

Promising new treatment for rare pregnancy cancer leads to remission in patients

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Credit: Imperial College London

An immunotherapy drug can be used to cure women of a rare type of cancer arising from pregnancy when existing treatments have failed.

Three out of four patients with the cancerous forms of gestational trophoblastic disease (GTD) went into remission after receiving the [immunotherapy drug](#) pembrolizumab in a clinical trial carried out by researchers at Imperial College London.

The trial, which took place at Charing Cross Hospital, part of Imperial College Healthcare NHS Trust, is the first to show that pembrolizumab can be used to successfully treat women with GTD.

The team hopes that this small early stage study, published in *The Lancet*, could provide another treatment option for women who have drug-resistant GTD and lead to a 100 per cent cure rate.

Professor Michael Seckl, lead author of the study, said:

"We have been able to show for the first time that immunotherapy may be used to cure patients of cancerous GTD. The current treatments to tackle GTD cure most cases of the disease. However, there are a small number of women whose cancers are resistant to conventional therapies and as a result have a fatal outcome. Immunotherapy may be a life-saving treatment and can be used as an alternative to the much more toxic high dose chemotherapy that is currently used. These are landmark findings that have implications on how we treat the disease in the UK and around the world."

GTD is the term used to describe abnormal cells or tumors that start in the womb from cells that normally give rise to the placenta. They are extremely rare but can happen during or after pregnancy.

The most common type of GTD is so-called molar pregnancy where a foetus doesn't form properly in the womb and a baby doesn't develop, instead a lot of abnormal placental-like tissue forms. A molar pregnancy can usually be treated with a simple procedure to remove the growth of

abnormal placental cells from the womb but some of this material is usually left behind. This can become cancerous and spread to other parts of the body, requiring lifesaving chemotherapy. In around one in 50,000 pregnancies cancerous GTD known as choriocarcinoma develops after other types of pregnancy including normal pregnancies and this also requires life-saving chemotherapy.

Globally, 18,000 women are diagnosed annually with cancerous forms of GTD, most of whom are cured with chemotherapy or surgery. However, up to five per cent of these women's outcomes are fatal due to factors such as chemotherapy resistance and rare forms of the cancer such as placental site trophoblastic tumours (PSTT) that develop four or more years after the causative pregnancy has ended.

Immunotherapy is a type of treatment that helps a person's immune system fight diseases such as a cancer. The immune system fights off invading infections but can miss cancer cells. Pembrolizumab works by stimulating the body's immune system to target and kill cancer cells. The drug is also used to treat some cases of lung cancer and melanoma.

The researchers wanted to test whether pembrolizumab could be used to treat four patients aged between 37-47 years with multi-drug resistant cancerous GTD.

The patients were given pembrolizumab intravenously every three weeks over a period of about six months between 2015-2017.

The trial also took place at the Department of Women's and Children's Health in Stockholm.

The researchers then carried out a blood test to measure the amount of the pregnancy hormone hCG in their system, which is an indicator of whether abnormal placental cells are left in the womb or elsewhere in the

body.

They found that most patients' hCG levels started to fall by three doses and once their hCG was normal five consolidation doses of pembrolizumab were given before stopping treatment. This contrasts with melanoma and lung cancer where this drug is given to patients continuously for two or more years. The patients remain without signs of cancer recurrence for between five months to over two years on follow-up.

The researchers also found that pembrolizumab was well tolerated in GTD patients. This is in comparison to chemotherapy which can cause nausea, vomiting and hair loss.

The team suggests that this could have cost saving implications for the NHS as six months of the drug costs about £30,000 per patient compared to two rounds of high dose chemotherapy which costs £70,000.

Melody Ransome took part in the clinical trial after being diagnosed with choriocarcinoma, which had spread from her uterus to her liver, kidney, pancreas, lungs and brain. Melody was given the immunotherapy drug over five months in 2015. After her second infusion, Melody's hCG levels dropped by 50 per cent and she was in remission two months later. Melody continues to be in remission two and half years after receiving the immunotherapy.

"Before the trial I was being treated by high dosage of chemotherapy which made me feel awful. I experienced hair loss, fatigue and it was difficult to carry out normal tasks like looking after my two children. On top of that, the chemotherapy wasn't working.

This all changed for me once I was given the immunotherapy drug. Each week I felt better and better. I had no side effects and I started to feel

more normal. When I was told that I was in remission I was shocked that the treatment had worked in such a short amount of time. It's been life changing and I've been able to enjoy spending quality time with my family again. I used to be able to swim 40 lengths before my illness and since having the immunotherapy I am close to it. It's been an incredible journey."

Following the findings, NHS England has agreed provisional funding to treat some cases of GTD with pembrolizumab for two years at Charing Cross and Sheffield Hospitals where these cases are managed in the UK.

The researchers will carry out a further study to assess the effects of pembrolizumab on fertility to see whether it can be offered to women at an earlier stage of treatment.

Provided by Imperial College London

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