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Press release

Predicting the end of fertility for women after paediatric cancer

Researchers from the Paris Public Hospitals (AP-HP), Inserm, the Gustave Roussy and Curie Institutes, and Oscar Lambret Cancer Centre, coordinated by Dr Cécile Thomas-Teinturier of the Paediatric Endocrinology Service at Bicêtre Hospital, have studied the impact of certain therapeutic agents on the fertility of women who have been cured of a paediatric cancer. This research, carried out with support from the French National Cancer League, is published in the journal [Human Reproduction](#) on 23 March 2015.

Now that survival is increasing, the impact of therapeutic agents on the future fertility of girls cured of cancer in childhood can affect their quality of life. In all women, the length of reproductive life is related to the number of follicles present in their ovaries, a reserve that cannot be renewed, and that declines over time. Menopause occurs when this number declines below a certain threshold, 5-10 years after the end of fertility.

In this study, the researchers proposed the hypothesis that women who have undergone chemotherapy with a class of drugs known as alkylating agents—cyclophosphamide, ifosfamide, procarbazine—to treat a childhood cancer can have reduced follicular reserve, even though their apparent ovarian function may still be intact (regular cycles).

They evaluated the ovarian reserve in 105 women cured of cancer during childhood, who had received alkylating agents during their childhood, but no radiation therapy in the pelvic area. Investigations included measurement of hormone levels, particularly anti-Müllerian hormone (a reliable marker of ovarian reserve), ultrasound measurement of ovarian size, and follicle count. Results were compared to those for 20 women of the same age who had not received chemotherapy.

The team observed that the 105 women cured of paediatric cancer had smaller ovaries than the untreated women, and a significantly lower level of anti-Müllerian hormone. This reduction was more marked in patients who had received procarbazine for Hodgkin's lymphoma, or chemotherapy with high doses of alkylating agents prior to a bone marrow transplant. Neither the cyclophosphamide nor ifosfamide dose seemed to be associated with reduced ovarian reserve.

“These results seem to confirm our hypothesis,” explains Dr Thomas-Teinturier. “From a theoretical point of view, the end of fertility is likely to occur earlier in these women who have been cured of a paediatric cancer. This fact, when combined with increasing age at first pregnancy, is likely to increase problems with reproduction.”

However, although assessment of ovarian reserve seems to be a good predictor of the pregnancy rate in infertile women undergoing medically assisted reproduction techniques, there are few data regarding its real use when advising young women cured of paediatric cancer about the potential effects on their fertility, and their risk of early menopause.

“It therefore seems necessary to monitor these markers in this patient cohort in order to define the thresholds that may make it possible to predict the window of fertility and onset of menopause in the following years,” continues Dr Thomas-Teinturier. “The ultimate objective of our study is to be able, in future, to advise these young women individually on their potential for reproduction in the following five years, based on the results of their review at a given moment.”

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