Transfusion reactions

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Pre questions

1. Platelet transfusions are more prone to bacterial contamination compared to red cells. T/F
2. Common causes of an acute transfusion reactions include febrile non-haemolytic transfusion reactions and allergy T/F
3. ATR causing hypotension with anaphylaxis must not be treated with IM adrenaline if the patient has platelets less than 50. T/F
4. In differentiating between TACO and TRALI, High BP, and raised JVP favour TACO.  T/F?

5. A patient suffers an ABO haemolytic reaction –(unit intended for another patient); the transfusion laboratory should be notified in writing within 5 working days.  T/F?

6. An acute haemolytic transfusion reaction is effectively excluded if the ABO group is correctly matched between donor unit and recipient. T/F?
How do I recognise a transfusion reaction?

• Significant overlap between background illness and the myriad of ways a reaction may present*
• Protocol-driven
• Useful to know about timing and which reactions are most likely based on time from start of Tx
• Which blood products are more likely to cause the reaction in question?
Timing

- Anaphylaxis 1/3\textsuperscript{rd} within 15m may be 1-3hrs post
- ABO-incompatibility* usually within 15m
- Bacterial Sepsis usually within 15m
- TACO within 6hrs
- TRALI within 6hrs
How common are acute transfusion reactions?

- **TRALI**
- **Acute Tx Reactions** (allergic, hypotensive and severe febrile)
- **TACO**
- **Bacterial contamination**

- 17 cases reported in 2016
- 253 cases in 2016, No deaths
- 86 cases in 2016, 14 related deaths
- 3 cases in last 2 yrs (to 2016)
- 1 case in last 5 yrs, though 4 near-misses 2016
Acute Haemolytic Transfusion Reactions

Other evidence of haemolysis* within 24 hours of transfusion
All reports provided laboratory evidence of haemolysis, with the vast majority of patients having a raised bilirubin and a fall in Hb. There were also 6 reports of haemoglobinuria.

Figure 19.1:
Clinical signs associated with AHTR
Case 1 - from SHOT 2015

• A patient with myelodysplasia became acutely unwell 75mls into a transfusion of red cells.
  • Acutely Sob
  • Rigors
  • ‘‘tuned blue’’
  • Dark urine

• Management....?

• Further inv showed: Bilirubin raised, LDH raised and acute fall in Hb
• Patient transferred to ITU
• -whilst antibody not identified – transfusion was causative of haemolysis and led to deterioration
Treating a suspected Acute Haemolytic TR

• Nowt special
• Disconnect unit & keep
• Start Saline through the cannula
• Acutely: treat symptoms in front of you

• -then look up your protocol re: monitoring and what further investigations to send
Pulmonary Complications

TACO

TRALI

TAD
TACO

• New definitions emerging
• Basically – respiratory distress within 6>12hrs of transfusion
• +evidence of overload/+ve fluid balance etc
TRALI

- Transfusion associated lung injury – acute dyspnoea + low sats + bilateral CXR infiltrates
- Probable cause: antibodies to recipient neutrophils in transfused plasma
- < 6 h of Tx
- No alternative causes/compatible antibodies
Transfusion Associated Dyspnoea

• Breathing Bother Because Blood-component

• But not fitting in Boxes of TACO/TRALI

• 10 cases reported in 2016 SHOT report
Respiratory complications: Case 2

- 22 yr old female
- 3 litre post partum haemorrhage
  - 4U red cells
  - 4U FFP
  - 2U cryoprecipitate

Within 10m of starting cryo –dyspnoea, sats 64%, RR30, HR125, increased BP.

Given 80mg IV furosemide -2litre diuresis
Case 2 continued

• Despite diuresis –continued worsening. CXR patchy consolidation in both lungs
• Required intubation the following day

• Further inv showed suggestive antibodies –making TRALI highly likely
Case 3

- 70 yr old woman with a pneumonia and pulmonary hypertension became hypoxic 5 hours after a unit of platelets.
- Bilateral changes were present on CT
- She recovered after oxygen and some diuretics
- Further antibody investigation was negative for antibodies implicated in TRALI
Case 4

- Elderly patient weighting 51kg with heart failure (ejection fraction 30%) and aortic stenosis required regular transfusions due to lymphoma. 2-hours into a transfusion of red cells she had dyspnoea and raised RR.

- CXR showed pulmonary oedema

- Improvement was seen following diuretics, and the post Tx Hb was 98g/L
Q: When can I ignore a transfusion-associated fever and continue transfusing?

• A never – bin the unit and order another
• B as long as the fever is less than 39°C
• C as long as there is no angioedema
• D never, but transfusion may be paused and continued if an isolated temp +/- urticaria is present, and bedside checks all consistent.
Fever and allergy related to transfusion

• Probably the most common category
• Presenting as
  • Isolated fever*
  • Allergy*
    • Mild allergy – itch/urticarial rash
    • Severe allergy and anaphylaxis
  • Mixture of allergic and febrile
Case 5

- A 26 yr old male with sickle cell disease attended outpatients for a planned exchange transfusion.
- After the first unit of red cells he developed rigors and a temperature of 38.6 (rise of 2 degrees)
- BP higher, but no other symptoms/signs
- ? Management...?
- ? Differential...?
Case 6

- A 28yr old female was receiving a transfusion of red cells for PPH
- Within 15m, she complained of chest pain, difficulty breathing and had a fever of 39.6 (more than 2 deg above baseline)
- Visible angioedema, and complaints of advancing throat swelling
- ?acute management...?
- ?differential diagnosis...?
Treatment of Febrile/Allergic ATRs

- Febrile acute transfusion reactions (once more serious possibilities excluded) => Paracetamol
- Allergic Reactions: =>Antihistamine
- Limited role for steroids –(though used routinely in many areas) –use following acute mx
- IM adrenaline (0.5ml of 1:1000) for hypotension/angioedema – irrespective of platelet count
  - As per resus council guidelines
Recurrent allergy

• Different products – e.g. washed red cells/PAS suspended platelets
• IgA deficiency - rarely
• May require pre-medication
• Patients with anaphylaxis require further investigation and referral to an immunologist
Other transfusion reactions

• Delayed haemolytic transfusion reactions*
  • 24hrs to 14d post-transfusion
  • Often in multiply transfused pts –esp sickle patients
  • Present with signs of haemolysis and falling Hb
Reporting

• All severe transfusion reactions must be reported to blood bank > SHOT/SABRE

• How to define ‘severe’? *

• Any issue/near miss re: wrong blood given

• Evidence of contaminated unit
Reasons to involve the transfusion lab following a severe reaction

- Recall of other implicated products from the same donor
  - Infection
  - Odd antibodies/antigens
- Reporting to SHOT/SABRE - mandatory
- Help with further investigation
- Esp urgent if there has been an ABO-mismatch – to prevent corresponding unit being transfused
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