

THE RELATIONSHIP OF SYSTEMIC TNF-ALPHA AND IFN-GAMMA WITH IVF TREATMENT OUTCOME AND PERIPHERAL BLOOD NK CELLS

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ABSTRACT

BACKGROUND

To evaluate the association of serum tumour necrotic factor (TNF)-alpha and interferon (IFN)-gamma levels with IVF treatment outcome and peripheral blood NK cells.

METHODS

Prospective observational study of 126 randomly selected women who underwent IVF treatment. The serum levels of TNF-alpha and IFN-gamma were determined by multiplex suspension beads array system.

RESULTS

There were no significant differences with regard to the systemic TNF-alpha and IFN-gamma levels between the pregnant (n = 51, TNF-alpha: 53.5 pg/mL; IFN-gamma: 4.6 pg/mL) and not pregnant (n = 75, TNF-alpha: 63.0; IFN-gamma: 7.5) women after IVF treatment. For those women with a positive pregnancy after IVF treatment, the systemic TNF-alpha and IFN-gamma levels were higher in those women who miscarried (n = 13, TNF-alpha: 67.4; IFN-gamma: 9.1) when compared with those who had a live birth (n = 38, TNF-alpha: 48.7; IFN-gamma: 1.4), however this difference was not statistically significant. Interestingly, the systemic TNF-alpha and IFN-gamma levels were significantly higher in women who had a higher level of activated (CD69(+)) NK cells (n = 39, TNF-alpha: 86.8; IFN-gamma: 4.7) when compared with women who had a low level of activated NK cells (n = 87, TNF-alpha: 46.9; IFN-gamma: 1.7 P = 0.028 and 0.045 respectively).

CONCLUSION

The systemic levels of TNF-alpha and IFN-gamma have no association with implantation rate or miscarriage rate in women undergoing IVF treatment. However, high levels of TNF-alpha and IFN-gamma are associated with elevated levels of activated NK cells and this may subsequently exert a negative impact on reproduction.