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BRONCHOALVEOLAR LAVAGE FOR TB DIAGNOSIS IN RHINOCEROS – IMPACT OF TB DIAGNOSIS ON ANIMAL WELFARE

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Pathogenic mycobacteria in human, livestock and endemic wildlife species bear a great threat to endangered species in zoological institutions. Upon Tb diagnosis in a zoo collection, the risk of zoonosis for zoo staff and visitors or infection risk for other animals is of high concern. By law the zoonotic risk mandates further Tb testing of potentially infected animals or of the whole animal collection. Yet, immunological methods for Tb diagnosis established in human and livestock (skin test, serological test, γ- interferon) are not validated in wildlife species. Specifically, false positive results from non-validated serum tests might have fatal consequences as animals might become subject to euthanasia. In this context it is surprising that bacterial culture from bronchoalveolar lavage, the gold standard for Tb diagnosis in human, seems yet greatly underutilised in wildlife species to further determine the presence of mycobacteria. In this study we investigated the feasibility of broncho-alveolar and oesophageal lavage in seven white rhinoceroses (*Ceratotherium simum simum*) from two zoos as a complementary method for Tb diagnosis for non-validated immunological tests. Tb had been diagnosed *post mortem* in other species. Positive serological tests (DPP) in five rhinoceroses suggested a Tb infection. Bronchoalveolar and oesophageal fluids were collected from all animals and tested for the presence of *Mycobacterium tuberculosis* complex (MTC) bacteria by PCR, bacterial culture and real time PCR. Samples from all animals were PCR negative directly after sample collection. After 12 weeks of bacterial culture weak evidence on the presence of mycobacteria was found in oesophageal samples from two animals. In one animal the positive culture was associated the presence of non-tuberculous mycobacteria but not of members of the MTC. In the other animal *Mycobacterium tuberculosis* was finally identified in the oesophageal sample by real-time PCR and microarray spoligotyping. Yet, all results negative and positive require re-investigation. Negative results may just indicate that animals were not shedding at the time of sampling. For the animal tested positive the result must be confirmed prior further conclusions. It is concluded that in absence of validated immunological tests for Tb in wildlife, bacterial culture, PCR and real time PCR from samples obtained by bronchoalveolar lavage, represent a feasible and complementary method for Tb diagnosis in rhinoceros providing additional data that allow evidence-based management decisions.