



Show me the RH46 negative units!



Show me
the RH46
negative
units!

"Jerry Maguire." IMDb, IMDb.com, 13 Dec. 1996, www.imdb.com/title/tt0116695/.

Objectives

- Give a brief overview of the Sec (RH46) antigen and related workup
- Discuss transfusion options for individuals with anti-Sec
- Reinforce the importance of institutional collaboration

The Sec Antigen

- Also known as RH46, first described in 1989, and given an Rh number in 1990
- Present in 100% of the population: Sec is present on common Rh phenotypes except Rh_{null}, D--, and D• •
 - Found more frequently in sub-Saharan African populations
- Clinical Significance
 - Transfusion reaction – no information available
 - HDFN – no to severe

The Phone Call

- The Immunohematology Reference Lab (IRL) received a call about a female, African-American patient with a known anti-Sec (anti-RH46)
- Currently pregnant with her 7th pregnancy (para 0)
 - Abortions X 4
 - 23-week loss of non-viable male infant
 - 21-week loss of non-viable female infant
 - Cervical cerclage placed at 17 and 13 weeks, respectively, due to shortened cervix

The Phone Call

- No history of transfusion
- Paternal samples also submitted on father of the child
- History from the ARC: anti-c, anti-e, possible anti-U and anti-Sec (anti-RH46)
- The patient is being seen at two different facilities. IRL's involvement will depend on where she delivers. If full term, the facility she will deliver at uses another blood supplier and CBC-IRL will not be involved.
- IRL later found out that she was a student, having immigrated from Guinea

The Workup

- A work up is completed on the patient

| Forward Typing | | | Reverse Typing | |
|----------------|--------|--------|----------------------|---------|
| Anti-A | Anti-B | Anti-D | A ₁ Cells | B Cells |
| 4+ | 0 | 4+ | 0 | 4+ |

| | Poly | IgG | C' | Saline |
|-----|------|-----|-----|--------|
| DAT | (+) | (+) | (+) | 0 |

Maternal Genotype: E-, c-, C+^w, e+^w, K-, Fy(a-b^{-GATA}), Jk(a+b-), M-, N+, S-, s-, U-
 Paternal Genotype: E+, c+, C-, e+^{Partial}, K-, Fy(a-b^{-GATA}), Jk(a+b+), M+, N-, S-, s+, U+

****All children from the father would be c+ and Rh 46+****

The Workup

- Warm autoantibody is identified in the eluate.
- Panreactivity in the plasma, with the exception of certain cells...

| | | Rh | | | | | MNSs | | | | Kell | | Duffy | | Kidd | | Results |
|---|------------|----|---|---|---|---|------|---|---|---|------|---|-----------------|-----------------|-----------------|-----------------|----------------|
| | | D | C | E | c | e | M | N | S | s | K | k | Fy ^a | Fy ^b | Jk ^a | Jk ^b | IAT |
| 1 | D-- | + | 0 | 0 | 0 | 0 | + | + | 0 | + | 0 | + | + | + | 0 | + | 0 ^v |
| 2 | D-- | + | 0 | 0 | 0 | 0 | + | 0 | + | + | 0 | + | + | 0 | + | 0 | 0 ^v |
| 3 | D-- | + | 0 | 0 | 0 | 0 | + | 0 | + | 0 | 0 | + | 0 | + | + | 0 | 0 ^v |
| 4 | Rh Null | 0 | 0 | 0 | 0 | 0 | + | + | 0 | + | 0 | + | 0 | 0 | + | 0 | 0 ^v |
| 5 | •D• | + | 0 | 0 | 0 | 0 | + | 0 | + | + | 0 | + | 0 | + | 0 | + | 0 ^v |

- IRL was unable to detect the previously reported anti-c, anti-e or anti-U....

The Workup

- New York Blood Center was able to confirm the anti-Sec (anti-RH46)
 - Genotyping results: Partial C, E-, c-, e+^w

If transfusion therapy is indicated for this patient, selection of ABO compatible and RH genotype matched (c-, RH:-46 and U-) donor blood is recommended. These units are extremely rare and may not be available in the United States. Autologous donation is strongly recommended. If possible the blood of the patient's siblings should be evaluated for compatibility.

- The patient has three sisters, all three out of state, that IRL sent testing kits to their local blood centers to have them genotyped
 - Two sisters in North Carolina
 - One sister in Virginia

The Hunt Begins

- There are many complicating factors to consider when trying to find a unit
 - Since the patient has never gone to full term, we don't know how the pregnancy will proceed
 - For the health of the baby, you want the pregnancy to go as long as possible
 - We needed a unit available at 28 weeks minimum, fresh (<7days), and available for mom, baby, or both
 - We also needed a unit that could be frozen for later use
 - One unit won't work for all these scenarios
 - Obviously the first place to look for compatible units is from siblings

The Hunt Begins

- The IRL at CBC was able to coordinate with blood centers close to the siblings
 - Samples are drawn, free of charge, and sent to the New York Blood Center for genotyping....

