

the Clinical Chemist

What Is Your Guess?

Request for Uric Acid Analysis on an Iced Specimen

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CASE DESCRIPTION

During second shift, a green-top specimen was received on ice with a request for uric acid determination. The young processing technician, unfamiliar with this situation, asked a supervisor why the specimen came down on ice. After the ordering provider was contacted, it was determined that a 9-year-old female with lymphoblastic lymphoma was being treated with rasburicase to mitigate potential development of tumor lysis syndrome (TLS) during chemotherapy. Key serum chemistries are shown in Table 1.

Table 1. Select chemistry analytes.		
Analyte	Result, mg/dL	Reference interval, mg/dL
Day 0		
Uric acid	8.6	3.4-7.0
Calcium	10.2	8.8-10.8
Phosphorus	3.3	3.0-5.4
Potassium	3.8	3.3-4.5
Day 1 (0600 h)		
Uric acid	6.2	3.4-7.0
Calcium	9.4	8.8-10.8
Phosphorus	3.4	3.0-5.4
Potassium	3.0	3.3-4.5
Day 2 (1900 h)		
Uric acid	1.7	3.4-7.0
Calcium	6.7	8.8-10.8
Phosphorus	8.2	3.0-5.4
Potassium	3.7	3.3-4.5
Day 3		
Uric acid	0.8	3.4-7.0
Calcium	8.8	8.8-10.8
Phosphorus	6.2	3.0-5.4
Potassium	4.2	3.3-4.5

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QUESTIONS

1. What is TLS and how may it present biochemically?
2. What is rasburicase?
3. Why was the specimen submitted on ice?

The answers are below.

ANSWERS

TLS is a life-threatening condition in which chemotherapeutic treatment causes a massive release of intracellular contents into the bloodstream, commonly resulting in hyperuricemia, hyperkalemia, hyperphosphatemia, and hypocalcemia (1). This often culminates in acute renal failure. Rasburicase is a recombinant urate oxidase administered to convert serum uric acid to the substantially more soluble product allantoin, reducing the risk of renal crystal formation (2). In rasburicase-treated patients, uric acid is vigilantly monitored to verify efficacy. Because the drug's catalytic activity continues postcollection, specimens are iced to minimize ex vivo uric acid conversion, allowing relatively accurate determination (3).

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