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Association of abnormal vaginal flora with increased cervical tumour necrosis factor--alpha and interferon--gamma levels in idiopathic infertility

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This study was conducted to evaluate the presence of bacterial vaginosis (BV) and its association with cervical tumour necrosis factor alpha (TNF-alpha) and interferon gamma (IFN-gamma) levels in idiopathic infertility. Forty idiopathic infertile women and twenty fertile controls were recruited from the Department of Obstetrics and Gynaecology, El Shatby Maternity Hospital, Alexandria. High vaginal swabs were smeared and assessed by Gram staining for the presence of BV using Nugent's scoring system. Cervical mucus samples were collected at midcycle and assayed for IFN-gamma and TNF-alpha by enzyme linked immunosorbent assay (ELISA). Bacterial vaginosis was identified in 25% (10/40) of the infertile group and in 10% (2/20) of controls. The mean concentrations of TNF-alpha (232.2 +/- 51.6 pg/ml) and IFN-gamma (127 +/- 26.8 pg/ml) were significantly higher in the infertile group compared with controls (P < 0.001). Infertile women with BV showed significantly higher cervical levels of TNF-alpha (649 +/- 126.8 pg/ml) and IFN-gamma (350 +/- 59.2 pg/ml) than those with normal (62.2 +/- 8.1, 31.4 +/- 4.1 pg/ml respectively) and intermediate (252.5 +/- 21.4, 170 +/- 17.3 pg/ml respectively) vaginal flora (P < 0.001). A significant correlation was found between TNF-alpha and IFN-gamma concentrations in the idiopathic infertile group (r = 0.984, P < 0.001) as well as the fertile control group (r = 0.881, P < 0.001). In conclusion, BV is associated with elevated cervical mucus levels of TNF-alpha and IFN-gamma. The induction of these proinflammatory cytokines by an altered vaginal ecosystem may play a role in the etiology of idiopathic infertility. This may have potential applications in the diagnosis and treatment of female infertility.