Identification of Early Stage Epithelial Ovarian Cancer through Exosomal Proteins and miRNAs

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Ovarian cancer has poor prognosis as it predominantly presents as advanced disease. Therefore, it is essential that effective early detection strategies are identified. Exosomes are a specific subtype of vesicles and their content are cell type specific, making them “fingerprints” of the releasing cells and their metabolic status. Thus, we suggest that analysis of exosomal content may provide an approach to enrich tumor biomarker detection.

Exosomes were isolated from plasma obtained from patients with epithelial OvCa and characterised. The exosomal proteomic profile was identified by Liquid chromatography–mass spectrometry (LC-MS/MS) and SWATH analysis. An Illumina TrueSeq Small RNA kit was used to construct a small RNA library from exosomal RNA.

Results

There is an urgent need for a novel and minimally invasive diagnostic tool to identify women with early stage ovarian cancer. We propose that the combined measurement of exosomal biomarkers might allow the early identification of women with ovarian cancer, however, a larger trial is required for further validation. Exosomes can be isolated from circulation and represent the metabolic status of the releasing cell, making them an optimal biomarker. The future directions of this project involve validating the expression of specific miRNAs and proteins in a larger cohort of samples using quantitative polymerase chain reaction (qPCR).