Intra-amniotic ureaplasma infection: outcomes vary depending on gestation

Author

Norman, Jessica, Dando, Samantha, Kallapur, Suhas G., Nitsos, Ilias, Kemp, Matthew, Newnham, John, Jobe, Alan H., Knox, Christine L.

Published

2013

Conference Title

Journal of Paediatrics and Child Health

DOI

10.1111/j.1440-1754.2012.02411.x

Intra-amniotic ureaplasma infection: adverse outcomes vary depending on gestation

Norman, Jessica A., Dando, Samantha J., Kallapur, Suhas G., Nitsos, Ilias, Kemp, Matthew, Newnham, John P., Jobe, Alan H.,& Knox, Christine L.

Background:
Ureaplasmas are the most prevalent bacteria isolated from preterm deliveries and the prognosis for neonates varies depending on the gestation at delivery. Ureaplasmas vary their surface-exposed antigen (MBA, a virulence mechanism) during chronic intra-amniotic infections, but it is not known when changes first occur during gestation.

Method:
U. parvum serovar 3 (2x10e7CFU) was injected intra-amniotically (IA) into six experimental cohorts of pregnant ewes (of n=7), 3 days (d) or 7d before delivery at either: 100d, 124d or 140d gestation (term=145d). Control ewes received IA 10B broth. Fetuses were delivered surgically and ureaplasmas cultured from amniotic fluid (AF), chorioamnion, fetal lung (FL) and umbilical cord. Ureaplasmas were tested by western blot to demonstrate MBA variation.

Results:
The highest number of ureaplasmas were recovered from FL at 100d gestation after 3 days of infection ($p<0.03$). Six of 7(86%) 100d–3d FL demonstrated an ureaplasma MBA variant, but only 17% and 15% of FL showed an MBA variant after 3d infection at 124d and 140d gestation respectively. Greatest variation of the MBA occurred in AF and FL at 124d gestation after 7d infection. The least MBA variation was observed at 140d; however, at this time the most severe histological chorioamnionitis was observed.

Conclusions:
After intra-amniotic ureaplasma injections, higher numbers of ureaplasmas gained access to the FL at 100d gestation than observed at later gestations. This may exacerbate the adverse outcomes for neonates delivered early in gestation. In late gestation, ureaplasma MBA variation was minimal, but chorioamnionitis was the most severe. Adverse pregnancy outcomes associated with IA ureaplasma infection may vary depending on the duration of gestation, the number of ureaplasmas isolated from the fetal tissues and the degree of MBA variation.