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Case Report

A myriad of fat

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ABSTRACT

Hypertriglyceridemia is a familiar issue a physician and his patients face. Writing a prescription for the same may be effortless, but without a thorough evaluation, we may miss out on a number of concealed diseases. Treating the underling secondary disease, avoids an unnecessary pill burden, eventually decreasing healthcare costs also. Unearthing prevalent diseases like diabetes mellitus (DM) is rewarding in its own way and pays dividends multifold. The physician must be aware that secondary causes of hypertriglyceridemia manifesting as lipemia can commonly be seen in disorders like obesity, primary hypothyroidism and DM. The studied patient presented to us obviously shaken with a long history of weight gain and lipemia during a blood draw. She turned out to have the commonest risk factors for hypertriglyceridemia - Obesity, hypothyroidism and DM causing the alarming lipemia. It was an oddly interesting presenting symptom of hypertriglyceridemia, obesity, hypothyroidism and DM which resulted in an appropriate and prompt management of her underlying diseases.

Keywords: Diabetes mellitus, Hypertriglyceridemia, Hypothyroidism, Lipemia

INTRODUCTION

Very high hypertriglyceridemia (serum triglycerides >500mg/dL) (classification of hypertriglyceridemia is mentioned in Table 1) can have grave repercussions on the body.[1,2] It is most frequently associated with a premature coronary artery disease and acute pancreatitis. These diagnoses therefore warrant evaluation and aggressive interventions to reduce the cardiovascular risk. In a study among patients with recent type 2 diabetes mellitus, 10.2% had high triglycerides and other authors have also mentioned their association.[3-6] Hypothyroidism also has a strong association with high triglyceride levels as mentioned in various studies.[7-9] The studied patient had presented with lipemia which is understandably a rare initial presentation of hypertriglyceridemia, obesity, hypothyroidism and DM which resulted in a swift and apt tackling of her underlying diseases.

CASE REPORT

This 32-year-old lady presented to the outpatient department giving a history of noticing 'white blood' drawn from patient. While she was undergoing a routine medical check-up, she noticed a white opaque fluid being drawn during a blood draw. Patient did not have any symptoms as such apart from her lethargy and weight gain. On examination, she was overweight with a BMI of 24kg/m^2 apart from an otherwise normal examination. Authors advised her to undergo another set of blood investigations to evaluate the cause. On her review visit with us, her blood tests revealed the following and is tabulated in Table 2. Patient was found to have a serum triglyceride level of more than 4000mg/dL and an elevated total cholesterol level. Looking for the cause of hypertriglyceridemia, blood glucose levels and thyroid functions were checked. The investigations confirmed that she was a newly detected case of diabetes mellitus

and an overt hypothyroid. Treatment for each of them were initiated and her serum triglyceride and cholesterol levels eventually drastically reduced after a three-month period.

Table 1: Classification of Hypertriglyceridemia: National Cholesterol Education Program-Adult treatment panel III and The Endocrine Society.

Classificatin	Values
National Cholesterol Education Program-Adult treatment panel III	
Normal	<150mg/dL
Borderline high	150-199mg/dL
High	200-499mg/dL
Very high	≥500mg/dL
The Endocrine Society	
Normal	150mg/dl
Mild hypertriglyceridemia	150-199mg/dl
Moderate hypertriglyceridemia	200-999mg/dl
Severe hypertriglyceridemia	1000-1999mg/dl
Very severe hypertriglyceridemia	≥2000mg/dL

Table 2: Laboratory data of studied patient.

Investigations	Values
Fasting blood glucose (FBG)	236mg/dL
HBA1c	7.3%
Serum albumin	4.3mg/dL
Serum creatinine	0.5mg/dL
Serum triglycerides	4318mg/dL
Total cholesterol	953mg/dL
HDL cholesterol	58mg/dL
LDL cholesterol	94mg/dL
Free triiodothyronine (fT3)	12pmol/L
Free thyroxine (fT4)	8.1pmol/L
Thyroid stimulating hormone (TSH)	15.3mU/L

DISCUSSION

Hypertriglyceridemia is a notorious manifestation of various secondary causes. This occurrence of secondary hypertriglyceridemia is often seen in the setting of uncontrolled blood glucose or hypothyroidism. Very high hypertriglyceridemia is rarely seen in clinical practice. The various causes of primary and secondary hypertriglyceridemia are listed in Table 3. It is unusual but a very treatable manifestation of a concealed disorder. A highly deranged serum triglyceride level must trigger an attempt to evaluate its root cause and not blindly follow a knee-jerk treatment stride. Not only did it significantly reduce her morbidity and healthcare costs, but in addition it also unearthed a familiar camouflaged culprit.

The morphological appearance of 'white blood' has been rarely reported in the literature. It can inadvertently be mistaken for other body fluids and the physician must be well aware of this finding.

Table 3: Causes of hypertriglyceridemia.

Causes of hypertriglyceridemia
Primary/familial causes (Friedrickson classification)
Type I -familial chylomicronemia
Type IIB - familial combined hyperlipoproteinemia
Type IV - familial hypertriglyceridemia
Type V - primary mixed hyperlipdemia
Secondary causes
Obesity
Metabolic syndrome
Diet containing high fat/diet containing high glycemic index
Insufficient physical activity
Alcohol consumption
Type 2 diabetes mellitus
Renal disease
Uremia
Glomerulonephritis
Nephrotic syndrome
Miscellaneous
Pregnancy
Paraproteinemia
Autoimmune disorders
Hypothyroidism
Systemic lupus erythematosus
Medications
Corticosteroids
Estrogen
Tamoxifen
Isotretinoin
Cyclophosphamide
Non-cardioselective beta-blockers
Thiazide diuretics
Anti-retroviral regimens
Bile acid-binding resins
Phenothiazines

Lipemic blood is ordinarily seen in primary familial hypertriglyceridemia but can also be rarely present in secondary causes additionally.

It can predispose to pancreatitis and a premature coronary artery disease if left unevaluated and/ or untreated. The manifestations of hypertriglyceridemia are given in Table 4.

It may herald the diagnosis of diabetes mellitus or hypothyroidism commonly or other secondary disorders. A macroscopic appearance of 'white blood' must put a seed of thought into the physician's mind regarding the possibility of a hypertriglyceride state.

The evaluation of hypertriglyceridemia should initially focus on ruling out familial causes of hypertriglyceridemia (enquire regarding family history of dyslipidemia or a personal and/or family history of premature coronary artery disease). Furthermore, likely secondary causes should be attempted to be excluded.

The physician should bear in mind the possibility of both a secondary as well as a familial form of hypertriglyceridemia co-existing if the serum triglyceride levels are >2000mg/dL.[10]

Table 4: Effects of hypertriglyceridemia.

Effects of hypertriglyceridemia
Atherosclerosis
Premature coronary artery disease
Acute pancreatitis
Eruptive xanthomas
Lipemia retinalis
Chylomicronemia syndrome

CONCLUSION

This case demonstrates the unusual presentation of hypertriglyceridemia. Obesity, overt hypothyroidism and diabetes mellitus are all specific risk factors for lipemic blood and secondary hypertriglyceridemia. Evaluation and necessary management strides need to be taken to tackle this iceberg. Treating secondary causes reduces healthcare costs and not to mention avoids an unnecessary pill burden.

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