A physician from an outside hospital called our laboratory for help regarding interpretation of cerebrospinal fluid (CSF) results. She was confused by a report from her laboratory that reported the presence of "calcium oxalate crystals 3+" upon microscopy examination of a CSF sample (Figure 1). The CSF findings were as follows: protein concentration, 0.9 g/L (reference interval, 0.15–0.35 g/L); chloride, 106 mmol/L (reference interval, 120–130 mmol/L); and glucose, 65 mg/dL (3.5 mmol/L) [reference interval, 40–70 mg/dL (2.2–3.9 mmol/L)]. Clinically, the patient presented with features suggestive of acute infective meningitis. There was no current or previous history of toxin ingestion, suicide attempts, arthritis, or renal calculi.
QUESTIONS

1. What conditions are associated with the presence of oxalate crystals in the CSF?
2. What other simple investigation may be used to assist with diagnosis?
3. What is the likely cause for the presence of these crystals (given the patient history above)?

The answers are below.

ANSWERS

1. Oxalate crystals may occur in the CSF with ethylene glycol poisoning or primary hyperoxaluria type 1. Ethylene glycol is metabolized by alcohol dehydrogenase to form glycolic and oxalic acids.
2. Serum electrolytes and osmolality can be measured, and the anion and osmolar gaps can be calculated. Ethylene glycol poisoning is associated with an increased osmolar gap and increased anion gap metabolic acidosis (1).
3. Staff at the laboratory had used the CSF glucose tube (containing potassium oxalate, which acts as an anticoagulant) for the CSF microscopy analysis.

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Reference


News & Views

Colloquium on Rethinking the Future of Scientific Communication

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The format of communicating scientific information through professional journals has changed very little since the late 19th century. Recent advances in information technology have revolutionized the search and discovery of scientific information, yet neither the migration from paper to electronic publishing nor the explosion of social media tools has substantially altered the basic format for presenting scientific findings. By comparison, the popular press has undergone a transformation to better present and relay complex information to general readers, whose expectations about how to find and use information may now be much different than they were just a few years ago. Why have scientific research journals not undergone this same transformation? As we look to the future of scientific communication, how can we take advantage of current technologies as well as those that have not yet come into existence?

To address these issues, Clinical Chemistry, Stanford University Libraries, and HighWire Press hosted a meeting on the Stanford University campus in March 2012. Nineteen editors, librarians, publishers, graduate