

# Abortion in woman caused by caprine *Chlamydophila abortus* (*Chlamydia psittaci* serovar 1)

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## Summary

On a farm housing cattle and goats an abortion storm occurred affecting 50% of the goats during the lambing season 2000/2001. In one of three investigated caprine abortions *Chlamydophila abortus* could be identified as aetiology. During this time a pregnant woman (pregnancy week 19/20) had contact with aborting goats. She developed a severe generalized infection and aborted. The pla-

centa contained *Chlamydophila abortus* shown by immunohistochemistry and PCR. The aim of the present case report is to alert medical doctors about the potential zoonotic risk of ovine/caprine abortions.

*Key words:* abortion; *Chlamydia abortus*; zoonosis

## Introduction

Reports of spontaneous abortion in woman caused by Chlamydia date back to the 1950s [1]. A possible aetiological connection between abortion in small ruminants caused by *Chlamydophila abortus* (formerly *Chlamydia psittaci* serovar 1) and abortion in woman has been suspected since, but it was documented for the first time by Roberts et al. [2]. Fourteen reports between 1987 and 2000 document 20 cases of human abortion, which have been proven to be caused by *Cd. abortus* [3–5]. A similar, rather unspecific clinical course of the infection is reported in these cases consisting of fever, headache, dizziness, and vomiting. If not treated appropriately the patients develop septicaemia with DIC. Spontaneous abortion develops shortly after appearance of the first clinical symp-

toms. In the cases reported, abortion occurred between weeks 14 and 36 of pregnancy.

Abortions in small ruminants caused by *Cd. abortus* are seen worldwide. In Switzerland, *Cd. abortus* is one of the major causes of abortion in small ruminants [6]. During 1995 and 1996 in a collaborative retrospective study between the Institute of Pathology of the Cantonal Hospital, Luzern (Switzerland) and the Institute of Veterinary Pathology, University of Zürich (Switzerland), formalin fixed and paraffin embedded tissues from 195 human abortion cases were investigated for the presence of chlamydial antigen using immunohistochemistry [3]. Our observations should alert readers to test human abortion cases for a possible involvement of *Cd. abortus*.

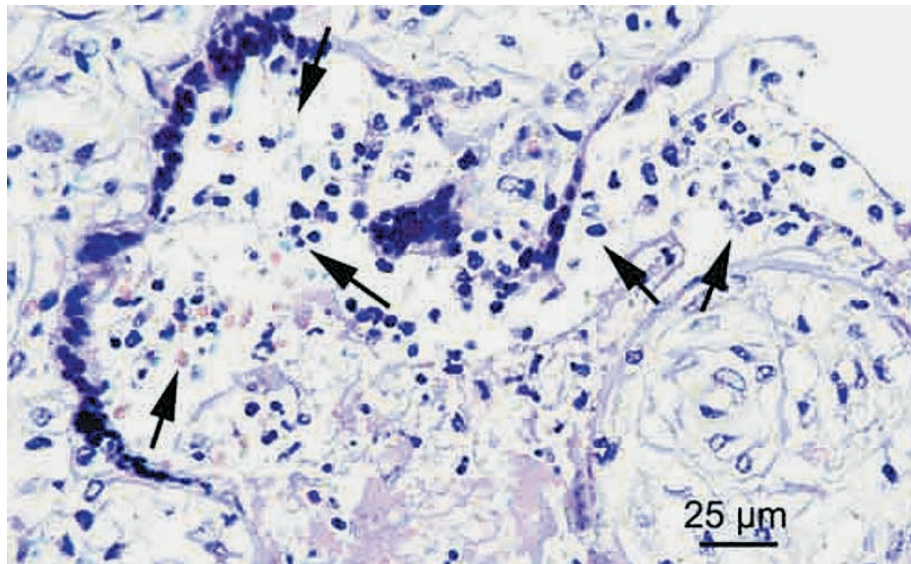
## Case report

During the lambing season of 2000/2001, 50 percent of the pregnant goats from one farm (with a population of 42 cows and 33 goats) in eastern Switzerland experienced abortion late in pregnancy. In 3 of the cases further investigations were performed. Placental tissue smears were stained according to Koester and Stamp resulting in one of the placenta clearly showing detectable chlamydial elementary bodies. Serum samples of the aborting goats were also tested serologically (ELISA Dr. Bommeli AG) for the presence of antibodies against Brucella and Coxi-

