

## ABID CASE #11

Case study by Jim Perkins, M.D. (© 2006)



**History:** This patient was an 81 year old man with a 4 year history of myelodysplastic syndrome for which he has received over 11 units of RBCs in the past. His transfusion requirement is alleviated by chronic erythropoietin therapy. His past history includes prostatectomy for cancer 2 years previously, severe osteoarthritis status post hip arthroplasty 4 years earlier, hypertension and type II diabetes. His blood group antibody screen has always been negative.

### ABO and Rh Typing

|    |    |          |         |        |    |        |     |        |
|----|----|----------|---------|--------|----|--------|-----|--------|
| <A | <B | A1 cells | B cells | 6% alb | <D | <D/AHG | CCC | Interp |
| 4+ | 0  | 0        | 4+      |        | 4+ | 0      | 2+  | O neg  |

### Antibody Screen

|      |     |      |
|------|-----|------|
|      | Gel | HPC* |
| SCI  | 1+  | w+   |
| SCII | 0   |      |

### Direct Antiglobulin Test (tube method)

|     |      |     |     |
|-----|------|-----|-----|
|     | Poly | IgG | <C3 |
| AHG | 0    |     |     |
| CCC | 3+   |     |     |

### Intial Plasma Panel

| Lot #8RA168 |       | Rh system |   |   |   |   |   | Kell |   |                 |                 |                 |                 | Duffy           |                 | Kidd            |                 | Xg              | Lewis           |                 | MNSs |   |   |   | P  | LutherAn        |                 | Other   |                |     | HPC* |  |
|-------------|-------|-----------|---|---|---|---|---|------|---|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|------|---|---|---|----|-----------------|-----------------|---------|----------------|-----|------|--|
| Cell        | Rh    | D         | C | E | c | e | V | K    | k | Kp <sup>a</sup> | Kp <sup>b</sup> | Js <sup>a</sup> | Js <sup>b</sup> | Fy <sup>a</sup> | Fy <sup>b</sup> | JK <sup>a</sup> | JK <sup>b</sup> | Xg <sup>a</sup> | Le <sup>a</sup> | Le <sup>b</sup> | S    | s | M | N | P1 | Lu <sup>a</sup> | Lu <sup>b</sup> | Typings | Cell           | Gel |      |  |
| 1           | R1wR1 | +         | + | 0 | 0 | + | 0 | 0    | + | 0               | +               | 0               | +               | 0               | +               | 0               | +               | +               | 0               | +               | 0    | + | + | 0 | +  | 0               | +               | +       | C <sup>w</sup> | 1   | 0    |  |
| 2           | R1R1  | +         | + | 0 | 0 | + | 0 | 0    | + | 0               | +               | 0               | +               | 0               | +               | 0               | +               | +               | 0               | +               | 0    | + | 0 | + | +  | 0               | +               |         | 2              | 0   |      |  |
| 3           | R2R2  | +         | 0 | + | + | 0 | 0 | 0    | + | 0               | +               | 0               | +               | 0               | +               | +               | +               |                 | 0               | +               | 0    | + | 0 | + | +  | 0               | +               |         | 3              | 0   |      |  |
| 4           | Ror   | +         | 0 | 0 | + | + | + | 0    | + | 0               | +               | 0               | +               | 0               | +               | 0               | +               | +               | 0               | 0               | 0    | + | + | + | +  | 0               | +               |         | 4              | 0   |      |  |
| 5           | r'r   | 0         | + | 0 | + | + | 0 | 0    | + | 0               | +               | 0               | +               | 0               | 0               | +               | +               | +               | 0               | 0               | 0    | + | + | + | +  | 0               | +               |         | 5              | 0   |      |  |
| 6           | r"r   | 0         | 0 | + | + | + | 0 | 0    | + | 0               | +               | 0               | +               | 0               | +               | +               | +               | +               | 0               | +               | +    | 0 | + | + | +  | +               | +               |         | 6              | w+  | w+   |  |
| 7           | rr    | 0         | 0 | 0 | + | + | 0 | +    | + | 0               | +               | 0               | +               | 0               | +               | +               | +               | 0               | 0               | +               | +    | 0 | 0 | + | 0  | +               |                 | 7       | 0              |     |      |  |
| 8           | rr    | 0         | 0 | 0 | + | + | 0 | 0    | + | 0               | +               | 0               | +               | +               | +               | +               | 0               | +               | +               | 0               | +    | + | + | + | +  | 0               | +               |         | 8              | 0   |      |  |
| 9           | rr    | 0         | 0 | 0 | + | + | 0 | 0    | + | 0               | +               | 0               | +               | +               | +               | 0               | 0               | +               | 0               | +               | 0    | + | + | + | +s | 0               | +               |         | 9              | 0   |      |  |
| 10          | rr    | 0         | 0 | 0 | + | + | 0 | 0    | + | 0               | +               | 0               | +               | +               | +               | 0               | 0               | +               | +               | +               | +    | + | + | 0 | 0  | 0               | +               |         | 10             | 0   |      |  |
| 11          | R1R1  | +         | + | 0 | 0 | + | 0 | +    | + | 0               | +               | 0               | +               | 0               | +               | +               | +               | +               | 0               | +               | +    | + | + | + | +  | 0               | +               |         | 11             | 0   |      |  |
| Patient     |       |           |   |   |   |   |   |      |   |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |      |   |   |   |    |                 |                 |         | AC             | 0   |      |  |

