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Advances in the pathophysiology of pre-eclampsia and related podocyte injury ADDENDUM

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Guidelines for Studying Preeclampsia

The low incidence of preeclampsia, combined with evidence suggesting that there are different subtypes, create unique challenges for researchers studying this syndrome. The Global Pregnancy CoLaboratory recently outlined standardization strategies for preeclampsia studies.¹ These guidelines for creating comprehensive and optimal datasets should advance our understanding of the pathophysiology of preeclampsia and facilitate comparisons between studies.

Hydrogen Sulfide (H₂S)

A recent paper provides additional evidence that the potential therapeutic benefits of H₂S merit further study.² Eight days of treatment with a H₂S donor decreased hypertension, proteinuria and endotheliosis in non-pregnant rats with high concentrations of circulating mouse sFlt-1. H₂S also increased VEGF production in human podocytes *in vitro*.

Rat Models

Rat models have provided important insights into the mechanisms linking placental ischemia with maternal disease.³ Most studies use mouse ELISAs to measure VEGF, sFlt-1 and PIGF in pregnant rats. R&D Systems does not offer rat ELISAs for sFlt-1 or PIGF. Many studies used a mouse VEGF ELISA after an early paper reported validating this ELISA with rat samples.⁴ The mouse ELISA does not measure free VEGF in rat samples,⁴ even though mouse and rat VEGF are highly homologous. Studies of sFlt-1 and PIGF are needed. Functional *in vitro* assays provide an alternate approach for examining angiogenic balance in rats.

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Post-partum Podocyturia

Podocyte loss during pregnancy could increase the risk of chronic kidney injury, particularly if podocyturia persists after delivery. One previous study, using the cytospin technique, showed that podocyturia persisted in 9% of women one month after a preeclamptic pregnancy.⁵ We recently assessed podocyturia at 5-8 weeks postpartum using cell culture techniques.⁶ Persistent podocyturia was observed in 30% of women who had preeclampsia, despite resolution of proteinuria. Large studies with long-term renal follow-up are needed.

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