PLACENTA GROWTH FACTOR IS NOT ESSENTIAL FOR SPIRAL ARTERY MODIFICATION IN PREGNANT MICE

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INTRODUCTION:
Placenta Growth Factor (PGF) is a vascular endothelial growth factor (VEGF) family member expressed by human trophoblasts and uterine Natural Killer (uNK) lymphocytes. Low blood or urinary PGF has been associated with pre-eclampsia, a hypertensive disease of late pregnancy. PGF is not well characterized in mouse implant sites and there are no reports on implantation sites in PGF\(^{-/-}\) mice\(^1\).

METHODS:
PGF expression was quantified by real time PCR in mesometrial tissue (side of uterine arterial supply) from non pregnant and gestation day (gd) 6-18 C57Bl/6J (B6) or alymphoid (RAG2\(^{-/-}\)/γc\(^{-/-}\)) mice and in lectin-purified B6 uNK cells. Message was localized by in situ hybridization using gd 6-12 B6 implant sites. Serially-sectioned, midgestation implant sites from PGF\(^{-/-}\) mice and their congenic controls were studied morphometrically.

RESULTS:
PGF was transcribed in C57Bl/6J and alymphoid mice at equal, constant low rates in virgin and gd 6-12 mesometrial tissue. Transcription elevated between gd 12-18. PGF expression was not detected in uNK cells but localized to decidual and trophoblast cells. PGF\(^{-/-}\) mice bore large litters (13-15 pups). The most distinctive histological feature in PGF\(^{-/-}\) implantation sites was a great elevation in binucleated uNK cells. Spiral artery wall to lumen ratios indicated that arterial modification occurred by gd10, as seen in normal mice.

DISCUSSION:
These data suggest that murine uNK cells are not a major source of PGF and that PGF is unlikely to support murine spiral artery modification. In murine pregnancy, PGF is more likely to have functional importance in late gestation.

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REFERENCE: