Abstract # 1788

Chlamydia Infects the Ovary, Elicits An Immune Response And Depletes The Ovarian Reserve In Mice. Urooza C. Sarma, Monash University, Australia

Chlamydia trachomatis is the most common sexually transmitted infection worldwide and can cause severe damage to the Fallopian tubes, often resulting in complete infertility. Recent studies indicate significantly increased miscarriage rates and time to natural conception, along with poor IVF outcomes in women seropositive for Chlamydia but in the absence of tubal pathology, suggesting that that fertility may be compromised by mechanisms that extend beyond fallopian tube scarring. In this study, we used a well-characterised mouse model to investigate the hypothesis that Chlamydia can infect and damage the ovary. Chlamydial DNA was detected in ovaries at 6 and 35 days post infection (pi) using qPCR and inclusion bodies were localised within macrophages in the ovarian stroma using immunofluorescence. Chlamydial infection was associated with an increase in the expression of mRNA for CXCL16 and IFNγ, suggesting the induction of a pro-inflammatory immune response within the ovary, which persists at least up to 35 days pi. Significantly greater numbers of immune cells including macrophages, NK cells and CD4+ /CD+ cells in the ovary 35 days pi, suggesting a localised ovarian inflammatory response to chlamydial infection, parallels this. Strikingly, the number of ovarian follicles was significantly reduced 35 days following a single infection compared to uninfected controls (p<0.05, n=4-5 mice/group) and the extent of follicle depletion was greater following a second infection (p<0.05, n=4-5 mice/group). Two infections was also associated with changes to the overall ovarian morphology and increased apoptosis and fibrosis in the ovary (p<0.05, n=5/group), consistent with activation of a prolonged inflammatory response. Collectively, these observations demonstrate that Chlamydia can penetrate the ovary, deplete the ovarian reserve and compromise ovarian function, and suggest that the ovary may act as a potential reservoir of infection. Ovarian follicles are essential for female fertility because they secrete hormones and contain oocytes. Follicles cannot be replaced once lost from the ovary. Thus, our data suggests that damage to the ovary caused by Chlamydia is permanent and may underlie some cases of unexplained infertility and poor IVF outcome in women.