Background Infection is implicated in cervical shortening and spontaneous preterm labour (SPTL). Increased understanding of inflammatory events in the vaginal tract prior to cervical shortening is needed. The authors undertook a longitudinal observational study to determine the relation between inflammation and cervical shortening in women at risk of SPTL.

Methods Women (n=112) with at least one previous preterm delivery were recruited (14–24-week gestation) from two prematurity clinics and assessed (transvaginal cervical scans and cervico-vaginal fluid (CVF) swabs) every 2 weeks until 28 weeks. If cervical length shortened (<25 mm), women were randomised to cervical cerclage or progesterone and samples taken weekly. Concentrations of interleukin 1β (IL-1β), IL-4, IL-6, IL-7, IL-8, granulocyte colony-stimulating factor, granulocyte-macrophage colony stimulating factor (GM-CSF), interferon γ (IFNγ), monocyte chemotactic protein-1 (MCP-1), macrophage inflammatory protein 1β, tumour necrosis factor α (TNFα) were measured in CVF samples (n=477 from 78 women) using an 11-plex fluid-phase immunoassay. Log-transformed data were analysed using STATA, results expressed as ratios (95% CI).

Results Women destined to develop a short cervix (n=37) exhibited higher CVF concentrations of GM-CSF (15.6 times greater, CI 1.7 to 144, p=0.015) and MCP-1 (4.9, CI 1.03 to 23, p=0.045) at <24 weeks’ than controls (n=41). Progesterone treatment had little effect on cytokine concentrations, whereas the concentration of five cytokines was higher in women randomised to cerclage vs progesterone (p<0.05). Cerclage, but not progesterone treatment, was followed by an increase in cervical length of 11.4 mm (CI 7.3 to 15.4, p<0.001).

Conclusion GM-CSF and MCP-1 appear to be involved in processes leading to cervical shortening. Progesterone treatment has little impact on CVF markers of inflammation or cervical length.

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