

Identification of infectious agents associated with bovine respiratory disease in white veal calves in Belgium

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In Belgium, the white veal calf (formula fed calves) industry is a niche market, which is specialized in rearing dairy and beef calves on a low iron milk diet in 6-8 months time. Calves come from multiple farms and are housed on a grid floor in groups of 6-8 animals. Bovine respiratory disease (BRD) complex is the major cause of morbidity and mortality on these veal calf farms. The objective of the present field study was to determine the infectious agents, associated with BRD in white veal calves in Belgium. In total 240 calves with respiratory disease from 24 natural occurring BRD outbreaks were sampled. Deep nasopharyngeal swabs and paired sera were taken. BRD outbreaks occurred on average 3 weeks after arrival and were of slow progressive nature. *Mycoplasma spp.*, *Mannheimia haemolytica* (Mh) and *Pasteurella multocida* (Pm) were cultured from 74.5%, 21.3% and 22.1% of the swabs respectively. Antimicrobial (multi)resistance was present in several Mh and Pm isolates, especially for tylosin (Mh: 90.9% and Pm: 90.9%), tiamulin (Mh: 36.4% and Pm: 63.6%) and tetracyclin (Mh: 72.7% and Pm: 33.3%). Among the calves, 39.5% seroconverted against at least one virus, of which bovine viral diarrhoea virus (BVDV) (18.7%) and parainfluenzavirus 3 (PI-3) (9.0%) were most prevalent. Combined viral infections were rare (5.6%), with a combination of BVDV or bovine adenovirus 3 (BAV-3) being the most frequent. At the herd level, presence of *Mycoplasma bovis* could be demonstrated by culture and/or seroconversion in all but one outbreak. In addition on 73.9% of the sampled herds one or more animals seroconverted against BVDV, on 50.0% against PI-3, on 37.5% against BAV-3, on 31.8% against bovine coronavirus, on 20.8% against bovine respiratory syncytial virus and on 16.7% against bovine herpesvirus 1. *M. bovis* could be cultured from 61.9% of pneumonic lungs at necropsy (n=21) and respectively 60.0% and 20.0% of the tested calves were BVDV (n=20) and bRSV (n=16) positive at necropsy. These results suggest an overall important role for *M. bovis* and BVDV in the bovine respiratory disease complex in white veal calves, in addition to a variable viral origin and the presence of often multi-resistant, bacterial respiratory tract pathogens at the individual calf level.