Ureaplasma parvum multiple banded antigen (MBA) size variation - association with fetal inflammation in a sheep model

Robinson, James W., Dando, Samantha J., Nitsos, Ilias, Newnham, John, Kallapur, Suhas G., Jobe, Alan H., & Knox, Christine L.

Background: Ureaplasma species are the most prevalent isolates from women who deliver preterm. The MBA, a surface exposed lipoprotein, is a key virulence factor of ureaplasmas. We investigated MBA variation after chronic and acute intra-amniotic (IA) ureaplasma infections.

Method: U. parvum serovar 3 (2x10^4 colony-forming-units) was injected IA into pregnant ewes at: 55 days gestation (d, term = 145d) (n=8); 117d (n=8) and 121d (n=8). Fetuses were delivered surgically (124d) and ureaplasmas cultured from amniotic fluid (AF), chorioamnion, fetal lung (FL) and umbilical cord were tested by western blot and PCR assays to demonstrate MBA and mba gene variation respectively. Tissue sections were sectioned and stained by haemotoxylin and eosin and inflammatory cell counts and pathology were reported (blinded to outcome).

Results: Numerous MBA/mba variants were generated in vivo after chronic exposure to ureaplasma infection but after acute infection no variants (3d) or very few variants (7d) were generated. Identical MBA variants were detected within the AF and FL but different ureaplasma variants were detected within chorioamnion specimens. The severity of inflammation within chronically infected tissues varied between animals ranging from no inflammation to severe inflammation with/without fibrosis. Chorioamnion, FL and cord from the same animal demonstrated the same degree of inflammation.

Conclusions: MBA/mba variation in vivo occurred after the initiation of the host immune response and we propose that ureaplasmas vary the MBA antigen to evade the host immune response. In some animals there was no inflammation despite colonisation with high numbers of ureaplasmas.