Biomedical Scientist education day – November 2017

Case study worksheet – Discussion notes

Case 1:

Scenario:

- 42 year old male admitted to ED via HEMS team
- Car versus bike RTA
- Patient required urgent theatre
- 2 units red cells requested pre-operatively
- Lab received two group & saves – both samples grouped as: A RhD +; AS=neg
- Patient transfused first unit of red cells post-operatively for low Hb
- Pre-transfusion observations (temperature, Blood pressure, respirations & pulse) – all normal
- 20 minutes into transfusion patient started to complain of chest pain. Repeat observations showed increase in temperature (37-38.5 degrees); Tachycardia and rigors (shaking/shivering)

? Potential reaction type: (tick all possibilities to be investigated)

- **Acute Haemolytic transfusion reaction**
- Delayed Haemolytic transfusion reaction
- **Febrile non-haemolytic transfusion reaction**
- Mild allergic reaction
- Bacterial contamination
- Anaphylaxis
- Transfusion associated circulatory overload (TACO)
- Transfusion related acute lung injury (TRALI)

Which of the following actions & investigations would you do & why? (Tick all that apply)

NB: Non-required tests/actions have been deleted.

- **Advise transfusion stopped**
- **Inform Haem registrar/ Transfusion practitioners**
- **Recall** – red cell unit including giving set and second unit from satellite fridge. Needs to be quarantined!
- **Check documents –** Documentation is correct (right blood transfused)
- **Group and antibody screen –**
  - **Repeat Pre sample:** group = A RhD positive, antibody screen = negative,
  - **Post sample:** group = O RhD positive, antibody screen = negative;
- **DAT –**
  - Pre sample = negative

    - Post sample = postive
- **Check for haemolysis –**
    - Pre sample plasma check = no signs of haemolysis
    - Post sample plasma check = plasma haemolysed
- **Urine dipstick - negative**
- **Full blood count –** Hb decreased

- **Biochemistry tests** (bilirubin, LDH, Haptoglobins) –
    - Bilirubin & LDH ↑, Haptoglobins ↓
- **Blood film –** fragments seen

RCA investigation:

- **ABO-incompatible transfusion reaction**
- **Failure to follow sample policy:**
    - Wrong blood in tube incident.
    - Wrong patient bled.
    - Two samples taken at same time and labelled with trauma patient details.

Treatment/Support post reaction: Patient required ITU admission – diuretics and dialysis for renal damage

Which of the following does the reaction need reporting to? (Tick all that apply)

- **SABRE** – ✓(Moderate or severe reaction that involved ITU admission, prolonged stay in hospital & intervention)
- **SHOT –** ✓(WBIT & acute HTR due to ABO-incompatible transfusion reaction)
- **Local –** ✓also reported as Serious incident & as ABO-incompatible transfusion reaction also to Department of Health (DoH) as a ‘Never event’

Case 2:

Scenario:

- 56 year old male
- Medical history: Aplastic anaemia
- Prescribed 1 pool platelets (Platelets = 5 x 10^9 g/l) to be administered on haem day unit
- Pre-transfusion observations = all normal (temperature, Blood pressure, respirations & pulse)
- 15 minutes minute observations: temperature increase from 37.2^{0}C to 38.5^{0}C

? Potential reaction type: (tick all possibilities to be investigated)

- Acute Haemolytic transfusion reaction
- Delayed Haemolytic transfusion reaction
- **Febrile non-haemolytic transfusion reaction**
- Mild allergic reaction
- Bacterial contamination
- Anaphylaxis
- Transfusion associated circulatory overload (TACO)
- Transfusion related acute lung injury (TRALI)

Which of the following actions & investigations would you do & why? (Tick all that apply)

NB: Non-required tests/actions have been deleted.

- **Advise transfusion stopped**
- **Inform Haem registrar/ Transfusion practitioners**
  - Temperature change <2^{0}C & <39^{0}C – mild reaction with no other signs or symptoms. No further investigation required in this instance.

RCA investigation:

- **Mild febrile Non-haemolytic transfusion reaction, no other signs or symptoms**
  - Temperature change <2^{0}C & <39^{0}C
  - Often a reaction due to cytokines in platelet bag that are fever inducing
  - Can be a frequently seen reaction, though this has been reduced with the introduction of leucodepletion

Treatment/Support post reaction: Patient given intravenous paracetamol and transfusion continued with close monitoring

Which of the following does the reaction need reporting to? (Tick all that apply)

- **SABRE**
- **SHOT**
- **Local – ✓**

Case 3

Scenario:

