

THE CONVERSATION

Can the menopause really be reversed?

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Scientists in Greece ["https://www.newscientist.com/article/mg23130833-100-menopause-reversal-restores-periods-and-produces-fertile-eggs/"](https://www.newscientist.com/article/mg23130833-100-menopause-reversal-restores-periods-and-produces-fertile-eggs/) claimed recently to have “reversed the menopause”. They did this by injecting blood plasma that contains platelets into the ovaries of eight women who had not menstruated for around five months in order to stimulate ovarian regeneration. The scientists later recovered eggs from the ovaries. The eggs were able to mature and reach the stage at which they could be fertilised. Does this mean the end of menopause? At this time, the answer would almost certainly be “no”.

The work was presented at the annual meeting of the European Society of Human Reproduction and Embryology in Helsinki earlier this month. Importantly, it has not been [peer-reviewed](http://www.senseaboutscience.org/pages/peer-review.html) and there is no independent verification of the findings.

But that’s not the only reason to treat the results as preliminary. This is a small study, which lacked appropriate controls. For example, one might reasonably expect a comparison with a group of perimenopausal women who did not have any treatment.

The fact that this work was first done in women is also potentially worrisome as limited data on safety of the technique was reported. A more traditional approach would have been to test the technique in a laboratory – so-called in vitro testing. Ovarian follicles, the part of the ovary in which the egg develops and which also secretes key hormones that influence the menstrual cycle, can be cultured in the laboratory and so an obvious experiment would have been to grow follicles in the presence of the platelet rich plasma. This could have been followed with testing on animals to prove that the procedure is safe.

Not an overnight change

Almost everyone is aware that women are born with a finite number of eggs, and that when this store runs dry, the woman enters menopause. But, like so many concepts in physiology, the devil is in the detail. Menopause is not a sudden overnight change, but a gradual process that can take many years. The first sign is a loss of regularity of ovulation and menstruation. This might last for ten years before the final menstrual period, so a break in cycling is not that uncommon and this is what might have been seen here – a break and then a temporary resumption of menstrual cycles, coinciding with the treatment.

Maybe a more accurate description of this work would have been “possible slight extension of perimenopausal phase”, but of course that is much less interesting than a reversal of menopause.

Is it even possible?

The method itself is biologically plausible. In 2010, a research group in the US, led by [Jonathan Tilley](http://www.ncbi.nlm.nih.gov/pubmed/22366948) identified cells in the adult ovary that, with the correct stimulation, could produce new ovarian follicles and new eggs. Others have reported that platelet rich plasma can cause [stem cells to differentiate](http://www.ncbi.nlm.nih.gov/pubmed/26622340). This is presumed to happen because this plasma contains a rich mix of “goodies”, including [cytokines](http://bitesized.immunology.org/receptors-and-molecules/cytokines/), which are small signalling molecules important in cellular communication.

Adding these two pieces of knowledge offers one possible explanation for the findings, but in biology, 1+1 rarely equals 2 and where it does, extensive work is required to prove it. For example, infusing the platelet rich plasma into the ovary would have caused an inflammatory response. Might this have been the cause of the resumption of the menstrual cycles reported?

The danger with reports such as this is that they offer hope which may prove to be false, especially when they enter mainstream media. Menopause is a stressful time, indicating a transition in life, which has physical and emotional impacts. This is amplified in the few women who experience early menopause. In addition, the average age of motherhood is rising steadily. People are looking at options for prolonging reproductive lifespans; options including banking eggs or embryos. Delaying menopause would be an amazing breakthrough, but there is a very long way to go to achieve this.

This article was originally published on <http://theconversation.com>. Read the original article at <https://theconversation.com/can-the-menopause-really-be-reversed-62853>.