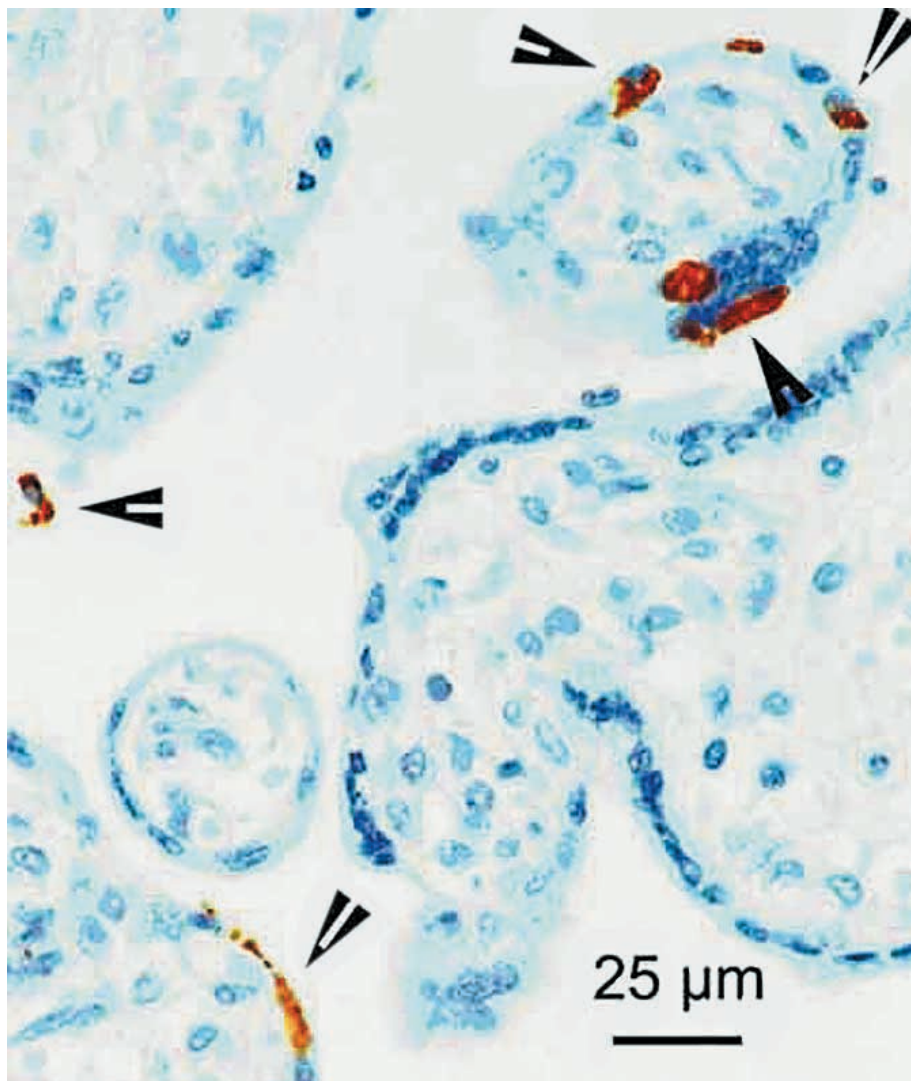
ella with negative results. During the abortion epidemic on the farm, a female employee in her 19/20<sup>th</sup> week of pregnancy had regular direct contact with the goats giving birth and aborting. Approximately two weeks after her return to her permanent residence in western Switzerland the woman's pregnancy ended in spontaneous abortion. Immediately following the abortion the woman fell unconscious and was admitted to a hospital which reported the following diagnoses: septicaemia, DIC affecting liver, kidney and heart. Antibodies against Brucella were not de-

**Figure 1**

Histopathology of placental lesions: villitis acuta (arrows).

**Figure 2**

Immunohistochemical demonstration of chlamydial antigen (arrow heads).



tected. After contact with the Cantonal Laboratory of Veterinary Bacteriology, Chur (Switzerland), a successful therapy using tetracycline was applied. Shortly afterwards the patient could return home.

