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Worsening Hypertriglyceridemia in an Adolescent Female with Type 1 Diabetes Mellitus despite Improvement in Glucose Control

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Background: Chylomicronemia syndrome with severe hypertriglyceridemia may be the result of genetic abnormalities, aggravating factors or a combination of both.

Clinical case: The patient is a 17-year-old overweight female (BMI of 90th percentile) with a history of type 1 diabetes mellitus (T1D) for eleven years, PCOS, vitamin D deficiency and hypertriglyceridemia. Her father has a history of hypertriglyceridemia that improves with dietary modifications. Her mother and younger sister (who also has T1D) have normal serum lipid levels. Although the patient has a history of poor compliance (HbA1c ranging between 9-11%), glucose control had been improving (HbA1c most recently between 8.1-8.6%). Her serum triglyceride level had been slightly abnormal for the past few years (200-300 mg/dL;

normal range: < 90 mg/dL) and had increased to 413 mg/dL, despite the improvement in glucose control. She subsequently started taking omega-3, 1000 mg daily. At that time, she also began treatment with combined oral contraceptives (COCs) for PCOS. The serum triglyceride level three months later increased to 1,322 mg/dL. She consistently denied alcohol or recreational drug use. The omega-3 dose was increased to 4 gm daily. Atorvastatin 10 mg daily was also started and COCs were discontinued. Three weeks later, a repeat triglyceride level was found to be 2,813 mg/dL. Fenofibrate 160 mg daily was added. Atorvastatin was discontinued and she began a low-fat diet. After further questioning, patient admitted to heavy alcohol intake during the weekends. She reported specifically drinking grain alcohols to avoid carbohydrates. Three weeks after cessation of alcohol, her triglyceride level declined to 302 mg/dL.

Clinical lesson: This patient had multiple risk factors for chylomicronemia syndrome including poorly controlled T1D, overweight and estrogen containing contraceptive therapy. Although alcohol abuse was a problem at the time hypertriglyceridemia worsened, the history of excessive alcohol consumption was not given until many other treatments had been initiated.

This case highlights the importance of screening for alcohol abuse in patients with hypertriglyceridemia who do not respond to standard therapies, especially in adolescent patients who may be reticent about discussing alcohol abuse with their physicians.

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