Transfusion reactions

Jim Taylor

Haematology SpR

Sheffield

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?

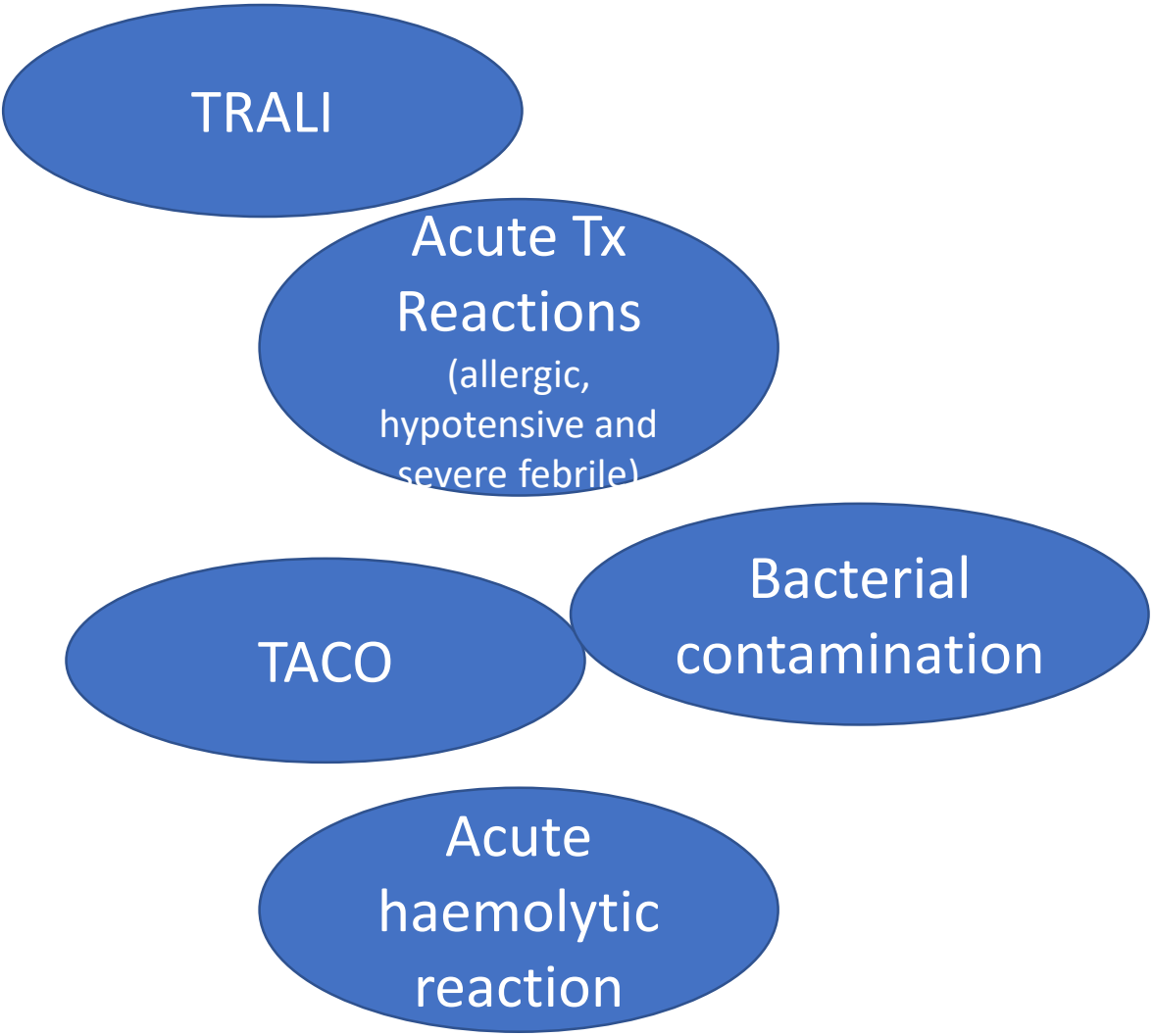
How do I recognise a transfusion reaction?

- 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 1/3rd 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?



1 case in last 5 yrs, though 4 near-misses 2016

3 cases in last 2 yrs (to 2016)

17 cases reported in 2016

253 cases in 2016, No deaths

86 cases in 2016, 14 related deaths

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.

