

Article review cell transfer during pregnancy

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This paper reviews the article Your Cells are My Cells and considers the validity of the article based on current knowledge about the immune system, microchimerism and the immune response. Finally an evaluation of the article as a source document is included.

Your Cells are My Cells

Nelson's (Date needed) article is a discussion on the cells that we may have inherited from our mothers, or that mothers retain after their pregnancy. The author discusses recent research on the topic as well as sharing her own thoughts on how the immune system deals with these cellular interlopers. The main point in the article was that cells' crossing the placenta is an established fact (microchimerism) but that new research is suggesting that these same cells can result in health or illnesses in both the mother and the child for a considerable time after the sharing occurred. Also that these cells can persist for an indefinite period of time and can become part of the body's organs.

There are instances when microchimerism can cause an immune attack in some individuals, but in some cases the body can actually be helped to heal through the same interplay of cells. Two examples in the paper showed an example of this. Firstly mothers who have rheumatoid arthritis can often have an improvement in their symptoms when they are pregnant, but that the condition returns after birth. This was initially considered to be because of higher levels of Cortisol in the blood of the mother, but because this phenomenon is not consistent in all cases (it doesn't work for some women)

this idea as discounted. Studies are now considering the disparity in Class II HLA's as a possible reason for the decrease in symptoms during pregnancy. The second example was juvenile dermatomyositis. In this case transferred immune cells (mother to foetus) can result in an attack on the child's body tissues. Another case in children is scleroderma and neonatal lupus. In both of these cases the adopted cells can cause the host body to attack the affected body tissues.

The final point in the article was that this transfer could be harmful for some, and a helping aid in others. The reasons why this is the case seems to differ from case to case and more research is needed to determine how and why this happens.

The transfer of cells between foetus and mother has been well documented especially in studies relating to negative impacts the mother can have on the babies health through the ingestion of alcohol and other harmful substances. The foetus is basically plugged into the mother's blood stream via the placenta and over the course of the pregnancy the mother and baby communicate chemically with some cells passing from mother to child and (more recently found) from the child to the mother. What wasn't understood until recently was that these cells can remain indefinitely in both the mother and the child as he/she develops after birth.

Not all cells pass from mother to foetus though. Part of the placenta's function is to ensure that many harmful teratogens from getting into the baby, but it is not known yet exactly how many substances pass through and which ones are blocked and if this is consistent in all cases. It is logical to assume though that the cell transfer via the blood is a two way process and

this can be evident in mothers who have a rhesus negative blood type, when carrying a foetus that has a positive blood group. Research studies that search for male cells in females and female cells in males have also supported the concept of cell transfer prior to birth. What is not known is the number, type and frequency of cells are carried around in a host's body and for how long. Analysis conducted on tissue shows different cell frequencies to those found in the blood in some cases and this is an area where further study is needed.

The immune system is our body's way of keeping us healthy. It does this by attacking cells it deems as foreign or harmful. It has been suggested that some of the inconsistencies in microchimerism cases could be the result of some cells having the ability to hide or shield themselves from the immune system in the host's body. This would prevent the normal immune response in the body from being activated.

Nelson's (2008) article does raise some interesting questions and ideas for further research. While not written in the standard research format that most studies are reported in, there is some interesting information contained in the report. The author does reference other research studies to support her claims although there are not a lot of them mentioned and she also outlines personal studies that herself and her team have conducted. However from a research perspective there is not enough detail provided about these experiments in this report to enable researchers to carry out replica studies for themselves. There were also a number of unsubstantiated and/or generalized comments made in the report. For example "biologists were surprised in the 1990s" (Nelson, 2008, p. 73).

This is an exciting field of study and the implications of Nelson's (2008) work and others could be really significant in terms of disease prevention and treatment. Because this cell transfer can be either a positive or negative impact on the host body, the specific details of why it happens in some cases and not in others is just one of the further areas of study researchers will have to focus on.

References

Nelson, J. L. (2008). Your cells are my cells. *Scientific American*. 298, 72 - 79