

Scientists identify possible cause of endometriosis

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Endometriosis can cause severe pelvic and abdominal pain

Endometriosis is a condition whereby patches of the inner lining of the womb appear in parts of the body other than the womb cavity. It can cause severe pain and affects approximately 15% of women of reproductive age. Endometriosis is also associated with infertility, with 50% of infertile women affected by the condition.

Researchers discovered that an enzyme, called telomerase, is released by cells in the inner lining of the womb during the latter stages of the menstrual cycle in women who are affected by endometriosis. Telomerase is not commonly found in the cells that make up the body, but is uniquely found in the inner lining of the womb and in some special cells, such as sperm and egg cells. The enzyme is also found in cancer cells and is thought to be responsible for replicating DNA sequences during cell division in chromosomes.

Dr Dharani Hapangama, from the University's Department of Reproductive and Developmental Medicine, explains: "Endometriosis occurs when cells of the inner lining of the womb are found growing outside of the uterus. At the time of a woman's menstruation cycle these cells, called endometrial cells, are shed and can be expelled into the abdominal cavity. If these cells continue to live and are implanted in the pelvis and abdomen it can cause severe pain and in serious cases can lead to infertility.

"We found the telomere – a region at the end of all chromosomes that prevents the chromosome destroying itself during cell division – is abnormally long in women with endometriosis. During menstruation telomeres normally shorten in length with each cycle of cell division until they reach a certain length at which they can no longer divide. An enzyme called telomerase can extend the length of the telomeres so that they can continue to divide and this can happen in some special cells such as sperm and egg cells, but not normally in cells that make up the organs of the body.

"Our research shows, however, that cells in the lining of the womb are unique in that they can express this enzyme in the early stages of the menstrual cycle when cell division is important, but not during the latter stages when implantation of the fertilised embryo becomes a priority.

"Women who have endometriosis express this enzyme in both the early and late stages of the menstrual cycle which means that the cells will continue to divide and lose their 'focus' in supporting the establishment of a pregnancy. As a result the lining of the womb may be more hostile to an early pregnancy, and the cells that are shed at this late stage in the menstrual cycle may be more 'aggressive' and more able to survive and implant outside the uterus, causing pain in the pelvic or abdomen area."

The research, published in *Human Reproduction*, will help scientists

develop new techniques for diagnosing and treating the condition.

Source: University of Liverpool

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