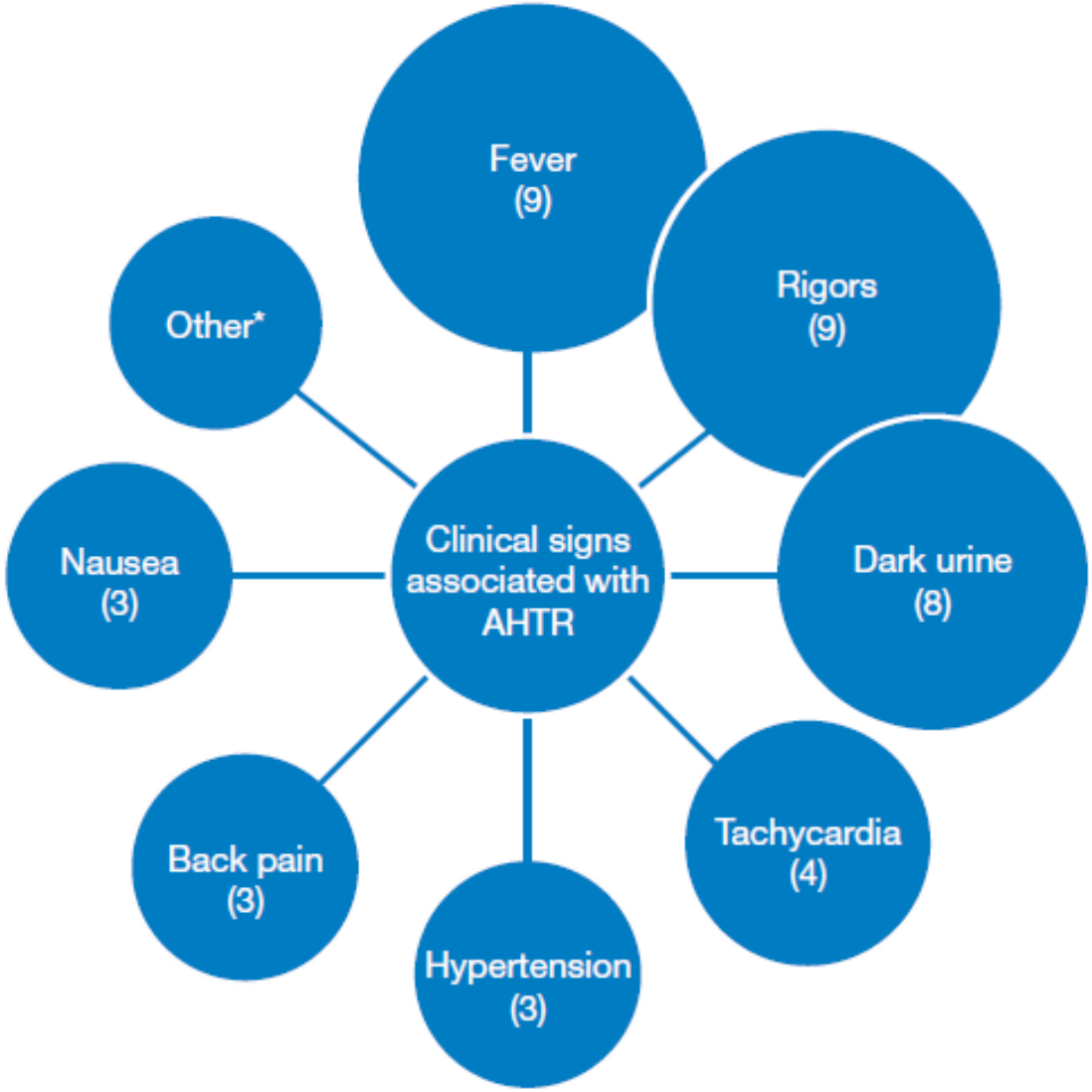


Figure 19.1: Clinical signs associated with AHTR

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

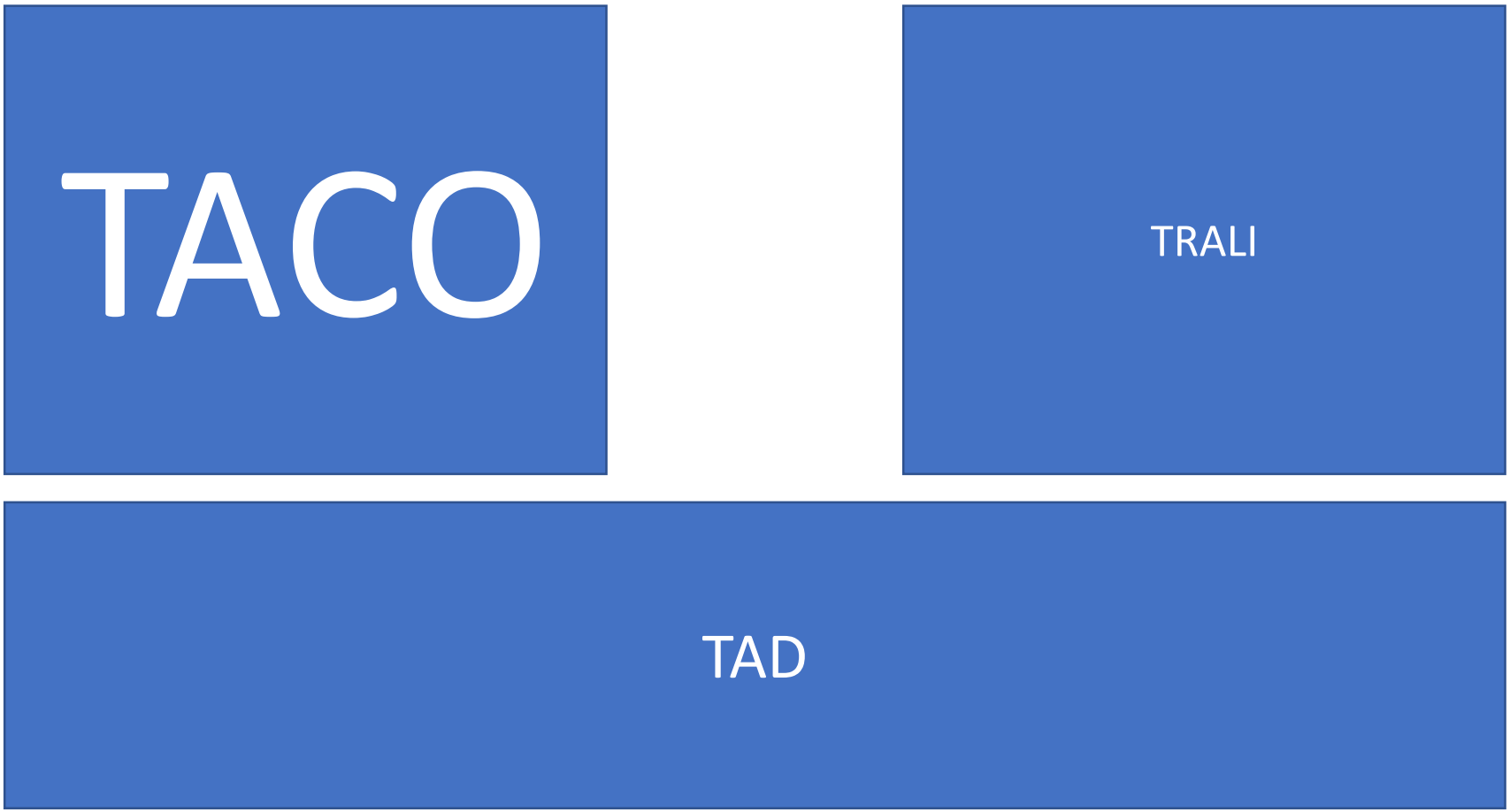
- Management….?
- Further inv showed: Bilirubin raised, LDH raised and acute fall in Hb
- Patient transferred to ITU
