

Step closer to predicting cancer patients' drug toxicity

January 22 2015, by Kate Bourne

Being able to predict that a patient will adversely react to a drug that's meant to be treating them is a key aim of personalised medicine, and could help to improve the patient's overall treatment.

Researchers at the University of Adelaide are now one step closer to accurately predicting which [cancer patients](#) will experience severe toxicity from chemotherapy.

In a [pilot study](#) involving 34 patients, researchers looked at specific genetic variations in the patients' immune system, and compared that with [information](#) about the types of cancer each patient had.

The researchers then produced a model that was able to predict – with more than 87% accuracy – the risk of patients having severe toxicity to their chemotherapy treatments.

"This is the first time that immune genetic factors have been used to predict the risk of toxicity for patients. While much more work still needs to be done to test and finalise this model, we're very pleased with the results so far," says Dr Janet Coller from the University's School of Medical Sciences, who is lead author of the study, published in the journal *Supportive Care in Cancer*.

Dr Coller says there are two specific genetic variations in the immune system that appear to play a role: a cell-signalling protein known as Tumor necrosis factor alpha, and a protein called Toll-like receptor 2.

"At this stage we're not entirely sure how these genetic variants lead to increases in a person's toxicity to chemotherapy, and it warrants further investigation," Dr Coller says.

"But we have a strong indication that [genetic variation](#) is playing a role, and it is something that we could potentially test for in the future. We're excited about the results because at the moment there is no way of telling a patient how likely they are to experience toxicity from [chemotherapy](#) drugs.

"Knowing this information will be vital in understanding whether or not certain patient groups need additional therapeutic support to help minimise severe toxic reactions," she says.

More information: "Predictive model for risk of severe gastrointestinal toxicity following chemotherapy using patient immune genetics and type of cancer: a pilot study." *Supportive Care in Cancer* October 2014, [link.springer.com/article/10.1 ... 07/s00520-014-2481-z](https://link.springer.com/article/10.1007/s00520-014-2481-z)

Provided by University of Adelaide

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