

5th International Conference on Biomarkers & Clinical Research

April 15-17, 2014 St. Hilda's College - University of Oxford, UK

Overlap of proteomics biomarkers between women with pre-eclampsia and PCOS: A systematic review and biomarker database integration

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Background: Various studies have indicated an association between Polycystic Ovary Syndrome (PCOS) and pre-eclampsia (PE), however the pathophysiological mechanisms supporting this association are unclear. Defining such mechanisms linking PCOS and PE, could assist in more accurate screening, and underpin novel preventative strategies for pre eclampsia.

Aim: The aim of this study was to catalogue proteomic biomarkers in PE and considers whether any represent candidate biomarkers for the detection of PET risk in women with PCOS.

Methods: A systematic review and update of our PCOS proteomic biomarker database was performed, along with a parallel review of PE biomarkers. All eligible published studies on proteomic biomarkers for PE and PCOS which were identified through MEDLINE (1996-December 2013), EMBASE (1980-December 2013) and Cochrane (1993-December 2013) ISI web of knowledge (v4.2) databases, using the search terms “proteomics”, “proteomic”, “pre-eclampsia”, “pre-eclamptic toxemia”, “proteomic biomarker”, “proteomic biomarker” and “polycystic ovary syndrome” without any restrictions were evaluated. The primary studies on PE were used to create a first database of proteomic biomarkers for PE, whereas those on PCOS to update our existing PCOS database. The two databases were then compared and searched for overlaps; proteomic biomarkers that were common to women with PCOS and PE.

Results: Five proteomic biomarkers were differentially expressed in both in women with PE and PCOS compared to controls: transferrin, fibrinogen alpha, beta and gamma chain variants, kininogen-1, annexin 2 and peroxiredoxin 2. In PE the biomarkers were found in serum, plasma and placenta and in PCOS the biomarkers were identified in serum, follicular fluid, ovarian and omental biopsies.

Conclusions: These proteomic biomarkers could potentially be used to understand the pathophysiological mechanisms linking PCOS and PE. The biomarkers may help to identify subgroups of women with PCOS at risk of developing PE and early diagnosis of PE could be helpful in the management of the women at risk.

Biography

Gulafshana Hafeez Khan did her medical degree from University of Peshawar, Pakistan and then did post graduation in Obstetrics and Gynaecology from College of Physicians and Surgeons Pakistan. She has trained in Obstetrics and Gynaecology in the UK and is a Member of Royal College of Obstetricians and Gynaecologists since 2004. She is currently doing PhD in Obstetrics and Gynaecology in School of Medicine, University Of Nottingham. Her special interest is reproductive medicine and general Obstetrics.

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