Alison Hey-Cunningham - What do we know about the immune system in Endometriosis?

While it is apparent that immune disturbances and inflammation occur in endometriosis, it is not yet fully understood how this contributes to disease development and progression and the common symptoms of pain and infertility. Changes in numbers and function of immune cells are apparent in endometriosis, within the pelvic cavity as well as within the uterus itself and in circulation. The immune system is made up of a network of cells and mediating factors which function cooperatively to respond to substances recognised as 'foreign' by the body in order to maintain general wellbeing and health.

During menstruation, it is normal for some of the shed blood and tissue to reflux up the fallopian tubes into the pelvic cavity. This should be cleaned up by the immune system. In women with endometriosis, evidence is growing that the failure of the immune response to clear this menstrual tissue in the pelvic cavity (along with other disturbances) encourages it to adhere and form endometriotic lesions. Endometriosis is considered to be an inflammatory condition. Inflammation promotes pain because inflammatory mediators make nerves more sensitive to stimulation, which makes them more prone to signalling pain. This is why anti-inflammatory pain relievers (NSAIDs – non-steroidal anti-inflammatory drugs) should be the first line of pain relief in endometriosis; they act against the inflammation.
Immune changes in endometriosis are also likely to be negatively impacting fertility in some women. Specific immune cells and inflammatory mediators play important roles in getting and staying pregnant and problems with a women's immune tolerance are linked to trouble getting pregnant and other issues like repeated early pregnancy loss. Another aspect of the immune system that we are starting to understand in endometriosis is the link to autoimmune diseases (conditions where the body's immune system mistakenly attacks its own apparently normal cells, such as lupus and type 1 diabetes).

Women diagnosed with endometriosis are more than 20 times more likely to have an autoimmune condition than the general population. Furthermore, endometriosis itself shows some similarities with autoimmune diseases, with specific immune cell activation and abnormal function, tissue damage, multi-site involvement and increased occurrence within families with a genetic basis. Our growing understanding of what's happening with the immune system in endometriosis begs the question of how this knowledge can help improve management of the disease. There is the potential for modulation of immune responses to be employed in new medical treatments for endometriosis, for example, treatment with certain known immune modulators can decrease lesion size in animal models of the disease, and increase pregnancy rates in women with endometriosis-associated infertility. Knowledge regarding immune aspects of endometriosis can also be harnessed to help women inform lifestyle and diet choices to reduce inflammation within the body.