

**AIHA CASE #10** Case Study by Jim Perkins MD (©, 2009)

**History:** This patient was a 41 year old woman with menorrhagia due to leiomyomata and urinary stress incontinence admitted for hysterectomy. She was G3P3 without known transfusions in the past. Her hematocrit was 33.8 with an MCV of 76.7, MCH 25.7, and RDW 18.7. A specimen for type-and-screen was received during a busy morning on the day of surgery.

**ABO and Rh Typing**

|    |    |          |         |        |    |        |     |        |
|----|----|----------|---------|--------|----|--------|-----|--------|
| <A | <B | A1 cells | B cells | 6% alb | <D | <D/AHG | CCC | Interp |
| 4+ | 0  | 0        | 3+      |        | 4+ |        |     | A pos  |

**Antibody Screen**

|     |     |
|-----|-----|
|     | Gel |
| OI  | 1+  |
| OII | 2+  |

**Direct Antiglobulin Test**

|         |      |     |     |
|---------|------|-----|-----|
| AHG     | Poly | IgG | <C3 |
| IS      | 0    |     |     |
| 5' inc. | 0    |     |     |
| CCC     | 2+   |     |     |

**Initial Panel**

| Lot# VRA109 | Rh system | Kell |   |   |   |   |   |   |   |                 |                 |                 | Duffy           |                 | Kidd            | Xg              | Lewis           | MNSs            |                 |                 |   |   | P | Lutheran |    | Other           |                 |                |      |     |  |  |
|-------------|-----------|------|---|---|---|---|---|---|---|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|---|---|---|----------|----|-----------------|-----------------|----------------|------|-----|--|--|
| 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        | PI | Lu <sup>a</sup> | Lu <sup>b</sup> | Typings        | Cell | Gel |  |  |
| 1           | R1wR1     | +    | + | 0 | 0 | + | 0 | + | + | 0               | +               | 0               | +               | 0               | +               | 0               | +               | +               | 0               | 0               | + | + | + | 0        | +  | 0               | +               | C <sup>w</sup> | 1    | 2+  |  |  |
| 2           | R1R1      | +    | + | 0 | 0 | + | 0 | 0 | + | 0               | +               | 0               | +               | +               | +               | +               | 0               | +               | 0               | 0               | + | + | + | 0        | +s | 0               | +               |                | 2    | 2+  |  |  |
| 3           | R2R2      | +    | 0 | + | + | 0 | 0 | 0 | + | 0               | +               | 0               | +               | +               | +               | +               | +               | 0               | 0               | +               | + | + | + | +        | +  | 0               | +               |                | 3    | 2+  |  |  |
| 4           | Ror       | +    | 0 | 0 | + | + | 0 | 0 | + | 0               | +               | 0               | +               | +               | 0               | +               | 0               | +               | 0               | +               | + | 0 | + | 0        | 0  | 0               | +               |                | 4    | 2+  |  |  |
| 5           | r'r       | 0    | + | 0 | + | + | 0 | 0 | + | 0               | +               | 0               | +               | 0               | +               | 0               | +               | +               | 0               | +               | 0 | + | 0 | +        | +s | 0               | +               |                | 5    | 2+  |  |  |
| 6           | r''r      | 0    | 0 | + | + | + | 0 | 0 | + | 0               | +               | 0               | +               | 0               | 0               | +               | 0               | +               | 0               | +               | + | + | + | +        | +  | 0               | +               |                | 6    | 2+  |  |  |
| 7           | rr        | 0    | 0 | 0 | + | + | 0 | + | + | 0               | +               | 0               | +               | 0               | +               | +               | +               | +               | 0               | 0               | + | + | + | +        | +  | 0               | +               |                | 7    | 2+  |  |  |
| 8           | rr        | 0    | 0 | 0 | + | + | 0 | 0 | + | 0               | +               | 0               | +               | +               | 0               | +               | 0               | +               | 0               | +               | 0 | + | 0 | +        | 0  | 0               | +               |                | 8    | 2+  |  |  |
| 9           | rr        | 0    | 0 | 0 | + | + | 0 | 0 | + | 0               | +               | 0               | +               | 0               | +               | 0               | +               | +               | 0               | +               | 0 | + | 0 | 0        | 0  | +               |                 | 9              | 2+   |     |  |  |
| 10          | rr        | 0    | 0 | 0 | + | + | 0 | 0 | + | 0               | +               | 0               | +               | 0               | +               | 0               | +               | +               | 0               | +               | 0 | + | + | +        | +  | 0               | +               |                | 10   | 2+  |  |  |
| 11          | R1R1      | +    | + | 0 | 0 | + | 0 | 0 | + | 0               | +               | 0               | +               | 0               | +               | 0               | +               | 0               | 0               | +               | + | 0 | + | +        | +  | +               | +               |                | 11   | 2+  |  |  |
| Patient     |           |      |   |   |   |   |   |   |   |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |   |   |   |          |    |                 |                 | AC             |      |     |  |  |

