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Singapore discovers way to predict chemotherapy resistance

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Ovarian cancer is usually treated with platinum-based chemotherapy; however, a significant number of patients are resistant to such treatments and relapse soon afterwards.

To improve their survival, there is a need to first identify which patients may be platinum-resistant, so that newer treatments may be administered early.

Now, researchers from the Cancer Science Institute of Singapore (CSI Singapore) at the National University of Singapore (NUS), have discovered a way to predict which patients are resistant to platinum chemotherapy.

The study, co-led by CSI Singapore Principal Investigators Assistant Professor Anand Jeyasekharan and Associate Professor David Tan, was published in the journal *EMBO Molecular Medicine*.

From their investigation, an association was found between patients whose cancers had high levels of the DNA repair protein, RAD51, and the time to relapse after platinum chemotherapy.

"RAD51 has been identified as a biomarker which can potentially be used to determine the resistance of ovarian cancer to platinum chemotherapy," explained Assoc Prof Tan, who is also a medical oncologist specialising in the treatment of gynaecological cancers.

RAD51 is a protein that is required for cancers to repair replication-associated DNA damage. Separately, RAD51 is also crucial for repairing platinum chemotherapy-induced damage to the DNA. The team used a stateÃ¢â?¬Â•ofÃ¢â?¬Â• theÃ¢â?¬Â•art automated microscopy method to image and accurately quantify the amount of RAD51 protein present in each tumour cell.

"Our findings offer a route to refine platinum use in ovarian cancer, but more broadly, this automated microscopy pipeline will be widely applicable to identifying determinants of immune exclusion and chemoresistance in several cancers," said Asst Prof Jeyasekharan.