\*Tested with HPC adsorbed serum

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**Additional panel; selected cells**

| Lot #17749 |       | Rh system |   |   |   |   | Kell |   |   |                 |                 | Duffy           |                 | Kidd            |                 | Lewis           |                 | P               | MN              |    |   |   | Lutheran |   | Xg              | Other           |                 | PEG             |      |     |     |  |
|------------|-------|-----------|---|---|---|---|------|---|---|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----|---|---|----------|---|-----------------|-----------------|-----------------|-----------------|------|-----|-----|--|
| Cell       | Rh    | D         | C | E | c | e | V    | K | k | Kp <sup>a</sup> | Kp <sup>b</sup> | Js <sup>a</sup> | Js <sup>b</sup> | Fy <sup>a</sup> | Fy <sup>b</sup> | Jk <sup>a</sup> | Jk <sup>b</sup> | Le <sup>a</sup> | Le <sup>b</sup> | P1 | M | N | S        | s | Lu <sup>a</sup> | Lu <sup>b</sup> | Xg <sup>a</sup> | Typings         | Cell | IgG | Gel |  |
| 1          | RzR1  | +         | + | + | 0 | + | 0    | 0 | + | 0               | +               | 0               | +               | +               | +               | +               | +               | 0               | +               | +  | + | 0 | +        | + | 0               | +               | +               |                 | 1    | 0   |     |  |
| 2          | R1wR1 | +         | + | 0 | 0 | + | 0    | 0 | + | 0               | +               | 0               | +               | +               | 0               | +               | +               | 0               | +               | +  | + | 0 | 0        | + | +               | +               | 0               | C <sup>w</sup>  | 2    | w+  | 1+  |  |
| 3          | R2R2  | +         | 0 | + | + | 0 | 0    | 0 | + | 0               | +               | 0               | +               | 0               | +               | 0               | +               | 0               | +               | +  | 0 | + | 0        | + | 0               | +               | 0               |                 | 3    | 0   |     |  |
| 4          | Ror   | +         | 0 | 0 | + | + | +    | 0 | + | 0               | +               | +               | +               | 0               | 0               | +               | 0               | 0               | 0               | +  | + | + | 0        | 0 | 0               | +               | +               |                 | 4    | 0   |     |  |
| 5          | r'wr  | 0         | + | 0 | + | + | 0    | 0 | + | 0               | +               | 0               | +               | +               | 0               | +               | +               | 0               | +               | +  | + | 0 | +        | + | 0               | +               | +               |                 | 5    | 0   |     |  |
| 6          | r"r   | 0         | 0 | + | + | + | 0    | 0 | + | 0               | +               | 0               | +               | +               | 0               | +               | +               | 0               | +               | 0  | + | 0 | 0        | + | 0               | +               | 0               |                 | 6    | 0   |     |  |
| 7          | rr    | 0         | 0 | 0 | + | + | 0    | + | + | 0               | +               | 0               | +               | 0               | +               | +               | +               | 0               | +               | 0  | + | + | +        | + | +               | +               | +               | Co <sup>b</sup> | 7    | vw+ | 1+  |  |
| 8          | rr    | 0         | 0 | 0 | + | + | 0    | 0 | + | 0               | +               | 0               | +               | +               | 0               | 0               | +               | +               | 0               | +  | 0 | + | +        | + | 0               | +               | +               |                 | 8    | 0   |     |  |