**Screening cell phenotypes (lot # VS152)**

| 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 | PI | Lu <sup>a</sup> | Lu <sup>b</sup> |
|------|------|---|---|---|---|---|---|---|---|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|---|---|---|---|----|-----------------|-----------------|
| OI   | R1R1 | + | + | 0 | 0 | + | 0 | + | + | 0               | +               | 0               | +               | 0               | +               | +               | 0               | +               | +               | 0               | + | 0 | + | + | +  | 0               | +               |
| OII  | R2R2 | + | 0 | + | + | 0 | 0 | 0 | + | 0               | +               | 0               | +               | +               | 0               | +               | +               | +               | 0               | +               | + | + | + | + | 0  | +               |                 |

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**Additional testing**

| Cells  | Saline antibody screen |         |     |    | Cold panel |        |         |        | REST adsorption |         |
|--------|------------------------|---------|-----|----|------------|--------|---------|--------|-----------------|---------|
|        | IS                     | 30'37°C | AHG | CC | IS         | 60' RT | 60' 15° | 60' 4° | 30' RT          | 30' 15° |
| OI     | 0                      | 0       | 0   | 2+ | 0          | 0      | 3+      | 4+     | 0               | 0       |
| OII    | 0                      | 0       | 0   | 2+ | 0          | 0      | 3+      | 4+     | 0               | 0       |
| Auto   | 0                      | 0       | 0   | 2+ | 0          | 0      | 3+      | 4+     |                 |         |
| O Cord |                        |         |     |    | 0          | 0      | w+      | 4+     |                 |         |
|        |                        |         |     |    |            |        |         |        |                 |         |
|        |                        |         |     |    |            |        |         |        |                 |         |
|        |                        |         |     |    |            |        |         |        |                 |         |

The technologist handling the problem diagnosed a cold autoantibody. The patient was out of the operating room by the time this workup was finished.

**Question:**

1. Do you agree with this diagnosis? Are you comfortable stopping there?

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The evening shift supervisor picked up the problem and did the following additional work.

| Repeat DAT |                 |                 |     | REST adsorption |     | Antibody screen |          |          | Warm autoadsorption |          |     |
|------------|-----------------|-----------------|-----|-----------------|-----|-----------------|----------|----------|---------------------|----------|-----|
| AHG        | Poly            | IgG             | <C3 |                 | Gel | PEG             | LISS 37' | LISS IgG | PEG                 | LISS IgG | Gel |
| IS         | 1+ <sup>w</sup> | 1+ <sup>w</sup> | 0   | OI              | 2+  | vw+             | 0        | 1+       | 0                   | 0        | 1+  |
| 5' inc.    | 0               | 0               | 0   | OII             | 2+  | w+              | 0        | 1+       | 0                   | 0        | 1+  |
| CCC        | 2+              | 2+              | 2+  |                 |     |                 |          |          |                     |          |     |
|            |                 |                 |     |                 |     |                 |          |          |                     |          |     |

