TITLE: AN OVERVIEW OF *HISTOPHILUS SOMNI*-ASSOCIATED DISEASE SYNDROMES IN CATTLE AND SHEEP FROM BRAZIL

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ABSTRACT:

Histophilus somni (formerly *Haemophilus somnus*) is a Gram-negative bacterium that is associated with a disease complex (collectively termed histophilosis or *H. somni* disease complex, HSDC) that can produce several clinical syndromes including thrombotic meningoencephalitis (TME), polysynovitis, arthritis, bronchopneumonia, septicemia, myocarditis, infertility, abortion, and mastitis in affected ruminants. Histophilosis causes elevated mortality and morbidity in feedlot cattle and has been well studied in North America and Australia. However, there is reduced data about the occurrence of HSDC in ruminants from Brazil. This paper provides an overview of the findings associated with HSDC in cattle and sheep from Brazil. Since 2014 cattle, sheep, and aborted bovine fetuses from different geographical regions of Brazil were investigated for the occurrence of HSDC. Routine necropsies were done on all carcasses and fetuses after which selected tissues were processed for histopathological evaluation. Additionally, bacterial DNA was extracted from tissue fragments and used in PCR assays designed to amplify the 16S gene of *H. somni*. PCR products were then sequenced and the isolates compared with known strains of *H. somni*. The principal syndromes observed in cattle included: bronchopneumonia, TME, abortions, myocarditis, and septicemia. The main clinical syndromes of HSDC in sheep were: bronchopneumonia, myocarditis, septicemia, and TME. *H. somni* DNA was amplified from multiple tissues of all ruminants and al aborted fetuses with clinical syndromes of histophilosis; sequencing confirmed the PCR results. In several cases involving cattle, there were concomitant infections with Bovine Respiratory Syncytial Virus, Bovine Coronavirus, *Pasteurella multocida*, and *Mannheimia haemolytica.* Moreover, nucleic acids of *Neospora caninum*, Bovine Herpesvirus -1, and Bovine Viral Diarrhea Virus were amplified from the tissues of aborted fetuses and resulted in coinfection with these abortive agents. These findings confirmed the participation of *H. somni* in the clinical syndromes investigated during this study, and suggest that this bacterial pathogen may be more widespread than previously suggested. In addition, it is recommended that *H. somni* be included in the differential diagnosis of ruminants from Brazil with clinical manifestation of respiratory, neurological, and reproductive disease.

Keywords: histophilosis; histopathology; molecular diagnostics; bronchopneumonia; myocarditis; thrombotic meningoencephalitis.