Savior Siblings

- This week our discussion will focus on "savior siblings." Tissue typing is part of pre-implantation genetic testing procedures. It allows parents to test embryos to see if they are HLA matches for their existing children in need dire need of matched transplanted tissues. The children born for this purpose have been named "savior siblings."
- In light of what you learned this module with regards to issues surrounding host integration of CTE solutions I would like you to consider the use of "savior siblings" as a technique to modify the immune response.

HLA matching greatly increases the chances of tissue or cell transplantations (Zachary and Leffell). Mismatches result in increased immunosuppression, which in turn can increase the risk of infection. A "savior sibling" is a baby that has been created through In Vitro Fertilization (IVF) and prescreened using a preimplantation genetic diagnosis (PGD), a test accurate at 98-99% (Genetic Alliance information), to act as a donor for a sick sibling. The "savior sibling" may be the solution for any sibling wo needs hematopoietic stem cell transplantation. Since half of HLA markers are inherited from the mother and the father, the chance that an embryo will be an exact HLA match to the sibling are 25%. Even after an exact 6-antigen match, rejection can occur because other antigens, not yet identified, can play a role in the rejection (UCDavis). The authorization for this procedure, can cover umbilical cord extraction, to bone marrow transplant, and even, eventually organ transplant. For bone marrow transplants, the "born to donate" sibling may be used for multiple transplants.

Referring to the case study by Dr. Laural Rivard, comment on whether or not you think it was ethical for the Nash parents to give birth to Adam under these circumstances.

Having framed the "savior sibling" technique to work around the immune system, I believe there are many ethical concerns in Adam's story. Starting with the embryo, depending what we consider as life, it can be questionable to pick one and discarding the others. Next, Nash parents had to take the uneasy decision to decide to have a child for the immediate purpose of saving another life. We can imagine a number of psychological risks for Adam. He may feel closer to her sister knowing that he was able to save her life or he may be resentful, has low-self-esteem, and be depressed. We should also consider the adverse effects of the transplant itself, and the physiological side effects, like pain, fatigue, and many others. I would have been less conflicted knowing that a duly appointed ethic committee, would have reviewed Nash case, considered that the psychological and emotional risks for both children (did Molly has the desire to live and deal with her sickness? Did the Nash parents were ready to transmit to Adam the same disease for the rest of his life?) were minimized, concluded that all other resources were exhausted (no potential donor in the family or registries); and would have given its consent. In conclusion I don't believe it was an ethical decision and could create a slippery slope promoting genetic selection.

You are asked not only to post but also to thoughtfully respond to at least one posting by a peer for full credit.

Respond to at least two of your classmates.

Due: Initial post - Sunday 11:59 pm, responses - Tuesday 11:59 pm

Savior Sibling Case Study.pdf

References:

[1]: Rivard, L. (June 11, 2013). Case study in savior siblings. Scitable by Nature Education. https://www.nature.com/scitable/forums/genetics-generation/case-study-in-savior-siblings-104229158/

[2]: Information about PGD: https://geneticalliance.org.uk/information/service-and-testing/preimplantation-genetic-diagnosis-how-does-it-work/

[3]: UCDavis information about HLA matching: https://health.ucdavis.edu/transplant/about/hla-typing-matching.html#:~:text=The%20chance%20of%20finding%20an,these%20patients%20do%20very%20well.