#### Histopathology of placental lesions

Histopathology of the placenta was characterized by generalized villitis acuta (fig. 1). An immunohistochemi-

cal labelling of placental tissue using a monoclonal antibody against *Cd. abortus* revealed a large amount of antigen present in areas of villitis in the cytoplasm of trophoblast epithelium (fig. 2). To substantiate the diagnosis a genomic diagnosis using PCR was applied. Specific genomic sequences of the 16S rRNA gene of Chlamydia were subjected to PCR using primers of 17 bp length [7]. The PCR product was sequenced and showed 100% identity with *Cd. abortus*.

## Discussion

In Switzerland, as in many other countries, *Cd. abortus* is involved in approximately 20–30% as aetiology of abortion in small ruminants (sheep and goats) [6]. However, documented cases of human abortions caused by *Cd. abortus* are rare [3–5]. Notably however, in each of the existing reported cases a prior contact with aborting small ruminants could be substantiated. As in small ruminants, *Cd. abortus* causes late term abortions in woman. *Cd. abortus* replicates within the trophoblast epithelium leading to a dysfunction of the placenta and foetal death. In small ruminants chlamydial agents spread into foetal organs, predominantly liver and lung.

Pregnant women should be advised to avoid, or reduce to a minimum, contact with small ruminants giving birth and/or aborting. In pregnant

women who develop fever and other non-specific symptoms, and who had contact with small ruminants, a possible infection with *Cd. abortus* should be taken into consideration.

In cases of human abortion, an investigation of the aetiology (histopathology, immunohistochemistry, genomic diagnosis) using placental tissue and serology of maternal serum samples should be considered.

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## References

- 1 Giroud P. Résultats concernant l'avortement de la femme. Académie des sciences, 1956;242:697–9.
- 2 Roberts W, Grist NR, Giroud P. Human abortion associated with infection by ovine abortion agent. Br Med J 1967;4:37.
- 3 Feist A, Sydler T, Gebbers JO, Pospischil A, Guscetti F. No association of Chlamydia with abortion. J R Soc Med 1999; 92:237–8.
- 4 Hyde SR, Benirschke K. Gestational psittacosis: case report and literature review. Mod Pathol 1997;10:602–7.
- 5 Chanton-Greutmann H, Thoma R, Corboz L, Borel N, Pospischil A. Aborte beim kleinen Wiederkäuer in der Schweiz. Untersuchungen über zwei Ablampperioden (1996–1998) mit besonderer Beachtung des Chlamydienabortes. Schweiz Arch Tierhkd 2002;144, in press.
- 6 Kampinga GA, Schröder FP, Visser IJR, Anderson JME, Buxton D, Möller AVM. Lambing ewes as a source of severe psittacosis in a pregnant woman. Ned Tijdschr Geneesk 2000;144:2500–4.
- 7 Everett KD, Bush RM, Andersen AA. Emended description of the order Chlamydiales, proposal of *Parachlamydiaceae fam. nov.* and *Simkaniaceae fam. nov.*, each containing one monotypic genus, revised taxonomy of the family Chlamydiaceae, including a new genus and five new species, and standards for the identification of organisms. Int J Syst Bacteriol 1999;49:415–40.

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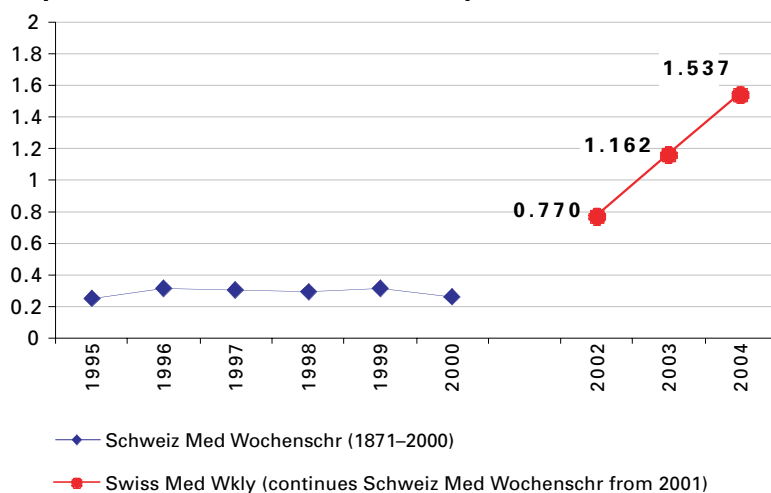
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