Role of Peptidoglycan Recognition Proteins in Pathogenesis of Preeclampsia and Periodontitis

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ABSTRACT
Preeclampsia (PE) is a pregnancy-related disease and is the leading cause of maternal and fetal morbidity and mortality. Recently, altered immune-inflammatory responses at the placental level in response to infectious agents have been proposed to be etiological for this pregnancy complication. Chronic infections at alveolar sites are potential sources for such infectious agents, e.g., chronic periodontitis. A new class of Pattern Recognition Receptors called Peptidoglycan Recognition Proteins (PGRPs) constituting four distinct molecules PGRP 1-4 is emerging as key player in modulating the relative mRNA expression of the following pattern recognition receptors.

PERIODONTAL ASSOCIATION

- Subclinical infection
- -maternal blood
- -pregnant uterus-

PLACENTA

- Expression PGRPs (1-4) in the placenta of pre-eclamptic products.
- The aim of this pilot study is to investigate the host responses to peptidoglycan and its breakdown molecules

PGRPs

- PGRP-1 (1.4 fold) and down regulation of PGRP-3 (1.3 fold)
- There was an up-regulation of PGRP-4 (1.6 fold)

RESULTS

- First study reporting the expression of these genes in the human placental tissue
- PGRP 1, 3, and 4 expression noted in the placental samples
- There is a change in expression of PGRPs between cases and controls

clinical significance

- The results from this novel research could lead to development of salivary biomarkers for early detection of PE that warrants further investigation.
- The results of this study will aid in understanding
  1. how the human placenta reacts to infection, specifically through expression of PGRPs
  2. May provide potential new therapeutic opportunities for managing pre-eclampsia.

REFERENCES

- See references page for full list of references.