. Primary hypertriglyceridemia is the result of various genetic defects leading to disordered triglyceride metabolism. Secondary causes are acquired causes, such as high fat diet, obesity, diabetes, hypothyroidism and certain medications.²

Triglyceride in the body serves as depots of energy. The primary sources of TG is the fat consumed in the diet.³ When energy is required TGs are broken into its components glycerol and fatty acids which are released into the blood. TGs do not travel free in the blood stream but transported in particles called lipoproteins which also contain cholesterol, proteins and phospho- lipids. Certain lipoproteins have higher triglyceride content and are called triglyceride-rich lipoproteins, e.g., Chylomicrons and Very Low Density Lipoproteins (VLDL). These TG rich lipoproteins transport TG and Cholesterol throughout the circulation. TGs are also present in Low density lipoproteins (LDL) and High-Density Lipoproteins (HDL) but in much smaller quantities.⁴

Hypertriglyceridemia is frequently associated with other lipid abnormalities and the metabolic syndrome (abdominal obesity, insulin resistance, low high-density lipoprotein (HDL), high triglyceride, and hypertension), which are linked to coronary artery disease.⁵

CASE REPORT

66 years old gentleman presented with complaints of joint pain was referred to medical Out Patient Department (OPD) for management of diabetes.

He was hypertensive since 4 years and on amlodipine 5 mg OD. He had history of daily consumption of alcohol and was a chronic smoker (6-8 cigarettes per day) since last 12 years.

His initial assessment revealed height to be 170 cm and weight 82 kg (BMI =28.37).

His general and systemic examinations were insignificant.

He was advised to have blood sugar fasting and postprandial, lipid profile and liver function tests. When the sample was taken and centrifuged, the serum extracted was milky white. In this serum, test for triglyceride was performed which showed 18.5 mmol/L (1621.38 mg/dl). Since the serum was completely opaque and milky white (Fig-1), other tests could not be performed. So the patient was called and enquired about his dietary habit, especially of the previous night before he came to give blood sample. After repeated enquiry he said he had consumed approximately 500 ml of alcohol (whisky) and about two kilogram of fried pork. This gave a clue that why the serum was milky white and the level of triglyceride was high.



Fig. 1. Lipemic serum

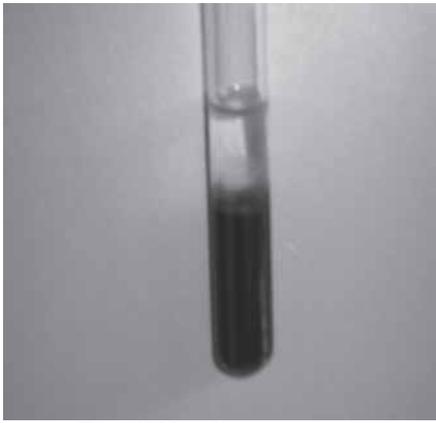


Fig. 2. Non-lipemic serum

He was then asked to repeat the lipid profile after a week of normal meal and abstinence from alcohol.

After a week, the sample had normal straw colored serum (Fig-2) and the findings were the following- Fasting blood sugar 6.6 mmol/L (119 mg/dl), Urea 4.0 mmol/L (24 mg/dl), Creatinine 79.5 μ mol/L (0.89 mg/dl), Cholesterol 4.5 mmol/L (174mg/dl), HDL 1.2 mmol/L (46.2mg/dl), LDL 2.4 mmol/L (92.8 mg/dl), Triglyceride 4.2 mmol/L (162 mg/dl) and Hb 14.0 gm/dl.

DISCUSSION

TGs are main storage form of energy, endogenously produced in liver and exogenously from diet. When TGs level is excess in blood, then they are deposited into the fatty tissues. These are part of lipid profile and can be performed to assess the risk of coronary and vascular disease. There are some interfering factors like ingestion of fatty meals, drugs (e.g., Cholestyramine, estrogens and oral contraceptives etc.), alcohol and pregnancy which may cause elevated TG level. Some drugs which may cause decreased level of TGs are Ascorbic acid, asparaginase, colestipol and clofibrate.⁶

The National Cholesterol Education Program (NCEP) Adult Treatment Panel III (ATP III) defined elevated triglycerides as 150 mg/dL and higher. Triglycerides increase gradually in men until about 50 years of age and then decline slightly. In women, they continue to increase with age. Mild hypertriglyceridemia (triglycerides >150 mg/dL) is slightly more prevalent in men beginning at age 30 years and women starting at age 60 years. Hypertriglyceridemia is usually asymptomatic until triglycerides are greater than 1000-2000 mg/dL.⁴

In addition, patients with a triglyceride level of 1000 mg/dL or higher should be placed on a very low-fat diet

(i.e., 15 percent or less of caloric intake). Normalization of triglyceride level is rarely achieved in patients with severe hypertriglyceridemia (i.e., triglyceride levels above 2,000 mg/dL (22.60 mmol/L). Initiating a combination of fibrates, niacin and or fish oil to lower triglyceride levels to below 500 mg/dL is the primary goal.⁷

The treatment of hypertriglyceridemia begins with Therapeutic Lifestyle Changes (TLC). Specifically, a low fat, carbohydrate- controlled diet should be adopted. Saturated fat should not make up more than 7% of total daily calories, carbohydrates should be restricted to 50.0% to 60.0% of daily calories, and simple sugars like sucrose should be avoided. Alcohol should be greatly reduced or stopped altogether, along with smoking cessation if indicated. Discontinuation of any offending medications should be considered as well.¹

For this test, the patient should fast for 12 to 14 hours before the test but the water intake is permitted and patient should not drink alcohol for 24 hours or any fatty diet before the test .⁶

Since hypertriglyceridemia can purely be of dietary origin as in above illustrated case, detail clinical history and dietary consumption of the subjects need to be thoroughly assessed prior to the test. Positive diagnosis of hypertriglyceridemia as in above case may have serious implications if instantly treated as a case of hypertriglyceridemia.

REFERENCES

1. National Cholesterol Education Program. Executive Summary of the Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III). *J Amer Med Assoc* 2001; 285: 2486-97.
2. Rade NP, Daniel TL. Hypertriglyceridemia. *J Amer Board Family Med* 2006; 19: 310-16.
3. Fodor G, Kotrec M. Hypertriglyceridemia. *Canadian J Diagn* 2004; 21: 87-93.
4. Citkowitz E. Hypertryglyceridemia. For further information visit <http://www.emedicine.com/med/topic2921.htm>, 28 May 2007.
5. Ford ES, Giles WH, Dietz WH. Prevalence of the metabolic syndrome among US adults: Findings from the third national health and nutrition examination survey. *J Amer Med Assoc* 2002; 287: 356-59.
6. Pagana KD, Pagana TJ. (Ed). *Mosby's Diagnostic and laboratory test reference*. Seventh Edition, Elsevier Mosby 2005: 937-8.
7. Oh RC, Lanier JB. Management of hypertriglyceridemia. *Amer J Fam Physician* 2007; 75: 1365-71.