Role of known cancer gene in ovarian cancer investigated

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The role of a known cancer-causing gene in the development of the most lethal type of ovarian cancer is being investigated by researchers from the Walter and Eliza Hall Institute after they were awarded a Cure Cancer Australia Foundation (CCAF) grant.

Dr Rachael Rutkowski, from the institute's Stem Cells and Cancer division, was awarded $180,000 to study the role of the known cancer-causing gene in the development of high-grade serous ovarian cancers. This gene belongs to the MYC family of cancer-causing genes that are overproduced in more than 50 per cent of human cancers.

Dr Rutkowski said that the MYC gene family had recently gained attention as a potential cause of some high-grade serous ovarian cancers that are associated with poor clinical outcomes.

"The Cure Cancer Australia funding will allow us to develop better disease models that we can use to discover whether the MYC gene family has a significant role in ovarian cancer development," Dr Rutkowski said. "It could also help us identify new therapeutic targets and biomarkers for diagnosis of this devastating disease."

Ovarian cancer is the sixth most common cause of cancer death in Australian women. Each year, more than 1200 Australian women are diagnosed with ovarian cancer, and around 800 will die from the disease.

Epithelial ovarian cancer accounts for 90 per cent of all ovarian cancers; epithelial referring to the tissue from which the cancer develops. Despite efforts to develop better screening tools, 80 per cent of epithelial ovarian cancers have spread beyond the ovary before they are diagnosed and 70 per cent are generally incurable. High-grade serous ovarian cancers are the most lethal type of epithelial ovarian cancer, and account for approximately 40 per cent of all epithelial ovarian cancers.

Associate Professor Clare Scott, who heads the ovarian cancer research program at the Walter and Eliza Hall Institute and is a medical oncologist at The Royal Melbourne Hospital, said new treatments for ovarian cancer were urgently needed.

"High-grade serous ovarian cancers are aggressive, difficult-to-treat cancers that often have a poor prognosis," Associate Professor Scott said. "The cancers are typically not diagnosed until after they have spread, and are often resistant to chemotherapy drugs. It is imperative that we improve our understanding of how ovarian cancers develop so we can identify molecular or cellular targets for new therapeutic agents."

Changes in the levels of MYC-family proteins have been identified as a potential cause of at least 15-20 per cent of high-grade serous ovarian cancers, and are associated with poor clinical outcomes.

Dr Rutkowski said that the research team would develop pre-clinical models of ovarian cancer with high levels of MYC-family proteins, and abnormal p53 signaling, to determine whether the MYC gene family is involved in the development and chemotherapy-resistance of these cancers.

"We are hoping that we will identify molecular targets for the development of new therapeutic agents to treat ovarian cancer," Dr Rutkowski said. "Similar studies have yielded new therapeutic targets for breast cancer; for example, the treatment of HER2-positive breast cancers, which typically had a poor prognosis, has been revolutionised by the development of Her2-targeted therapeutic approaches. We are looking to accelerate the development of similar targeted therapies for ovarian cancer."

Provided by Walter and Eliza Hall Institute

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