Relationship Between Growth Factors And The Embryotoxicity Of Hydrosalpingeal Fluid
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Objective: The pathophysiology of hydrosalpinx remains unclear. There is growing evidence that cytokines and growth factors play an important role in the pathogenesis of hydrosalpinx-associated infertility. Our main hypothesis is that infertility and low IVF outcome associated with hydrosalpinx may be due to imbalance of hydrosalpingeal fluid contents including growth factors. The objectives of this study were to characterize the secretion of growth factors in the hydrosalpingeal fluid (HSF) and to examine their role in HSF induced embryotoxicity using the mouse embryo model.

Design: Experimental study in a research laboratory in a tertiary care facility.

Material and Methods: HSF was collected from 11 infertile patients undergoing laparoscopic interventions. Levels of VEGF, TGF-β2, PDGF-AB and FGF-basic were determined by quantitative immunoassay kits. Mouse embryotoxicity was measured by observing the blastocyst development rate (BDR) of 2-cell embryos incubated with 25%, 50% and 75% concentrations of HSF.

Results: The embryotoxicity of HSF was concentration dependent. An increase in the HSF concentration resulted in significant decrease in BDR (BDR at 25% HSF = .93 (95%CI .86-.99); at 50% HSF = .70 (95%CI .57-.84); at 75% HSF = .50 (95%CI .39-.61); p for trend <0.0001). VEGF, TGF-β2, PDGF-AB and FGF-basic were detected in all samples with a median and interquartile ranges of 367.3 (133.7, 536.1) pg/mL, 96.7 (42.7, 462.4) pg/mL, 81.17 (17.16, 233.27) pg/mL and 150.87 (55.48, 223.96) pg/mL respectively. FGF-basic (Figure) was significantly related to BDR (r= +0.756; P<0.01), while VEGF, TGF-β2, and PDGF-AB demonstrated no significant relationship to BDR.

Conclusions: We demonstrated the presence of VEGF, TGF-β2, PDGF-AB and FGF-basic in human hydrosalpingeal fluid. FGF-basic was significantly related to the BDR. Embryotoxicity associated with hydrosalpinx may vary according to its growth factor contents.
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