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Validation of fine-needle aspiration as a minimally invasive sampling method for pcr-based bpv detection in four clinical types of equine sarcoid

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In equine practice, bovine papillomavirus (BPV) induced equine sarcoids are often identified based solely on clinical examination. Confirmation of the clinically suspected diagnosis is essential for correct treatment selection as well as for scientific research. However, only few approaches are presently available for this purpose. Histopathology is generally avoided by practitioners out of fear for lesion exacerbation. PCR based screening for BPV nucleic acids in superficial swabs is an alternative method to support clinical suspicion. While this method effectively detects sarcoid involvement in wounds, sensitivity is lower in tumours with intact epithelium. The aim of this study was to assess the ability to detect BPV DNA in sarcoid-derived fine-needle aspirations (FNAs), considering the whole spectrum of possible disease manifestations. The ability to detect BPV in all principal sarcoid types (occult, verrucous, nodular, fibroblastic) may facilitate a targeted diagnostic workup for identifying equine sarcoids.

PCR was performed using a singleplex assay for the detection of the housekeeping gene eqIFNβ, to confirm successful DNA extraction, and a multiplex assay for BPV-1/-2 detection. The sensitivity to detect BPV was different between swabs (69.8%) and FNAs (98.4%). In general, FNAs were more likely to detect sarcoid-associated viral nucleic acids ($P<0.001$). Furthermore, a 100% diagnostic specificity was obtained for FNA. Results suggest that PCR screening of FNA for BPV-1/-2 represents a valid method to detect viral nucleic acids in ulcerated sarcoids, as well as tumours with an intact skin surface. Moreover, FNA is a minimal invasive method that could be implemented in routine clinical practice to improve the consistency and quality of sarcoid diagnosis.

Speaker Biography

Lien Gysens was working in Department of Surgery and Anesthesiology of Domestic Animals, Ghent University, Belgium. she demonstrated the ability to work independently on multiple equine sarcoid-focused research projects. Recently, her work paid off when her manuscript 'New approach for genomic characterisation of equine sarcoid-derived BPV-1/-2 using nanopore-based sequencing' was selected for publication in the international peer-reviewed Virology Journal.

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