

Isolation of *Haemophilus somnus* from dairy cattle in KwaZulu-Natal. An emerging cause of 'dirty cow syndrome' and infertility?

R D Last^a, M D Macfarlane^b and C J Jarvis^a

ABSTRACT

Haemophilus somnus was consistently isolated from vaginal discharges of dairy cows submitted from field cases of vaginitis, cervicitis and/or metritis in the KwaZulu-Natal Midlands during the period July 1995 – December 2000 and from the East Griqualand area in November/December 2000. The purulent vaginal discharges, red granular vaginitis and cervicitis, and pain on palpation described in these cases was very similar to that reported in outbreaks of *H. somnus* endometritis syndrome in Australia, Europe and North America. In all the herds involved in these outbreaks, natural breeding with bulls was employed. Although there was a good cure rate in clinically-affected animals treated with tetracyclines, culling rates for chronic infertility were unacceptably high. Employment of artificial insemination in these herds improved pregnancy rates in cows that had calved previously, but many cows that had formerly been infected failed to conceive.

Key words: artificial insemination, endometritis, *Haemophilus somnus*, infertility.

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Haemophilus somnus has been reported worldwide as a cause of clinical disease in cattle. This bacterium is known to induce various clinical syndromes in cattle including thromboembolic meningoencephalitis (TEME), pneumonia, arthritis, tenosynovitis, vaginitis, endometritis, abortion, conjunctivitis and myocardial abscessation^{1,2,4-7}.

Kitching *et al.* isolated *H. somnus* from cattle for the first time in South Africa in association with clinical disease, when they described an outbreak of TEME in a feedlot outside Pietermaritzburg, KwaZulu-Natal³. Since then, little has been published on *H. somnus* in South Africa, and there have been no confirmed reports of involvement in reproductive disease of dairy cattle in this country.

Reproductive disease complexes associated with *H. somnus* infection are infertility and abortion^{4,6,7}. Infertility is largely a consequence of the endometritis syndrome, which is characterised by a purulent vaginal discharge, usually with an accompanying red granular vaginitis and cervicitis, after natural service^{1,6,7}. The pathogenesis of this endometritis is

believed to be related to the ability of *H. somnus* to adhere to the zona pellucida of developing embryos, causing embryonal degeneration⁷. *H. somnus* is able to induce detrimental effects in bovine embryos, reducing survival rates, without causing significant uterine pathology⁷. Abortion, on the other hand, is a result of hematogenous spread of *H. somnus* from other tissues to the foetus^{1,2,4,6}.

In KwaZulu-Natal, the first isolates of *H. somnus* from purulent vaginal discharges were made in 1995, from a farm in the Midlands with a serious fertility problem. From 1995–1999, *H. somnus* was isolated from reproductive tracts of cows with severe cervicitis and mild vaginitis from 11 other dairy farms fairly close to the original farm. More recently, during November/December 2000, isolates of *H. somnus* were obtained from some cows with purulent vaginal discharges in 3 separate herds in East Griqualand. A common denominator was that all of these herds used only bulls, or pick-up bulls, to serve cows.

Laboratory diagnostic procedures were performed on each farm to exclude other potential pathogens, including bacteria (*Campylobacter*, *Arcanobacterium*), protozoa (*Trichomonas*), fungi and viral agents (herpesvirus, bovine viral diarrhoea virus). Serum metabolic profiles failed to reveal

any distinct mineral imbalances or deficiencies.

Clinically-affected cows that received intra-uterine treatment with 2400 mg oxytetracycline recovered well. Introducing periods of sexual rest and implementing AI to replace natural service resulted in improvement of pregnancy rates in recently-calved cows. However, in previously-infected cows the culling rate for chronic infertility was unacceptably high. On the farms that persisted with natural service after treatment, pregnancy rates dropped further, with increased returns to service, and *H. somnus* was consistently isolated from discharges of cows in these herds.

In the light of these findings, the role of *H. somnus* as a potential cause of or contributor to the 'dirty cow syndrome' certainly needs further investigation. The next logical step would be a case-control study, but unfortunately the economic implications of such a study cannot be met by an industry already under severe pressure.

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^aVetdiagnostix – Veterinary Pathology Services, PO Box 13624, Cascades, 3202 South Africa.

^bHowick and Hilton Veterinary Clinic, PO Box 95, Howick, 3290 South Africa.

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