Lactescent Plasma in Acute Leukemia
Van Leung-Pineda1 and Dennis J. Dietzen1,2*

CASE DESCRIPTION
A 15-year-old white girl presented with headaches and night sweats of 2 weeks' duration. Her platelet count was 50 × 10^9/μL (50 × 10^9/L) [reference interval, 140–440 × 10^9/μL (140–440 × 10^9/L)]. Upon referral to hematology/oncology, the patient had a leukocyte count of 21 × 10^9/μL (21 × 10^9/L) [reference interval, 3.8–9.8 × 10^9/μL (3.8–9.8 × 10^9/L)] with 46% lymphoblasts. The patient was diagnosed with pre-B acute lymphocytic leukemia and was started on treatment. A follow-up sample for a basic metabolic panel that had been drawn into lithium heparin and centrifuged is shown in Fig. 1.

QUESTIONS
1. Why are data from this type of sample compromised?
2. What is the most likely reason for the appearance of this sample?
3. What are potential remedies to extract meaningful data from this sample?

* The answers are on the next page.
The milky (lactescent) appearance is due to lipemia, which causes analytical interference by scattering light and decreasing the plasma water content. This patient’s chemotherapy included L-asparaginase. Up to 20% of patients receiving L-asparaginase exhibit marked dyslipidemia [triglycerides >1000 mg/dL (>11.3 mmol/L)] (1, 2). The triglyceride concentration in this sample was 10155 mg/dL (115 mmol/L), and the total cholesterol concentration was 877 mg/dL (23 mmol/L), with fasting reference concentrations being <150 mg/dL (<1.7 mmol/L) and <200 mg/dL (<5.2 mmol/L), respectively. Analytical interferences from lipemia may be mitigated by dilution, centrifugation, or surfactant treatment. Although the lipid abnormalities associated with L-asparaginase therapy are generally transient and benign, in some cases the severe dyslipidemia leads to hyperviscosity or pancreatitis necessitating plasmapheresis (3).

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References