- 63 year old female
- Post –op: prescribed 1 unit of packed red cells for low Hb (75g/L)
- Pre-transfusion observations: All normal (temperature, respirations, pulse, blood pressure)
- 7 minutes into transfusion patient starts to shiver violently (rigors)
- Observations show: spike in temperature from 36.8^0C to 39.2^0C

? Possible reaction type: (tick all possibilities to be investigated)

- **Acute Haemolytic transfusion reaction**
- Delayed Haemolytic transfusion reaction
- **Febrile non-haemolytic transfusion reaction**
- Mild allergic reaction
- **Bacterial contamination**
- Anaphylaxis
- Transfusion associated circulatory overload (TACO)
- Transfusion related acute lung injury (TRALI)

Which of the following actions & investigations would you do & why? (Tick all that apply)

- **Advise transfusion stopped**
- **Inform Haem registrar/ Transfusion practitioners**
- **Recall units –** unit and giving set. Quarantine!
- **Check documents –** right blood, right patient
- **Group and antibody screen**
- **Pre Group and antibody screen –**
    - **Repeat Pre sample:** group = A RhD positive, antibody screen = negative,
    - **Post sample:** group = A RhD positive, antibody screen = negative,
- **DAT –**
    - Pre sample = negative
    - Post sample = negative
- **Check for haemolysis –** no sign of haemolysis in pre or post
- **Bacterial cultures –** Very important as temp rise is >2^0C and >39^0c (culture bag and patient)
- **Full blood count – all normal (no signs of haemolysis)**
- **Biochemistry tests (bilirubin, LDH, Haptoglobins) –** all normal
- **Refer to NHSBT –** Should be done urgently. No signs of haemolysis and massive spike in temperature. Bacterial contamination needs to be ruled out. LAB/Haem SpR need to seek advice from NHSBT consultant. Recall to NHSBT may be required. **NHSBT recalled unit**

RCA investigation: Febrile NHTR caused by bacterial contamination

- Patient & unit cultured – positive for same organism
- Cold chain compliance and visual inspection on receipt and on issue complete by BMS staff – no issues raised
- Donor was asymptomatic at time of donation
- NHSBT instigated a recall for other components from donor

Treatment/Support post reaction: IV antibiotics administered post blood cultures.

No change to transfusion management for the patient

Which of the following does the reaction need reporting to? (Tick all that apply)

- **SABRE** – ✓quality issue for NHSBT, for them to investigate fully
- **SHOT –** ✓ moderate/severe reaction caused by bacterial contamination
- **Local –** ✓

Case 4:

Scenario:

- 46 year old female
- Medical history: fibroids and menorrhagia
- Previous transfusion 2006
- 2 units requested to cover Myomectomy (Hb= 7.5g/L), both transfused during operation.
- Discharged home 2 days later
- Patient presented to ED 5 days later complaining of: Fever, chills, rigors, back pain, dark urine

? Possible reaction type: (tick all possibilities to be investigated)

- Acute Haemolytic transfusion reaction
- **Delayed Haemolytic transfusion reaction**
- Febrile non-haemolytic transfusion reaction
- Mild allergic reaction
- Bacterial contamination
- Anaphylaxis
- Transfusion associated circulatory overload (TACO)
- Transfusion related acute lung injury (TRALI)

Which of the following actions & investigations would you do & why? (Tick all that apply)

- **Inform Haem registrar/ Transfusion practitioners**
- **Check documents –** right blood, right patient
- **Group and antibody screen**
  - **Repeat Pre sample:** group = A RhD positive, antibody screen = negative,
  - **Post sample:** group = A RhD positive, antibody screen = positive (Anti-E & Cw)
- **DAT –**
  - Pre sample = negative
  - Post sample = negative
- **Check for haemolysis –** Post sample – plasma haemolysed
- **Full blood count –** Hb = 48 g/L
- **Biochemistry tests (bilirubin, LDH, Haptoglobins) –** Bilirubin/LDH raised BUT not tested pre
- **Blood film –** Spherocytes seen

RCA investigation: Delayed Haemolytic transfusion reaction caused by lack of communication of patient's sickle status

- Shared care patient – Under another hospital for sickle
- Patient HbSC – lab unaware and did not issue antigen negative blood for either transfusion episode. (C-E-K-HbS- as standard)
- Patient likely to have developed antibodies after first transfusion in 2006

- Without relevant info & with negative antibody screen – laboratory issued random A RhD positive units by immediate spin technique.
- Look back - 2/4 units did not meet requirements for a sickle patient

Treatment/Support post reaction:

- Admitted to ICU
- Renal failure requiring dialysis

Which of the following does the reaction need reporting to? (Tick all that apply)

- **SABRE** – ✓Severe reaction requiring hospital admission
- **SHOT –** ✓ Delayed HTR
- **Local –** ✓reported as Serious incident