Effects of chronic intra-amniotic Ureaplasma parvum (serovar 3 or 6) exposure on the ovine fetus?

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Background: We have developed a sheep model of intrauterine ureaplasma infection. We aimed to examine the capability of ureaplasmas in the amniotic fluid to infect the fetus and alter fetal development.

Methods: At 50 days of gestation (d, term=150 d) ewes bearing single fetuses were given a single ultrasound-guided intra-amniotic injection of (a) 2x10⁷ colony forming units (cfu) of U. parvum (serovar 3, n=7; serovar 6, n=8), (b) 2x10⁴ cfu of U parvum (serovar 3, n=6; serovar 6, n=8) or (c) media control (n=6). At 125 d, fetuses were delivered by caesarean section. Amniotic fluid and umbilical arterial blood was collected. Fetal body weight was recorded and fetal cerebrospinal fluid (CSF) collected. The fetal brain and membranes were fixed with 4% paraformaldehyde then blocked, paraffin embedded, stained and viewed by light microscopy.

Results: Chronic intra-amniotic exposure of U parvum serovar 3 or 6 (ureaplasmas) did not result in fetal abortion or death. Amniotic fluid ureaplasma titers at delivery were not dose- or serovar dependent. Chronic ureaplasma exposure did not affect fetal body or brain weights, or result in a fetal systemic inflammatory response. Umbilical arterial blood gases at delivery were similar between ureaplasma- and media-exposed fetuses. Chronic intra-amniotic exposure to ureaplasmas resulted in higher inflammatory cell scores in the fetal membranes compared to controls (p<0.05). No gross anatomical changes were observed in the cerebral hemispheres of fetuses exposed to ureaplasmas; even in animals (n=3) that had CSF ureaplasma infection/colonisation.

Conclusion: Chronic ureaplasma exposure resulted in chorioamnionitis without observed deleterious effect on the developing fetus.