Detection and prevalence of chlamydiae in semen and male genital tracts of boars, bulls, rams and bucks

Original title / Originaltitel
Nachweis und Verteilung von Chlamydien im männlichen Geschlechtsapparat und Ejakulaten von Schwein, Rind, Schaf und Ziege

Summary / Zusammenfassung
Chlamydiae cause abortion and reproductive disorders in sows. Although organisms can infect the male genital tract, little is known about the disease situation in boars. Hence, we examined the prevalence of chlamydial infection in semen and genital tracts of boars. Samples collected from Swiss boars (group A: n=42), and boars from Germany (group B: n=39) were examined by bacteriology, LPS-ELISA, immunohistochemistry (IHC) and polymerase chain reaction (PCR). The latter methodology involved use of three PCR assays including 16Sig rDNA, IGS-S (intergenic spacer 16S/23S-Short) and IGS-L (intergenic spacer 16S/23S-Long) PCR for comparison methods. PCR sensitivity and the presence of potential PCR inhibitors were determined by spiking semen with Chlamydophila (Cp.) abortus DNA. Detection limits of the 16Sig and IGS-S PCR were 10 templates, while the IGS-L PCR was less sensitive (100 templates). Of 25 semen samples that were collected from group A, one semen sample was positive for Cp. psittaci and two were positive for Chlamydia-like organisms by 16Sig PCR. Screening of sera from Swiss boars revealed three animals with positive reactions in the LPS-ELISA, although we failed to detect chlamydiae within organs of these or sera-negative animals by IHC or IGS-S PCR. In group B, 10 ejaculates were positive for Chlamydia (C.) suis and two were positive for Chlamydia-like organisms by 16S PCR. The identification of DNA from Chlamydia-like organisms in semen from both groups of boars was surprising and a role for these bacteria in reproductive diseases requires further assessment. In conclusion, the prevalence of chlamydial infection was low in group A animals indicating that venereal transmission may not be significant for Chlamydia-associated reproductive diseases in pigs, although rare cases may occur.

Chlamydiae infect male genital organs of ruminants. However, little is known about their prevalence. Hence, we investigated fresh and cryopreserved semen (bulls: n=304; rams: n=78; bucks: n=44) by polymerase chain reaction (PCR), as well as genital organs (bulls: n=13; rams: n=10; bucks: n=6) by immunohistochemistry (IHC) and PCR. Sera from bulls (n=104) and small ruminants (n=61) were tested by LPS and rMOMP (recombinant major outer membrane protein) ELISA and competitive ELISA (cELISA), respectively. Three PCR assays were compared in this study for detection of chlamydial DNA in semen: 16S rRNA, IGS-S (intergenic spacer 16S/23S-short), and IGS-L (intergenic spacer 16S/23S-long) PCRs. PCR sensitivity and inhibitory effects were determined by spiking semen with Chlamydophila (Cp.) abortus DNA. In bull semen, detection limits of the 16S, IGS-S and IGS-L PCRs were 10, 10, 100 templates, respectively. However, PCR sensitivity was reduced in ram and buck semen suggesting the presence of potential PCR inhibitors. Of 304 bull semen samples, the 16S PCR revealed DNA of chlamydiae in 20 samples (6.6%), including Cp. abortus (n=2), Cp. psittaci (n=1), Chlamydia suis (n=2), and Chlamydia-like organisms (n=15). In rams, one semen sample was positive for Chlamydia-like organism. All investigated male genital organs were negative for Chlamydia. Serology revealed 47.1% (49/104) positive bulls by LPS ELISA. Of these, 30 samples were positive by rMOMP ELISA, predominantly for Cp. pecorum. In small ruminants, cELISA displayed 34.8% (16/46) and 60% (9/15) positivity for Cp. abortus in rams and bucks, respectively. There was no correlation between serology and PCR of semen. The presence of chlamydiae in semen suggests the
possibility of venereal transmission, although risk may be low in Switzerland.

**Publications / Publikationen**

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Boar, bull, ram, buck, Chlamydia, semen, male genital tracts, PCR, immunohistochemistry, serology, prevalence

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