Anti-Sd\textsuperscript{a} – A case study

Sofia Plymin
St. Vincent’s Hospital Melbourne

NICE
Launceston 2018
Clinical Notes

- 28 year old female

- 12 weeks pregnant

- Blood group and antibody screen requested through GP
Findings

Blood Group

Antibody Screen

A Rh(D) Positive

Positive
Findings

Phenocell B panel performed by Diamed Liss/Coombs CAT

- Finely granular reactions
- Negative auto control
**Findings**

Phenocell B panel performed by Diamed Liss/Coombs CAT

<table>
<thead>
<tr>
<th>Cell No</th>
<th>Reference No</th>
<th>Rh Phen</th>
<th>C</th>
<th>K</th>
<th>MNS</th>
<th>P1PK</th>
<th>LE</th>
<th>LU</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2170164</td>
<td>R1,R1</td>
<td>+</td>
<td>+</td>
<td>0</td>
<td>+</td>
<td>0</td>
<td>+</td>
</tr>
<tr>
<td>2</td>
<td>5115543</td>
<td>R1,R1</td>
<td>+</td>
<td>+</td>
<td>0</td>
<td>+</td>
<td>0</td>
<td>+</td>
</tr>
<tr>
<td>3</td>
<td>5566800</td>
<td>R1,R1</td>
<td>+</td>
<td>+</td>
<td>0</td>
<td>+</td>
<td>0</td>
<td>+</td>
</tr>
<tr>
<td>4</td>
<td>4125085</td>
<td>R1,R2</td>
<td>+</td>
<td>+</td>
<td>0</td>
<td>+</td>
<td>0</td>
<td>+</td>
</tr>
<tr>
<td>5</td>
<td>4396997</td>
<td>R1,R2</td>
<td>+</td>
<td>+</td>
<td>0</td>
<td>+</td>
<td>0</td>
<td>+</td>
</tr>
<tr>
<td>6</td>
<td>5961888</td>
<td>r,r</td>
<td>0</td>
<td>+</td>
<td>0</td>
<td>+</td>
<td>0</td>
<td>+</td>
</tr>
<tr>
<td>7</td>
<td>2226735</td>
<td>r,r</td>
<td>0</td>
<td>+</td>
<td>0</td>
<td>+</td>
<td>0</td>
<td>+</td>
</tr>
<tr>
<td>8</td>
<td>2111482</td>
<td>r,r</td>
<td>0</td>
<td>+</td>
<td>0</td>
<td>+</td>
<td>0</td>
<td>+</td>
</tr>
<tr>
<td>9</td>
<td>2054546</td>
<td>r,r</td>
<td>0</td>
<td>+</td>
<td>0</td>
<td>+</td>
<td>0</td>
<td>+</td>
</tr>
<tr>
<td>10</td>
<td>5152135</td>
<td>r,r</td>
<td>0</td>
<td>+</td>
<td>0</td>
<td>+</td>
<td>0</td>
<td>+</td>
</tr>
<tr>
<td>11</td>
<td>2155988</td>
<td>r,r</td>
<td>0</td>
<td>+</td>
<td>0</td>
<td>+</td>
<td>0</td>
<td>+</td>
</tr>
</tbody>
</table>

- Patient is R2r K-. Could it be anti-C? + ???
Findings

Papainised panel performed by NaCl CAT

- Finely granular reaction in one cell
Findings

No reactions seen in:

- Grifols Perfect Panel by Manual Diamed LISS/Coombs CAT
- Saline room temperature/37°C/IAT Phenocell C 3% panel
- PEG IAT panel
Clinical notes: Pregnant.

GROUP: A Rh(D): Positive
Note: Insufficient sample to perform reverse group.

PHENOTYPE: C-E+c+c+(probable R2r), K-, Fy(a+b-), Jk(a+b+), M+S+s+.

DAT: Negative.

PLASMA: Anti-Sda very weakly reactive (score 3) with occasional panel cells by PEG-IAT, BioRad LISS/Coombs cards and enzyme technique. The plasma reacted very strongly (score 12) with a known strong Sda+ cell showing mild mixed field reactions.

No other antibodies, including anti-C and anti-Bg/HLA antibodies, were detected by saline 22°C, PEG-IAT and BioRad LISS/Coombs cards.
Red Cell Reference Laboratory Report

Comments:

The plasma sample contains anti-Sda. Anti-Sda is an uncommon finding we rarely encounter it in our reference work. The expression of the Sda antigen varies enormously amongst individuals but it is reported that approximately 4% of individuals are truly Sd(a-). There is an increased frequency of Sd(a-) red cell phenotype amongst pregnant women. Anti-Sda is usually an IgM antibody although some may be IgG. There are 2 reports in the literature of anti-Sda causing haemolytic transfusion reactions with transfusion of Sd(a++) red blood cells. Anti-Sda has not been reported to cause HDFN.
Sd\textsuperscript{a} antigen

- First described in 1967 - Macvie and Renton simultaneously
- Biosynthetic enzyme is \( \beta 1,4-N\)-acetylgalactosaminyltransferase 2
- Classified in the 901 series of high frequency antigens
  - ISBT 901011
- Not yet a blood group system as gene has not been fully elucidated
Sd<sup>a</sup> antigen

- Strength of expression is continuous
- At birth, newborns are Sd<sup>a</sup>-
- A transient Sd<sup>a</sup>- phenotype can be seen in pregnancy
Anti-Sd\textsubscript{a}

- Mostly IgM, however IgG has also been reported

- Shows characteristic ‘mixed-field reaction’
  
  - Small agglutinates in sea of free cells

  - Unagglutinated cells retested with anti-Sd\textsubscript{a}: same mixed-field reaction noted

- Sd\textsubscript{a} antigen can be found in high concentrations in saliva and urine

  - Urine can be used to neutralise anti-Sd\textsubscript{a} if it is interfering with antibody investigations
Anti-\textsuperscript{a}Sd : In the context of pregnancy

- Clinically insignificant
- No reported cases of Haemolytic Disease of the Foetus and Newborn
- Reported cases of Haemolytic Transfusion Reactions
