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Faulty proteins may prove significant in identifying new treatments for ovarian cancer

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A constellation of defective proteins suspected in causing a malfunction in the body's ability to repair its own DNA could be the link scientists need to prove a new class of drugs will be effective in treating a broad range of ovarian cancer patients, an Oregon Health & Science University Knight Cancer Institute study found.

These research results, published this week in *PLoS ONE*, have prompted additional exploration into whether the patient population included in clinical trials for drugs that target the enzyme poly ADP ribose polymerase (PARP) should be expanded. Several forms of cancer are more dependent on PARP for their growth than regular cells, which means that targeting these enzymes when they go haywire is a potentially effective way to treat ovarian cancer. Currently PARP inhibitors are being tested with patients who have two types of malfunctioning proteins, BRCA1 or BRCA2. But, the OHSU Knight Cancer Institute study of additional proteins, beyond BRCA proteins, suggests that they too are playing a role in driving ovarian cancer.

Tapping into the potential of PARP inhibitors could change the dynamics of ovarian cancer treatment. There has not been a substantial increase in treatment options for ovarian cancer in the past two decades, said Tanja Pejovic, M.D., Ph.D., gynecologic oncologist at the OHSU Knight Cancer Institute. Pejovic, who led the study of these additional defective proteins, added that the results provide evidence that further

research into the role of multiple proteins is warranted.

Only about 10 to 15 percent of women with ovarian cancer have BRCA 1 or BRCA 2 mutations.

Pejovic's study of 186 patients with nonhereditary cancer found that 41 percent who had an early recurrence of the disease also had abnormal levels of the other proteins tracked. In contrast, only 19.5 percent of patients who hadn't yet had a recurrence of the disease in three years had abnormal levels of these proteins.

"If we are able to identify the proteins that differentiate these patients at risk for early recurrence, this would open up a new direction in ovarian cancer treatment," Pejovic said.

Provided by Oregon Health & Science University