- -whilst antibody not identified –transfusion was causative of haemolysis and led to deterioration

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

- 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

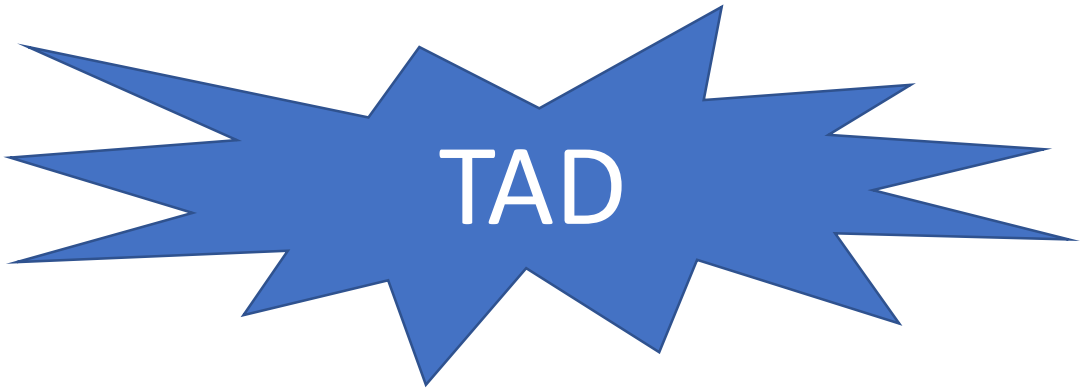
Case 2 continued

- 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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