

RESEARCH COMMUNICATION

First isolation of *Campylobacter jejuni* from the vaginal discharge of three bitches after abortion in South Africa

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ABSTRACT

ODENDAAL, M.W., DE CRAMER, K.M.G., VAN DER WALT, MARTHA L., BOTHA, A.D. & PIETERSON, P.M. 1994. The isolation of *Campylobacter jejuni* from the vaginal discharge of three bitches after abortion. *Onderstepoort Journal of Veterinary Research*, 61:193–195.

Campylobacter jejuni was isolated in pure culture from the vaginal discharge from three German Shepherd bitches after late-pregnancy abortions. The main clinical sign occurring in the bitches was a profuse and odourless haemorrhagic vaginal discharge.

This is the first documented report of abortion in bitches caused by *Campylobacter jejuni* in South Africa.

INTRODUCTION

Abortion in the dog resulting from *Brucella canis* infection is well recognized in certain countries (Carmichael & Kenney 1970) and is regarded as a specific cause of infertility in dogs (Van Duijkeren, 1992). Abortion arising from *Campylobacter jejuni* infection is uncommon, though it has been described in individual cases (Bulgin, Ward, Sriranganathan & Saras 1984).

In South Africa the actual incidence of abortion amongst bitches in large breeding establishments is unknown. It can be assumed that it is considerably higher than what is reported, owing to the many difficulties encountered in diagnosing it. One of these is the ingestion of the aborted foetuses by the dam, as this removes the material necessary to make such a

diagnosis. Another aspect that plays a role here, is accurate pregnancy diagnosis. This is usually not performed routinely, so that it may not be easy to distinguish foetal death resulting from abortion or foetal death from resorption accompanied by vaginal discharge from an open cervix pyometra.

CASE HISTORY AND CLINICAL SIGNS

Three German Shepherd bitches aged between 18 and 37 months were found to have aborted within 3 weeks of each other at a large breeding establishment harbouring more than 100 dams. One was a maiden bitch and the other two were multiparous.

All three bitches were mated at specific recorded dates and confirmed pregnant during routine abdominal palpation performed at 28 d of gestation. Daily surveillance of all pregnant animals was done routinely in the breeding unit, for any abnormalities that might occur. During one of these daily examinations, a copious amount of haemorrhagic vaginal discharge was noted on the buttocks in the perianal and vaginal region

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as well as the ventral aspects of the tail, in each of these three animals.

The diseased animals were immediately removed to an isolation facility where they were kept under strict observation. In spite of the appearance of the discharge, no smell was evident. At this stage the period of gestation of the affected animals ranged between 42 and 52 d. Abdominal palpation was subsequently performed in each of these cases. The presence of empty uteri led to the assumption that the bitches had aborted their foetuses.

In only one case was a dead and premature pup with intact foetal membranes found in the kennel.

It was in an advanced state of putrefaction. The administration of subconjunctival apomorphine to this bitch resulted in the vomition of half-digested foetal remnants, providing evidence that ingestion of an aborted foetus had taken place.

The only and most prominent clinical sign present was a purulent and haemorrhagic vaginal discharge. Otherwise, the affected animals appeared clinically healthy.

MATERIALS AND METHODS

Collection of specimens

With the necessary aseptic precautions, swabs for bacteriological cultures were collected from the region of the os cervix of the anterior vagina of the affected bitches, with the assistance of a speculum and a round, sterile plastic sleeve. The purpose of the sleeve was to limit contact of the sterile swab with the lateral sides of the vagina.

Bacteriologic isolation

The swab collected from each case was streaked onto six 10 % sheep blood tryptose-agar plates, of which two were incubated at 37 °C in an anaerobic jar filled with CO₂ from an Anaerocult C [E. Merck (SA) (Pty) Ltd, P. O. Box 1998, Midrand 1685] sachet, two in an anaerobic cabinet filled with 5 % hydrogen, 10 % CO₂ and 85 % nitrogen, and two in an ordinary aerobic incubator. Gram-stained smears and wet smears were prepared from small, white colonies that appeared after 48 h growth in the microaerophilic atmosphere. They were examined under normal 1000x magnification with normal illumination and phase contrast, respectively.

Swabs were also collected from the deep anterior vagina of ten bitches (after normal whelpings) of different breeds, from a highly pedigreed breeding unit, and cultured under the same conditions.

Serum specimens were tested for the presence of *Brucella canis* antibodies by a rapid slide agglutination test [Janssens Pharmaceutica (Pty) Ltd, Animal Health Division, Private Bag X9, Olifantsfontein 1665].

RESULTS

Scant growth of isolated colonies was evident on the anaerobic and aerobic cultures. A large number of small white colonies appeared on each of the microaerophilic incubated culture media made from the three animals with vaginal discharges. Gram smears made from these white colonies revealed typical gram-negative, spirally curved rods. Under phase contrast with 1000x magnification, these organisms were motile. They were subsequently identified as *Campylobacter jejuni* by means of biochemical and morphological tests (Lander & Gill 1985). The serological test for *Brucella canis* was negative for each of these animals. The swabs taken from the ten bitches, following normal whelping, yielded no *C. jejuni*; only a few single colonies of saprophytic organisms.

DISCUSSION

Campylobacter jejuni has been isolated in pure culture from a variety of cases of abortion in domestic animals. These include goats (Anderson, Hamoud, Urbance, Rhoades & Bryner 1983), sheep (Diker & Istanbuluoglu 1986), and dogs (Bulgin, Ward, Sriranganathan & Saras 1984). It has been described as the common cause of a catarrhal enteritis in Beagle dogs (Fox, O'Neill & Ackerman 1984), calves and lambs (Firehammer & Myers 1981), neonatal mice (Kazmi, Roberson & Stern 1984), Patas monkeys (Bryant, Stills, Lentsch & Middleton 1983) as well as various other domestic animals and humans (Prescott & Munroe 1982). It appears that these animals harbour this organism as part of their normal intestinal microflora.

Under experimental conditions *C. jejuni* has been shown to cause pathological lesions in hamsters (Humphrey, Montag & Pittman 1985), chickens (Ruiz-Palacios, Escamilla & Torres 1981), Sanyal, Islam, Neogy, Islam, Speelman & Huq 1984), adult rabbits (Caldwell, Walker, Stewart & Rogers 1983) and adult mice (Blaser, Duncan, Warren & Wang 1983).

In consideration of all the relevant facts regarding the case history, symptoms and organisms isolated, it is suggested that *C. jejuni* was the cause of the abortion. The pathogenesis of this disease in dogs is not clear, but could possibly fit in with the abortion model applicable for sheep and goats (Hirsh 1986). It is doubtful whether *C. jejuni* constitutes part of the normal vaginal microflora in the bitch (Van Duijkeren 1992), as no isolation of *C. jejuni* were made from ten normally whelping bitches. The inclusion of microaerophilic culture techniques when cases of canine abortion are examined, seems inevitable and worthy of consideration. *Campylobacter jejuni* can be included as a differential diagnosis for perinatal deaths in dogs.

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