A possible cause -- and cure -- for genital cancer in horses?

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Horses, like humans, suffer from genital cancer. Work by Sabine Brandt and colleagues at the University of Veterinary Medicine, Vienna -- together with Tim Scase and with Alastair Foote and his group -- provides strong evidence that a novel papillomavirus is involved and may thus pave the way for the development of a cure. The initial results are published in the current issue of the *Equine Veterinary Journal*.

Horses are prone to develop genital cancer, especially as they grow older. Male horses are more commonly affected than mares but both sexes suffer from the condition, which is extremely difficult to treat and may result in the animals' death. Because of the similarity of the disease to human genital cancer it seemed possible that a similar agent might be responsible. Several human genital cancers, including cervical tumours, are known to be caused by a papillomavirus infection, so Brandt and her coworkers used genetic techniques to look for papillomavirus DNA in tissue samples from horses bearing genital squamous cell carcinomas (SCC).

Brandt freely concedes that the experiment has the feel of a "magic bullet", although the researchers did have good reasons to suspect the involvement of a virus. Nevertheless, it was extremely satisfying when their hunch proved correct and they succeeded in identifying a novel type of papillomavirus, which they have named Equus caballus papillomavirus-2 (EcPV-2). EcPV-2 DNA was found in all the genital SCC samples from affected horses in Austria and, independently, in nearly all the samples from such horses in the UK (a single exception

may stem from experimental difficulties). The virus has not been detected in any samples from horses without tumours or with other types of cancer.

The scientists have succeeded in isolating and sequencing the entire genome of EcPV-2. Interestingly, the sequence shows that the novel virus is closely related to the two viruses known to be responsible for the majority of genital cancers in humans. This lends further weight to the idea that EcPV-2 might be involved in causing disease in horses.

Taken together, the results provide a strong indication that EcPV-2 causes genital cancer in horses. A final proof would require the demonstration that infecting mucous membranes with the virus eventually leads to the development of cancer and experiments of this kind have – understandably – not yet been performed. There is also a need for further studies to examine the frequency of the virus in horse populations. But the initial evidence already seems sufficiently cogent to justify attempts to prepare a vaccine. Perhaps the work of Brandt and her collaborators may soon lead to the development of preventative measures so that horses – like humans – no longer have to suffer from this debilitating and ultimately life-threatening disease.

More information: The paper "Equus caballus papillomavirus-2 (EcPV-2): An infectious cause for equine genital cancer?" by T. Scase, S. Brandt, C. Kainzbauer, S. Sykora, S. Bijmholt, K. Hughes, S. Sharpe and A. Foote was published in the *Equine Veterinary Journal* 2010, Vol. 42, p. 738.

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