Severe Hypertriglyceridemia-induced Acute Pancreatitis: Successful Management by Plasmapheresis

Sir,

This presentation illustrates case of a 44-year-old female with uncontrolled Type II diabetes mellitus for 6 years, who presented to the emergency room with upper abdominal pain and vomiting of 3 days' duration. Clinical examination revealed stable vitals with epigastric tenderness and guarding per abdomen. Random blood sugar was 494 mg/dl and urine ketones were negative. She was started on insulin infusion and other supportive management. The blood was highly lipemic [Figure 1] with serum triglyceride (TG) level of 6800 mg/dl, total cholesterol of 613 mg/dl, low-density lipoprotein cholesterol of 137 mg/dl, and high-density lipoprotein cholesterol of 53 mg/dl. Serum amylase was 871 U/L, lipase was 796 U/L, and renal and liver function tests were normal. Her ultrasound abdomen showed bulky pancreas with fat stranding. Contrast-enhanced computed tomography (CT) abdomen was suggestive of acute pancreatitis (AP) with modified CT severity score

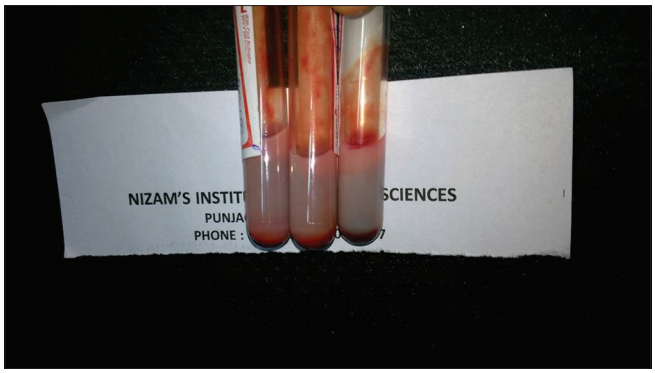

Figure 1: Image showing highly lipemic serum

of >6. She had no history of alcohol use, drug intake, gallstones or pancreatitis. The patient was managed as severe hypertriglyceridemia (SHTG)-induced AP (revised Atlanta classification 2012). She was kept nil per oral, given intravenous fluids along with other supportive management. However, abdominal pain persisted with persistently high TG levels, for which she was started on plasmapheresis. Her TG after plasmapheresis decreased to 1158 mg/dl and 761 mg/dl after the 1st and 2nd session, respectively. She reported clinical improvement after two sessions of plasmapheresis. She was started on oral statins and fenofibrate. Insulin infusion was switched over to intermittent short-acting insulin. She was discharged in a stable condition on statins, fibrate, and insulin. On follow-up, her serum TG decreased to 289 mg/dl after 2 weeks [Figure 2].

Hypertriglyceridemia is classified as mild (150–199 mg/dl), moderate (200–999 mg/dl), severe (1000–1999 mg/dl), and very severe (>2000 mg/dl). SHTG with serum TG concentrations >1000 mg/dl is a risk factor for AP.[1] The exact pathophysiology of hypertriglyceridemia-induced AP is not clear. A proposed mechanism is hydrolysis of TG by pancreatic lipase, leading to accumulation of high concentrations free fatty acids and chylomicrons which can produce acinar cell injury and capillary plugging causing ischemia and acidosis activating trypsinogen and AP.[2] Conventional management of hypertriglyceridemia includes dietary fat restriction and pharmacotherapy which are time-consuming. Furthermore, in the patients with severe AP (SAP), urgent lowering of TG is necessary to prevent disease complications and oral pharmacological therapy may not always be feasible.[3]

Plasmapheresis is an effective therapeutic option for hypertriglyceridemia-induced SAP with rapid reduction of serum TG and can be considered early in the management. There are few case studies reports published in the literature.[4-7] The absolute indications of plasmapheresis in patients with hypertriglyceridemia are (a) patient refractory to nutritional and pharmacological approaches, (b) serum TG exceed 1000 mg/dl, (c) worsening inflammation and organ dysfunction.[8] The relative indications

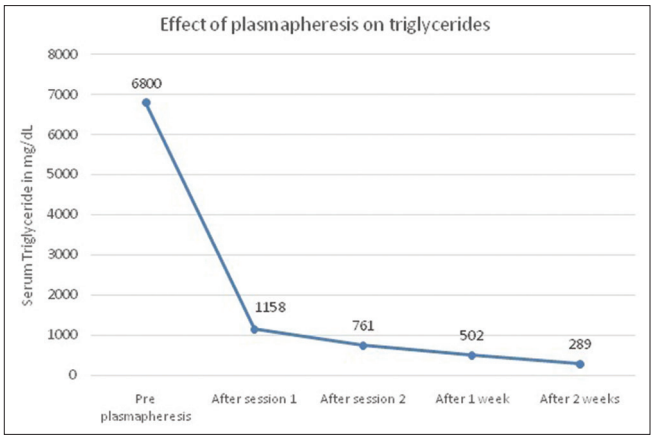

Figure 2: Graphical representation of serum triglyceride levels after plasmapheresis

include (a) serum lipase 3 times the upper limit of normal, (b) severe hypocalcemia, and (c) lactic acidosis. Our patient had TG >1000 with AP refractory to treatment with lipase >3 times.

The beneficial effect of plasmapheresis is believed to be because of rapid decrease in TG levels; however, removal of excessive proteases from the plasma which are key enzymes in inflammation and replacement of consumed protease inhibitors might be an additional benefit.[3] Two sessions of plasmapheresis costs about 35,000 in our center and it is a rather expensive treatment option and not available in all centers. This might therefore limit its use.

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Conflicts of interest

There are no conflicts of interest.

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