| | ABO/D | DAT | Antibody screen | Rh serology | Reactive with Patient's Plasma? | |
|-----------|-------|-----|-----------------|-----------------------|---------------------------------|-----------|
| Sister #1 | A/pos | Neg | Neg | C+E-c-e+ RH: 32-46 | No | <u>U+</u> |
| Sister #2 | O/pos | Neg | Neg | C+E-c-e+ RH: 32-46 | No | <u>U+</u> |
| Sister #3 | A/pos | Neg | Neg | C+E-c-e+ RH: 32-46 | No | <u>U+</u> |

- Interestingly, all three siblings had prior pregnancies with no complications ie: no antibodies

The Hunt Begins



"Raiders of the Lost Ark." IMDb, IMDb.com, www.imdb.com/title/tt0082971/mediaviewer/rm941314048.

Getting a unit

- The IRL submitted all necessary paperwork to the prospective blood centers for the sibling's collection(s)
 - None of the siblings have donated before
 - Communication with sisters to make sure they were eligible to donate ie: no illnesses, no medications or no travel to a malarial area
 - All sister were eligible and willing to donate and all blood centers were ready and waiting.....



"Forrest Gump." IMDb, IMDb.com, www.imdb.com/title/tt0109830/mediaviewer/rm815742720

The time has come

- One month later, IRL was notified that the patient was giving birth at her local hospital, a non-CBC client...
- IRL then stopped our search for the RH:-46 units
 - No siblings had donated to date



I think I'll go home now

"Forrest Gump." IMDb, IMDb.com, www.imdb.com/title/tt0109830/mediaviewer/rm797380096.

Then the phone rang...

- Two weeks later, IRL is notified that the infant born is being transferred to the local hospital – a CBC customer
 - TBIL = 29.4 upon arrival – IVIG and phototherapy are started
 - Hgb = 11.3 g/dL
 - HCT = 32.3%
 - DAT = 4+ in gel
- The local hospital requests one unit: little c-negative, U-negative, Sec-negative (RH:-46)
 - We have no unit available – none of the siblings made appointments to donate and are no longer returning our phone calls or emails...



"Taken." IMDb, IMDb.com, www.imdb.com/title/tt0936501/mediaviewer/rm2571975168.

Gotcha!

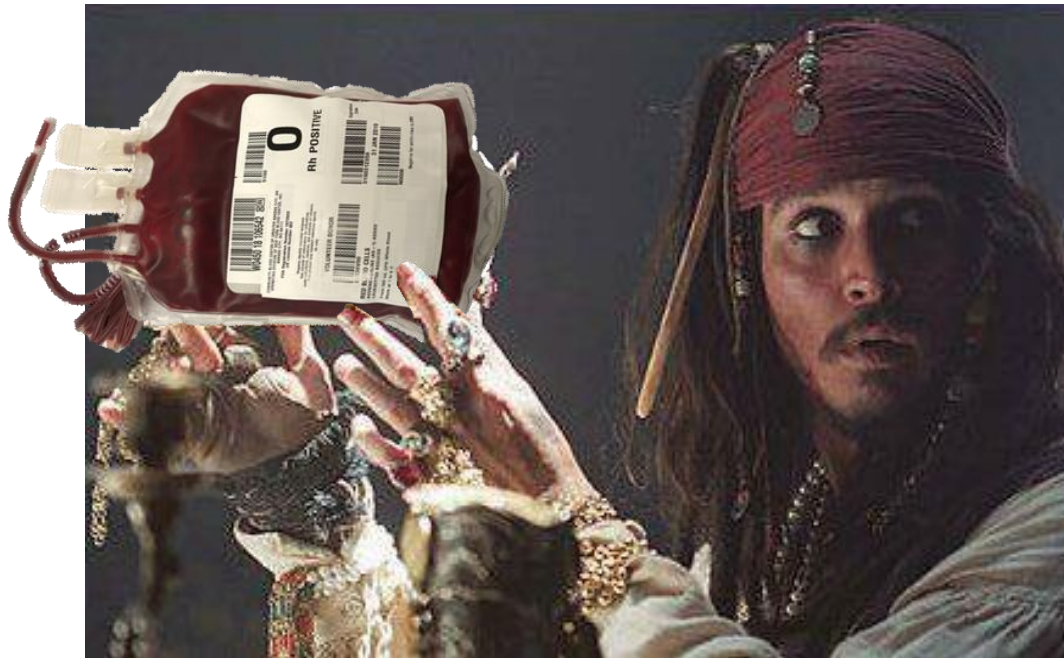
- The child's mother was finally able to reach her siblings and two of the siblings agreed to donate for the child
 - Only one of the two siblings had a successful donation, but the unit would take time to be tested and shipped.... The hospital needed a unit STAT
- After communicating with the hospital, CBC's medical director and some of our enterprise partners, a (liquid) D- - unit was located and shipped to CBC

Gotcha!