**Eluate**

| 8RA178  |        | Rh system |   |   |   |   | Kell |   |   |                 |                 |                 | Duffy           |                 | Kidd            |                 | Xg              | Lewis           |                 | MNSs            |   |   |   | P | Lutheran |                 | Other           | Last wash      |      |     |    |  |       |   |
|---------|--------|-----------|---|---|---|---|------|---|---|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|---|---|---|---|----------|-----------------|-----------------|----------------|------|-----|----|--|-------|---|
| 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 | PI       | Lu <sup>a</sup> | Lu <sup>b</sup> | Typings        | Cell | IgG |    |  | IgG   |   |
| 1       | R1R1   | +         | + | 0 | 0 | + | 0    | 0 | + | 0               | +               | 0               | +               | 0               | +               | 0               | +               | 0               | +               | +               | + | 0 | + | 0 | 0        | 0               | +               | +              |      | 1   | 3+ |  | BCell | 0 |
| 2       | R1wR1  | +         | + | 0 | 0 | + | 0    | + | + | 0               | +               | 0               | +               | +               | +               | +               | +               | +               | 0               | +               | + | + | 0 | + | 0        | +               | 0               | C <sup>v</sup> | 2    | 3+  |    |  |       |   |
| 3       | R2R2   | +         | 0 | + | + | 0 | 0    | 0 | + | 0               | +               | 0               | +               | +               | +               | 0               | +               | 0               | +               | +               | + | + | 0 | + | 0        | +               | +               |                | 3    | 3+  |    |  |       |   |
| 4       | Ror    | +         | 0 | + | 0 | + | 0    | 0 | + | 0               | +               | 0               | +               | 0               | 0               | +               | 0               | 0               | 0               | +               | + | 0 | 0 | 0 | 0        | +               | 0               | Bg(a+)         | 4    | 3+  |    |  |       |   |
| 5       | r'r    | 0         | + | + | 0 | + | 0    | 0 | + | 0               | +               | 0               | +               | +               | 0               | 0               | +               | 0               | +               | +               | + | 0 | + | 0 | 0        | +               | +               |                | 5    | 3+  |    |  |       |   |
| 6       | r''r   | 0         | 0 | + | + | + | 0    | + | 0 | 0               | +               | 0               | +               | +               | 0               | 0               | +               | 0               | +               | +               | + | + | 0 | + | 0        | +               | +               |                | 6    | 3+  |    |  |       |   |
| 7       | rr     | 0         | 0 | + | 0 | + | 0    | + | 0 | 0               | +               | 0               | +               | 0               | +               | 0               | +               | 0               | +               | 0               | + | + | 0 | + | 0        | +               | +               | Bg(a+)         | 7    | 3+  |    |  |       |   |
| 8       | rr     | 0         | 0 | + | 0 | + | 0    | 0 | + | 0               | +               | 0               | +               | +               | 0               | +               | 0               | 0               | +               | +               | + | 0 | + | 0 | 0        | +               | 0               |                | 8    | 3+  |    |  |       |   |
| 9       | rr     | 0         | 0 | + | 0 | + | 0    | 0 | + | 0               | +               | 0               | +               | +               | +               | 0               | +               | +               | 0               | 0               | 0 | + | 0 | + | 0        | +               | +               |                | 9    | 3+  |    |  |       |   |
| 10      | R1R1   | +         | + | 0 | 0 | + | 0    | 0 | + | 0               | +               | 0               | +               | +               | 0               | +               | +               | 0               | +               | +               | + | + | + | + | 0        | +               | +               |                | 10   | 3+  |    |  |       |   |
| 11      | R2Rh32 | +         | w | + | + | w | 0    | 0 | + | 0               | +               | 0               | +               | 0               | 0               | +               | 0               | 0               | +               | +               | 0 | + | + | 0 | 0        | +               | +               |                | 11   | 3+  |    |  |       |   |
| Patient |        |           |   |   |   |   |      |   |   |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |   |   |   |   |          |                 |                 | AC             |      |     |    |  |       |   |

No specimen remained for further workup.

