

the Clinical Chemist

What Is Your Guess?

Have You Ever Seen a 21-mmol/L Serum K⁺ Concentration?

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CASE DESCRIPTION

A blood sample from an 82-year-old man with non-Hodgkin lymphoma was analyzed. His chemistry results are shown in Table 1. The serum hemolysis index was negative.

Test	Result	Reference interval
Sodium, mmol/L	138	135-145
Potassium, mmol/L	21.0	3.5-5.5
Chloride, mmol/L	101	97-110
Glucose, mg/dL	127	65-110
Alanine aminotransferase, U/L	9	0-35
Aspartate aminotransferase, U/L	20	0-40
Creatinine, mg/dL	0.99	0-0.7

QUESTIONS

1. What can cause spurious gross hyperkalemia?
2. What is the most likely type of preanalytical error involved in this case?

The answers are below.

ANSWERS

When the sample was reanalyzed by direct ion selective electrode (ISE) method, potassium was 20.3 mmol/L and calcium was below the lower limit of quantification.

Hyperkalemia can be seen with hemolysis, leukocytosis, fist clenching during venipuncture, or analytical errors (1, 2). In these situations, hyperkalemia of this magnitude would not be expected, and calcium should be normal.

In our case, a medical student drew the sample into a K₂EDTA tube and, after realizing his mistake, decanted the

sample into a serum separator tube. To prevent EDTA contamination, tubes should be drawn in recommended order and should not be transferred into other tubes (3).

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