- The D- - unit was crossmatch compatible with the maternal plasma and 46 mL was transfused (sterile docking device)
 - The infant was discharged a few days later with continued improvement
- The unit was returned to CBC and then forwarded to New York Blood Center to freeze the remainder of the unit
- Meanwhile.... An Rh:-46 negative unit was donated by one of the siblings and shipped to CBC....

The Unit

- Due to limitations by the collecting facility, the unit was donated as a “Directed Donor” meaning that the unit could only go to the child and no one else
 - This was the only option for collecting a unit from this facility



The Unit

- Due to the rarity of the unit, and with the donor's permission, Community Blood Center was able to release the unit to be used by others
 - Allowing us to freeze the unit for future use

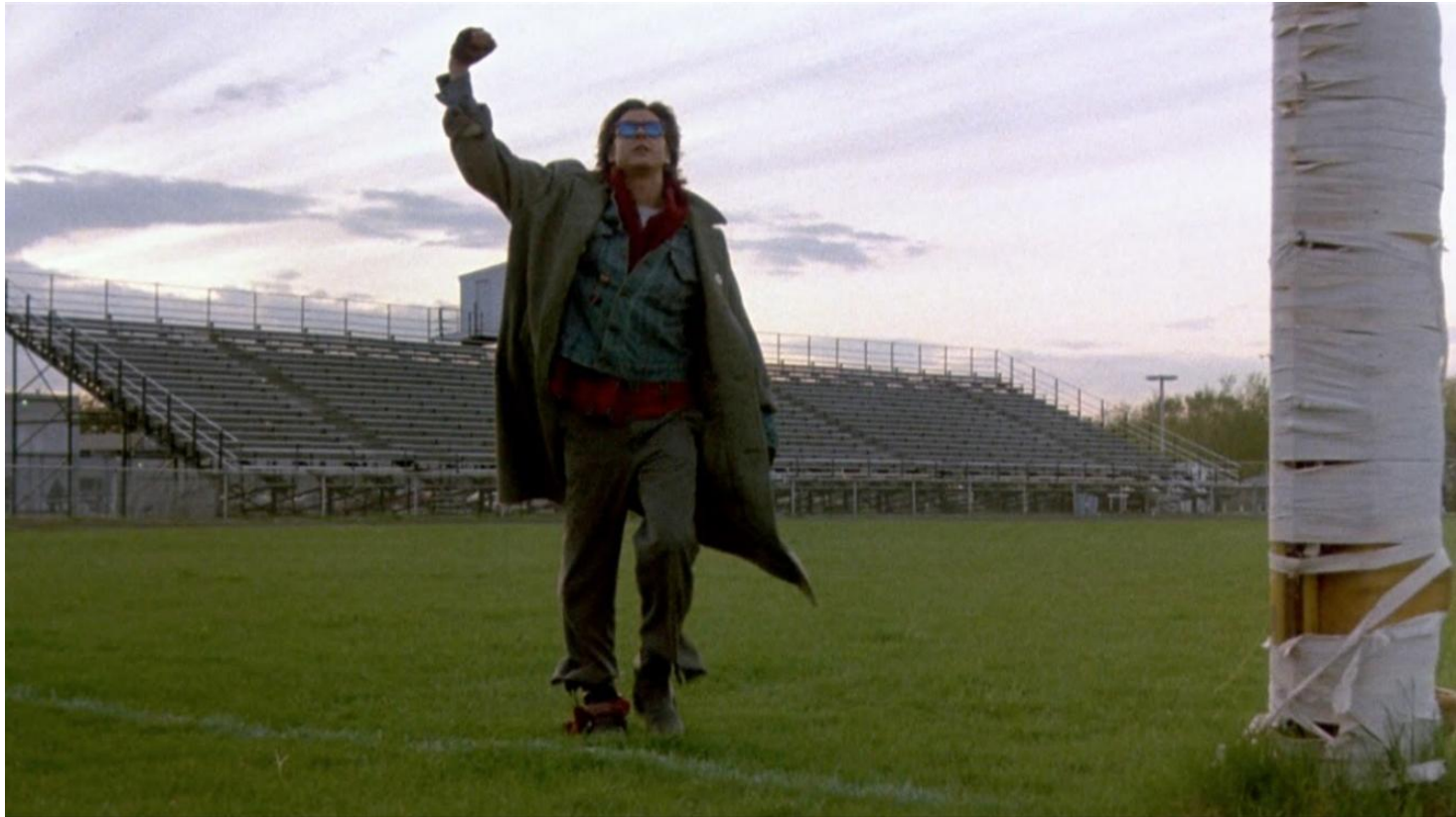


"The Shining." IMDb, IMDb.com, www.imdb.com/title/tt0081505/mediaviewer/rm4166679040.

Objectives

- Give a brief overview of the Sec (RH46) antigen and related workup
- Discuss transfusion options for individuals with anti-Sec
- Reinforce the importance of institutional collaboration

Questions?



"The Breakfast Club." IMDb, IMDb.com, www.imdb.com/title/tt0088847/mediaviewer/rm1102187776.



Δ New York *Blood Center Enterprises*

innovation • experience • expertise

