NICE POSTER

THE JOYS, TRIALS AND TRIBULATIONS
OF A MULTIDISCIPLINE LABORATORY

SUE QUIRING & NADINE VERDOORN
1. INTERESTING CASE?

WE CERTAINLY DO
Patient SP arrived at the Northern Hospital in Epping Melbourne from customs as he did not look well at airport Wednesday 17/07/2013.

Diagnosed on arrival with bleeding varices, Hb = 64g/L at around 13:00 on ED Gas analyser.

Samples taken at 13:25 and sent to laboratory. The Hb = 69g/L. The crossmatch sample had no date or time recorded so was rejected at specimen reception.
MULTI-ANTIBODIES – LUCKY US

- A second crossmatch sample was taken at 15:23 17/07/2013.
- Blood group was B Positive (Cde/cde) probable R_1 r.
- All 3 CSL Abtect III cells positive on AutoVue – Day shift left and afternoon shift started.
- Auto control positive, as were all 11 panel cells.
- Positive DAT due to IgG score 4+ (12).
- MTP activated after the 20:30 Hb = 48g/L.
PHENOTYPE OF SP

- PHENOTYPED AS A PROBABLE
  - $R_1r$ (Cde/cde)
  - K-
  - Fy(a+b-)
  - Jk(a-b+)
  - M+N+
  - S-s+
What we found out about SP

- Transfusion history of SP was relatively unknown.
- What we progressively found out:
  - SP was 3 days from his 58th birthday and had received relatives blood in India for sometime.
  - SP had a transfusion reaction in India and was refused further transfusions.
  - SP had ‘cousins’ in Australia who informed him that he could have treatment in Australia, so he caught a plane.
WHAT WAS IN THE SAMPLE OF SP

• Elution and absorption studies were performed.

• Anti-E, Anti-S and Anti-Jk\textsuperscript{a} were detected by IAT. Anti-Fy\textsuperscript{b} (1 cell) and Anti-K (2 cells) could not be excluded with the cells on-hand at the laboratory.

• ARCBS confirmed Anti-E, Anti-S and Anti-Jk\textsuperscript{a} were present and did not find Anti-Fy\textsuperscript{b}.
ANTI-E HAEMOLYSIS

• Anti-E showing haemolysis in well 8 on AutoVue

• Routine case, known Anti-E, but this was the first time any cells had haemolysed.
2. NEED HELP WITH AN ISSUE IN YOUR LABORATORY?

WE CERTAINLY DO
D Neg SCREEN
D Neg SCREEN

TWO ISSUES:

1. Cell 2 not dispensed into well.
   - Shows the importance of communication between lab and engineer. Lab forgot to tell engineer about 5mL vials. Result – 5mL bottles not configured on AutoVue.
   - Volume calculation not accurate – random empty wells on panel & D Neg screen cells.
D Neg SCREEN

2. Too Many Cells present in well.

Cell concentration is critical in IAT testing:

- The number of red cells is proportional to the number of antigen sites, contributing to antibody/antigen ratio.
- If cell preparations are too concentrated:
  - Weaker results may occur due to increased antigen/antibody ratio.
  - Cells may fail to completely migrate to the bottom of the column resulting in a false positive interpretation.
HAEMOLYSIS IN FORWARD GROUP
HAEMOLYSIS IN FORWARD GROUP

• Caused by use of non-validated microtitre plates.
• On investigation, plates in use had inconsistent well depths, causing tip to hit bottom of well on shallow wells & cause haemolysis.
• Resolved by switching to microtitre plates with consistent well depths.
3. FOUND A RARE ANTIBODY AND WANT TO SHARE THE FINDINGS WITH SOMEONE?

WE CERTAINLY DID
HDN DUE TO ANTI-FY\textsuperscript{B}

- ND had blood taken for an FBE and Group and hold on Friday 16/03/2013.
- ND was having a routine caesarean section on Monday 18/03/2013.
- The pregnancy was routine with no history of antibodies. There was one previous pregnancy and very little pathology testing during pregnancy.
- The sample arrived at the laboratory Friday afternoon.
- Hb = 127g/L
- Plt = 188 x 10\textsuperscript{9}/L
- WCC = 7.5 x 10\textsuperscript{9}/L
MOTHER

- Blood group typed as A Positive (probable R₁r).

- The antibody screen was positive in all 3 cells using CSL Abtectcell 0.8% on an Autovue. Reactions were on a 0 - 4 scale with cells 1 and 2 showing a 3+ cell 3 showing a 2+.
MOTHER

• An 11 cell panel showed one negative cell (Cell 7 from Batch 2653 109 expiry 26/03/2013) and a negative reaction in the auto. The reaction strengths were variable, from which I concluded there were more than one antibody.
PHENOTYPE OF ND

- Phenotyped as a probable
  - $R_1r$ (Cde/cde)
  - K-
  - Fy(a-b+)
  - Jk(a+b-)
  - M+N-
  - S-s+
  - P1+
  - Le (a+b-)
MOTHER

• The sample was sent to ARCBS VIC Reference Red Cell Serology Lab.
• They were able to exclude K and C\textsuperscript{w} antibodies as well as confirm Fy\textsuperscript{a} and Jk\textsuperscript{b}.
• The incompatible donor was not sent to them for testing.
BABY OF ND

- Baby boy of ND was born 18/03/2013.
- A blood transfusion sample was received at the laboratory 27/03/2013 with clinical notes of “Jaundice” and tests were requested for G6PD and a Blood Group and Coombs.
- G6PD result was normal at 45.0 U/g Hb (RR > 4.5).
- Baby of ND typed as A Rh(D) Negative with a positive DAT showing a MF reaction by the Autovue reader at a score of 3+.
- There were earlier samples sent for bilirubin and FBE, all with the clinical notes of ‘Jaundice’. FBE was normal for age with mild polychromatic red cells seen on the blood film. Bilirubin was elevated.
**BABY OF ND**

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BABY OF ND

- An Eluate was performed and \( \text{Jk}^b \) was detected as the antibody coating the baby’s red cells.
- Baby phenotype \( \text{Jk(a-b+)} \).
CHANGING BLOOD GROUP

Autovue Forward & Reverse

Biovue Check Group
CHANGING BLOOD GROUP
CHANGING BLOOD GROUP

• No history on patient SS.
• Patient SS transferred from a subsidiary hospital in the same network.
• Turns out that SS had been given 2 units of O Negative emergency issue from the subsidiary blood fridge.
• SS was in fact AB Positive.