

Teaching and Discussion Notes for Transfusion Reaction Presentation

This presentation provides realistic case studies which have been designed with audience participation in mind and should encourage discussion within the group. The cases are NOT designed for individual learning and if used in this way caution is advised. Each case unfolds as time goes on reflecting a true clinical situation and, as a result, there are no clear-cut correct answers until the case is concluded. Discussion of these case studies should use problem-solving skills, be based on effective communication between the laboratory and the clinicians and take into consideration national and local policies on the management and investigation of transfusion reactions.

Note: It will be beneficial for staff to read the BCSH guidelines on the investigation and management of acute transfusion reactions and to review the local transfusion reaction policy.

Slides 1-7 Introduction to the subject

This presentation is for Biomedical Scientists and assumes a basic knowledge of the adverse effects of transfusion. This brief introduction provides an overview of other support and learning materials.

Slide 8 – Introduction to the cases

This part of the education session was interactive and examples were used to stimulate conversation and group learning. No answer was deemed incorrect but justification was needed for your answer. Notes have been added after the presentation to help with some guidance when delivering this back in the work place and used for learning. Discussion with your lab manager and/or training manager will aid learning.

There are learning points throughout the presentation (highlighted in black) containing knowledge that can be applied in daily practice.

Slides 9-18 Case study 1

Slide 11 – Case study 1, question 1

Option 1: (Emergency O RhD negative) Whilst O RhD negative is a safe option, it is appropriate to conserve O RhD negative blood for those patients where an alternative cannot be used. A group and screen on 2 samples was already available and, providing the samples were labelled according to the sample acceptance policy and had been taken from the right patient, group specific blood could have been given.

Options 2 and 3: The patient had a second sample taken which was received and tested so the patient should be eligible for electronic issue if this is the laboratory policy and all the other criteria have been met. As the case is an emergency it would not be inappropriate to release group specific uncrossmatched units as 2 samples have been tested.

Discussion point:

What processes do you have in the laboratory to issue blood in an emergency?

What crossmatching techniques are available in your laboratory?

What are the criteria for electronic issue?

Option 4: If this option was selected there should be discussion as to what the 'something else' is. Be aware that this is a female of childbearing potential so avoiding sensitisation to the D and K antigens should be considered.

In an emergency situation the provision of blood should be a priority.

It may be beneficial to find out from the clinical team if other blood components are required.

Slide 15 – Case study 1, question 2

There may be not enough information at this stage to give a full and complete answer and there should be a discussion with regards to which answers were chosen and why.

Option 1: Ectopic pregnancy can cause DIC, this option would not explain the drop in Hb.

Option 2: We do not have information on what other IV fluids, or the volume, the patient has received. A review of the patient's treatment may help support or exclude this diagnosis.

Option 3: This option may explain the drop in Hb in this case. This is a possibility.

Option 4: DIC and drop in Hb with no urine production are symptoms of acute haemolytic transfusion reactions. If a patient has had a blood transfusion this may be an option due to sampling/administration/checking errors. However, in this case there were 2 samples grouped for this patient and a two sample policy reduces the risk of WBIT.

Discussion points:

How confident are staff with the laboratory testing for ABO? What are the signs and symptoms of an ABO transfusion reaction?

What additional samples would you request and what tests would you perform?

Slide 17 – Case study 1, question 3

The options were given to encourage discussion and learning between the group of delegates.

Options 1 & 3: This is a possibility, but this would have meant that the same errors occurred twice on 2 different runs, as the laboratory received and tested 2 separate samples for this patient.

Discussion points:

How confident are you with regards to your laboratory ABO typing?

Could there be a possibility a mistake could be made on 2 separate samples?

Option 2: Wrong blood in tube (WBIT) has been reported in all Trusts. The new BSCH Guidelines state that 2 samples, taken at 2 separate times, should be tested prior to a transfusion. There has been reports of 2 samples been taken at the same time and one kept and sent later in order to save time and not bleed the patient twice – this practice does not reduce the risk of a wrong blood in tube incident. The Department of Health have listed an ABO incompatible transfusion as a ‘never event’.

Discussion points:

Why might the person taking the blood take 2 samples at the same time?

Can you think of any safe guards to prevent an ABO incompatible transfusion?

Option 4: Failures in the final administration stage have occurred and have been documented in past SHOT reports. It may be that the wrong patient was bled at the time of admission although 2 samples were received in the laboratory. This is a likely source of error but the patient may have had a dedicated team involved in transfusion and communication with the lab as she was bleeding and in urgent need of treatment.

Slides 19-29 – Case study 2

Slide 21 – Case study 2, question 4

All the options contain information that would be useful for the Dr. Get the group to vote for the option and have a discussion regarding the choices made.