| 9          | R1R1  | +         | + | 0 | 0 | + | 0    | + | + | 0               | +               | 0               | +               | +               | 0               | 0               | +               | 0               | +               | +  | 0 | + | 0        | + | 0               | +               | +               |                 | 9    | 0   |     |  |
| 10         | R1R1  | +         | + | 0 | 0 | + | 0    | 0 | + | +               | +               | 0               | +               | 0               | +               | 0               | +               | 0               | +               | +  | 0 | + | 0        | + | 0               | +               | 0               |                 | 10   | 0   |     |  |
| 11         | R1r   | +         | + | 0 | + | + | 0    | + | 0 | 0               | +               | 0               | +               | 0               | +               | +               | 0               | 0               | +               | +  | + | + | 0        | + | 0               | +               | 0               |                 | 11   |     |     |  |
| 12         | r"r   | 0         | 0 | + | + | + | 0    | 0 | + | 0               | +               | 0               | +               | 0               | +               | +               | 0               | 0               | +               | 0  | 0 | + | 0        | + | 0               | +               | +               | Co <sup>b</sup> | 12   |     |     |  |
| 13         | r"r"  | 0         | 0 | + | + | 0 | 0    | + | + | 0               | +               | 0               | +               | +               | +               | 0               | +               | +               | 0               | 0  | + | + | +        | + | 0               | +               | +               |                 | 13   |     |     |  |
| 14         | rr    | 0         | 0 | 0 | + | + | 0    | 0 | + | 0               | +               | 0               | +               | +               | +               | +               | +               | 0               | +               | +  | + | + | +        | 0 | +               | +               | +               |                 | 14   |     |     |  |
| 15         | rr    | 0         | 0 | 0 | + | + | 0    | 0 | + | 0               | +               | 0               | +               | 0               | +               | +               | +               | 0               | +               | +  | + | 0 | +        | 0 | +               | +               | +               |                 | 15   |     |     |  |
| 16         | rr    | 0         | 0 | 0 | + | + | 0    | 0 | + | 0               | +               | 0               | +               | 0               | 0               | +               | +               | 0               | 0               | +  | + | 0 | +        | 0 | 0               | +               | 0               |                 | 16   |     |     |  |
| Patient    |       |           |   |   |   |   |      |   |   |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |    |   |   |          |   |                 |                 |                 | AC              |      |     |     |  |

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**Questions:**

1. What is the identity of this antibody?
2. Is any further workup needed to prove it?      Comment on the sensitivity of the gel and PEG techniques in this case.
3. Is the patient at risk for an immediate hemolytic transfusion reaction?      A delayed hemolytic transfusion reaction?      Would this antibody cause hemolytic disease of the fetus and newborn?
4. Four weeks earlier the patient's antibody screen was negative. Why wasn't the antibody detected at that time? Do you think the patient had not yet made it?
5. What is the biochemical nature of the antigen? To what family of structures does it belong?