PROTEOMIC BIOMARKERS OF PRETERM BIRTH RISK IN WOMEN WITH POLYCYSTIC OVARY SYNDROME (PCOS): A SYSTEMATIC REVIEW AND BIOMARKER DATABASE INTEGRATION

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Introduction: Preterm Birth (PTB) is a major cause of neonatal mortality and morbidity. Women with Polycystic Ovary Syndrome (PCOS) are at high risk of PTB. There is a need for research studies to investigate the mechanisms linking PCOS and PTB, to facilitate screening, and develop novel preventative strategies.

Methods: For the identification of the relevant studies, the following search terms were used: “proteomics”, “proteomic”, “preterm birth”, “preterm labour”, “proteomic biomarker” and “polycystic ovary syndrome”. This search was restricted to humans only.

A database on proteomic biomarkers for PTB was created while an already existing PCOS biomarker database was updated. The two databases were integrated and biomarkers that were co-expressed in both women with PCOS and PTB were identified and investigated.

Results: A panel of six proteomic biomarkers was similarly differentially expressed in women with PTB and women with PCOS compared to their respective controls (normal age-matched women in the case of PCOS studies and women with term pregnancy in the case of PTB studies). These biomarkers include Pyruvate kinase M1/M2, Vimentin, Fructose bisphosphonate aldolase A, Heat shock protein beta-1, Peroxiredoxin-1 and Transferrin.

Conclusions: These proteomic biomarkers (Pyruvate kinase M1/M2, Vimentin, Fructose bisphosphonate aldolase A, Heat shock protein beta-1, Peroxiredoxin-1 and Transferrin) can be potentially used to better understand the pathophysiological mechanisms linking PCOS and PTB. This would help to identify subgroups of women with PCOS at risk of PTB and hence the potential of developing preventative strategies.