Clinical Case Study

Sudden Onset of Severe Anemia in a Patient with Cystic Fibrosis

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CASE

A 26-year-old woman with end-stage lung disease secondary to cystic fibrosis, cirrhosis secondary to hepatitis C, and insulin-dependent diabetes mellitus presented with acute pneumonia. She was treated with intravenous piperacillin/tazobactam and tobramycin. Other medications included dexamethasone, bumetanide, pantoprazole, dornase, and insulin. At admission, the patient's hematocrit was 30.8% (Table 1). On day 8 of hospitalization, she developed severe anemia with a hematocrit of 11.5%. Her blood type was group A, Rh D-positive, and the results of her antibody screen (performed in solid-phase, low-ionic-strength solution), which had previously been positive for only anti-E antibody, were now positive with a panreactive pattern. The result of the direct antiglobulin test (DAT)[3] was 2 + (moderately positive) for IgG, and the eluate was nonreactive. Six units of red blood cells (RBCs) were requested for transfusion. Her plasma was weakly to moderately cross-match incompatible with all group A–positive, E antigen–negative units tested. Given the severity of her anemia, 6 of these units were emergently released for transfusion to stabilize the patient while the investigation of her anemia and the new serologic findings continued.

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Table 1. Laboratory results for day 1 and day 8 of hospitalization.

Test	Day 1	Day 8	Reference interval
Hematocrit, %	30.8	11.5	34.0–42.1
Hemoglobin, g/dL	10.4	NM	11.5–14.6
mmol/L	6.45		7.14–9.06
Platelet count, X10^3/μL	47	46	143–398
White blood cell count, /μL	12 900	32 250	3280–9290
AST,[a] U/L	33	352	7–36
ALT, U/L	17	81	4–45
Alkaline phosphatase, U/L	116	107	31–103
Total protein, g/dL	5.2	4.8	6.2–8.6
Albumin, g/dL	2.7	3.7	3.7–5.1
Total bilirubin, mg/dL	0.8	78.7	0.2–1.1
μmol/L	13.7	1346	3.4–18.8
Conjugated bilirubin, mg/dL	NT	37.3	0.0–0.2
μmol/L		638	0.0–3.4
Haptoglobin, mg/dL	NT	NM	30–190
Urine hemoglobin	NT	Positive	Negative
LDH, U/L	NT	2508	91–223
Potassium, mmol/L	4.4	4.5	3.6–5.4
Creatinine, mg/dL	0.6	1.9	0.5–1.3
μmol/L	53	168	44–115

[a] NM, not measurable owing to icterus; AST, aspartate aminotransferase; ALT, alanine aminotransferase; NT, not tested.

Questions to Consider
• What tests are used to diagnose hemolytic anemia?
• What laboratory test suggests the hemolytic anemia in this patient is immune mediated?
• What is unusual about a panreactive pattern on the antibody screen with a negative eluate result?
• How does cirrhosis of the liver affect the laboratory evaluation of hemolysis?

Final Publication and Comments

The final published version with discussion and comments from the experts will appear in the September 2012 issue of *Clinical Chemistry*. To view the case and comments online, go to http://www.clinchem.org/content/vol58/issue9 and follow the link to the Clinical Case Study and Commentaries.

Educational Centers

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