Option 1: This is useful information although the patient may have already been reviewed by the haematologist managing the patients care, hence the 2 units already crossmatched for tomorrow. The platelets have not been requested and by telling the Dr that they are expiring at midnight may mean that they decide to give these. Making sure all requests are appropriate should be the key concern.

Option 2: The fact that the patient has antibodies may not be something the Dr knows about his patient and is useful information.

Option 3: As the patient has MDS and has been treated for it for the last 18 months they will be under the care of the haematology team. Referral to this team to check the treatment plan would be important as there may be a good reason to wait and transfuse the patient in the morning as originally planned.

Option 4: Due to reduced number of staffing and patient safety it is not recommended that patients are routinely transfused at night. If a transfusion is not urgent it should be given during routine hours. In this scenario the patient is breathless and therefore may be deemed symptomatic.

Discussion point:

If unsure of the appropriateness of a request who do you refer to?

Slide 23 – Case study 2, question 5

Patient has an increase in temperature, blood pressure and respiratory rate which are signs of a transfusion reaction.

Option 1: The transfusion labs are the experts in the transfusion medicine field and are the point of contact and support for the clinical area. If it is felt that dealing with this is not within your knowledge base you should be able to advise them who to contact.

Options 2 and 3: These are both considered correct actions. Reference to local policy should be made. Suspected transfusion reactions should always be referred to the haematologist.

Discussion points:

*If you received the implicated unit in the laboratory what tests would you perform?
Would a post transfusion sample be requested?*

Option 4: Discussion should be held as to what other actions would have been done at this point if this was selected by anyone in the group. It may be that this option has been chosen because both option 2 and 3 would have been selected.

Slide 25 – Case Study 2, question 6

Option 1: The patient has had significant changes in observation without a significant fever and is breathless. These are signs of TACO. The weight of the patient has not been given and it is unclear what other fluids the patient has been given. The patient also has poor renal function.

Option 2: The patient has had significant changes in observation without a significant fever and is breathless. These are signs of TRALI. With TACO, the central venous pressure (CVP) will be raised and with TRALI the CVP will be normal.

Option 3: The patient has anti-Fy^a but the units transfused were Fy^a negative and crossmatch compatible. Haemolytic transfusion reactions related to non-ABO blood group systems do not tend to be immediate.

Option 4: Anaphylaxis causes shock/severe hypotension with a wheeze or stridor. This can be caused by transfusion in patients who are IgA deficient. The patient should be treated with adrenaline.

Option 5: The temperature rise was less than 2°C but the temperature is above 39°C. Bacterial contamination presents with shock/severe hypotension without clinical sign of anaphylaxis or fluid overload.

Discussion points:

*What would be the most likely diagnosis based on the results and clinical picture presented so far?
Could more than one diagnosis be possible?*

Slide 28 – Case Study 2, question 7

Discuss all options bearing in mind the following notes, BCSH guidelines and local policy.

Option 1: These tests are useful when looking for a serological transfusion reaction. In this case these are not the most useful set of investigations.

Option 2: When bacterial contamination is suspected NHSBT should be informed to quarantine other products made from this donor. In this case the patient's blood cultures have shown no additional bacterial growth and the pseudomonas detected is the same as the organism detected on admission. Therefore it is very unlikely that the reason for the patient's deterioration is due to bacterial contamination of the transfusion.

Option 3: If a TRALI is suspected the case should be discussed with the TRALI panel at NHSBT. Samples will be requested and tested for neutrophil antibodies. If a TRALI is suspected treatment should not be delayed until the laboratory results are returned.

Option 4: IgA deficient patients may have anaphylactic reactions following a transfusion. This patient however has been transfused many times and therefore would have had a reaction previously.

Option 5: TACO. This patient has a positive fluid balance and has clinical signs to support cardiac failure. These are symptoms of TACO.

The patient also has impaired renal function

Slides 30- 35 Case study 3

Slide 31 – Case Study 3, question 8

Option 1: it is possible he could have developed an allergy to the plasma in Platelets although this is the first time the patient has had a reaction. Washed platelets should be considered if severe reactions occur on more than one occasion.

Option 2: The patient should wait and be reviewed by the doctor before being allowed to go home.

Option 3: Antihistamines can be given to deal with the allergy but this causes drowsiness so he should not be allowed to drive home

Option 4: Unlikely, but we do not have all the clinical details on the patient. If there had been a significant rise in temperature there may be reason to suggest bacterial contamination.

Disclaimer:

All of these cases reflect a similar case in clinical practice but they have been modified so that the hospital, the staff and the patient are not identifiable.

The information given reflects current clinical and laboratory practice but local variations may be in place.