

Case Study 5

Advanced Lab and Clinical Cases

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Past medical & transfusion History

- * 44 year old female with established alcohol related cirrhosis of the liver
- * Menorrhagia ++
- * Received multiple electronically issued (EI) red cell transfusions over the preceding 8 years
- * Sept 2017 admitted – heavy PV bleeding
- * 4 RBC units transfused uneventfully (Hb 64-95g/L)
- * Further transfusion required 1 week later, Hb 76g/L ...

Question 1

- * What is the recommended Hb Trigger to transfuse patients with Chronic Anaemia?
 - * 1. 70g/L
 - * 2. 90g/L
 - * 3. Anaemia is chronic so no need to transfuse
 - * 4. 80g/L
 - * 5. 60g/L

Question 1

- * What is the recommended Hb Trigger to transfuse patients with Chronic Anaemia?
 - * 1. 70g/L
 - * 2. 90g/L
 - * 3. Anaemia is Chronic so no need to transfuse
 - * **4. 80g/L**
 - * **However, the patients ability to cope with the anaemia should also be taken into account. If the patient is young and tolerating the low Hb and is asymptomatic then the anaemia could be treated with iron and management of the cause of the anaemia.**
 - * 5. 60g/L

Patient symptoms

- * Unit started at 07:00 and stopped at 08:15
- * Approx 75mls transfused.
- * Patient observations:
 - * Slight temperature rise of 1.6 degrees,
 - * Patient felt cold and shaky,
 - * Raised pulse to 138bpm,
 - * Slight drop in blood pressure of 105/60
 - * Oxygen saturation 93%
- * Patient treated with paracetamol and piriton at 09:00

Laboratory results

- * Pre transfusion

- * Hb 76 g/L.
- * LDH level 208 IU/L,
- * Total Bilirubin 19 μ mol/L.

- * 2hrs Post transfusion

- * Hb 76 g/L
- * Blood film showed decreased platelets and polychromasia.
- * Reticulocyte 345 x 10⁹/L.
- * LDH level 288IU/L,
- * Total Bilirubin 56 μ mol/L.

Question 2

- * What type of transfusion reaction was the patient likely experiencing?
 - * 1. Acute haemolytic transfusion reaction
 - * 2. Transfusion associated circulatory overload
 - * 3. Transfusion related acute lung injury
 - * 4. Non haemolytic febrile reaction
 - * 5. Allergic reaction

Question 2

- * What type of transfusion reaction was the patient likely experiencing?
 - * 1. **Acute haemolytic transfusion reaction**
 - * Increased bilirubin, and LDH post transfusion indicate haemolysis. FBC and blood film also showed features of haemolysis- raised retics and polychromasia
 - * 2. Transfusion associated circulatory overload
 - * 3. Transfusion related acute lung injury
 - * 4. Non haemolytic febrile reaction
 - * 5. Allergic reaction

Transfusion laboratory results

- * Pre transfusion sample
 - * Antibody screen negative
 - * Mono DAT negative.
- * Post transfusion sample
 - * Antibody screen negative
 - * Mono DAT negative.
- * Pre transfusion and post transfusion samples crossmatched against the offending unit...
 - * **Both pre & post transfusion samples incompatible with the unit.**
- * Could the unit be DAT positive?
 - * A monospecific DAT on the unit...
 - * **Negative!**

Transfusion laboratory results

- * Could the patient have an antibody to a low frequency antigen?
- * The patient was typed as negative for both Kp(a) and Lu(a).....
 - * But the unit was both KP(a) and Lu(a) negative
- * Four additional units were fully crossmatched for the patient– all were compatible.
- * The Pre and Post transfusion samples plus the units pilot line were sent to NHSBT RCI for further investigation...

NHSBT report

- * Anti-Wr(a) detected in patient plasma
- * Unit transfused was typed as Wr(a) positive
- * Unit transfused was incompatible by IAT crossmatch

Question 3

- * What Blood Group System does Wr(a) belong to?
 - * 1. Duffy
 - * 2. ABO
 - * 3. Colton
 - * 4. Knops
 - * 5. Diego

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 - * 4. Knops
 - * **5. Diego**
 - * The Diego system consists of 21 antigens: two pairs of antithetical antigens, Di(a) and Di(b), Wr(a) and Wr(b), plus 17 antigens of very low frequency

Anti-Wright(a)

- * The occurrence of the Wr(a) antigen is less than 0.1% of the population.
 - * 1 in 1000 donated units of RBC's will carry the Wr(a) antigen
- * Anti-Wr(a) is a relatively common naturally occurring antibody (reported incidence is between 1 in 56 and 1 in 100 in normal donors)
- * Incidence increases dramatically in patients, post partum women and people with other alloantibodies
- * ~1 in 3 patients with AIHA has anti-Wr(a)

Anti-Wright(a)

- * Anti-Wr(a) can cause:
 - * mild to severe/ immediate or delayed haemolytic transfusion reactions
 - * mild to severe haemolytic disease of the newborn.
- * Labs don't routinely screen for anti-Wr(a)
- * Not on many antibody ID panels
- * EI means no pre transfusion compatibility testing
- * Education in hospitals about the management of transfusion reactions is important.

Post reaction follow up

- * 24 hours post reaction:
 - * Hb dropped to 69 g/L
 - * Blood film showed some minor haemolytic features, polychromasia and occasional nucleated red blood cells.
 - * Haptoglobin = 0.10g/L,
 - * LDH = 448 IU/L,
 - * Total Bilirubin = 33 μ mol/L.
- * The patient was transfused further using serologically crossmatched red cells
 - * 48 hours post reaction Hb 86 g/L.
- * One month post reaction all results were back in normal ranges.

Questions

