

Utrecht University Repository

Title	Viral skin diseases in the Netherlands
Authors	Oosterbaan, M.M.; Grinwis, G.C.M.
Published in	Equine Veterinary Education
Publication Date	2018-10
Link	https://dspace.library.uu.nl/handle/1874/467068
Citation	Oosterbaan, M M & Grinwis, G C M 2018, 'Viral skin diseases in the Netherlands', Equine Veterinary Education, vol. 30, no. 10, pp. 558-563. https://doi.org/10.1111/eve.12682
Versions / License	Publisher version
Rights	https://www.uu.nl/en/university-library/license-and-reuse-conditions

Review Article

Viral skin diseases in the Netherlands

M. M. Sloet van Oldruitenborgh-Oosterbaan^{†*} and G. C. M. Grinwis[‡]

[†]Department of Equine Sciences; and [‡]Veterinary Pathobiology, Faculty of Veterinary Medicine, Utrecht University, The Netherlands.

*Corresponding author email: m.sloet@uu.nl

Summary

The most common viral skin problems are discussed in the third article in our equine dermatology series.

Introduction

The main viral skin diseases found in horses are equine papilloma and equine sarcoid. In addition, aural acanthosis (aural plaques), molluscum contagiosum, horse pox and equine coital exanthema (EHV-3) also occur occasionally. Although the bovine papillomavirus does play an important part in the aetiopathogenesis of equine sarcoid, this condition will be discussed with skin neoplasia in a later article.

Papillomatosis

A papilloma (wart) is a benign epithelial neoplasm caused by the papillomavirus. Papillomatosis is characterised by the development of multiple papillomatous lesions and in horses, four clinically different variants can be identified.

Congenital papillomatosis

Warts occur sporadically in newborn foals. Although they are histologically recognisable, detection of the papillomavirus

can often be disappointing. The warts may disappear spontaneously. However, sometimes they are so widespread that surgical intervention is required (**Fig 1**). Congenital epidermal nevus can have a similar gross appearance to warts, but a histological distinction between the two can be made.

Juvenile, milk and grass warts

The infection occurs through small wounds or abrasions of the skin either after direct or indirect contact. The condition is moderately contagious. Juvenile papillomata are frequently noted among groups of young horses in a paddock, where they can easily infect one another.

The incubation period is 2–3 months and most lesions take 3–4 months to mature, after which they generally regress spontaneously in response to seroconversion to the virus. Juvenile warts tend to occur in large numbers either individually or in coalescent areas, particularly on the nose and around the lips (**Figs 2** and **3**) and sometimes on the lower limbs (**Fig 4**) and genitals. They usually have an irregular exophytic form with a rough, cauliflower-like appearance. They remain confined to the skin and ulceration only occurs as a result of trauma.

Diagnosis is based on clinical appearance and a characteristic history. Differentiation from verrucose sarcoids is



Fig 1: Congenital papillomata in a newborn Friesian foal.

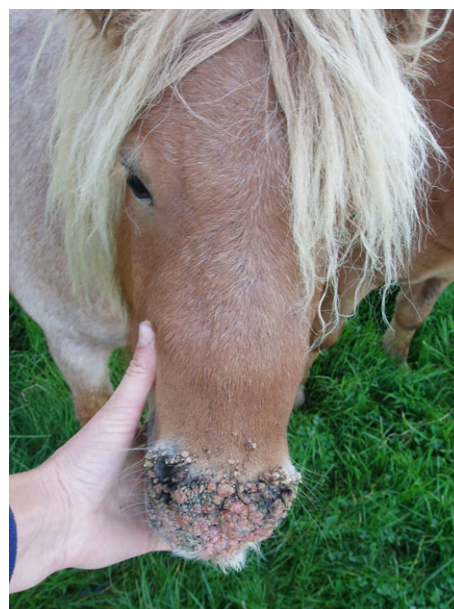


Fig 2: Papillomata on the nose of a Shelland yearling (courtesy of F. Rey).



Fig 3: Widespread papillomata on the nose of a Dutch Warmblood (KWPN) yearling which also had extensive infections with endo- and ectoparasites.



Fig 5: A 3-year-old Fjord gelding with extensive papillomatosis on head, neck and hindquarter (courtesy of R. de Moree).



Fig 4: Papillomata in the pastern region of a 5-year-old Dutch Warmblood (KWPN) horse.



Fig 6: Same horse as in Figure 5. There are severe lesions between hindlimbs (courtesy of R. de Moree).

important although these rarely occur in young animals. It is possible to differentiate between warts and sarcoids by means of histological examination of a biopsy, but that is not usually required (Figs 5–10). Therapeutic intervention is rarely necessary since the large majority resolve spontaneously.

If papillomatosis is very extensive, or if an individual lesion (or more lesions) is in an inconvenient anatomical location, surgical removal is usually simple and curative. Since severe bleeding may occur with excision, cryosurgery is preferred. Chemotherapy entailing cauterisation of the wart with trifluoroacetic acid can also have good results. Vaccination with an autologous vaccine is inconvenient and has mediocre results. If a strong immune response occurs, as in almost every case, the papillomata will usually regress spontaneously; however, the condition is self-limiting.

Adult papilloma

Warts are occasionally found on elderly horses (Figs 11 and 12). These will often be animals with some form of immunosuppression. Usually there will be only a few lesions, but in contrast to the juvenile form, they are usually very persistent. There is some suggestion that these could constitute a preliminary (precancerous) stage of squamous cell carcinoma (Fig 13).

Aural or pinnal acanthosis

Aural acanthosis, also known as aural plaques, hyperplastic aural dermatitis or equine ear papillomata (Figs 14 and 15) is a widespread problem among adult horses. A papillomavirus may also be involved in the development of this lesion. Contrary to historical dogma, no fungal infection is involved in this condition. Aural acanthosis is a usually trivial cosmetic nuisance. In most cases it does not bother the horse as long as no therapy has been attempted, but the early stages may create some ear discomfort.

Aural acanthosis should be left untreated because any form of therapy can cause resentment and behavioural

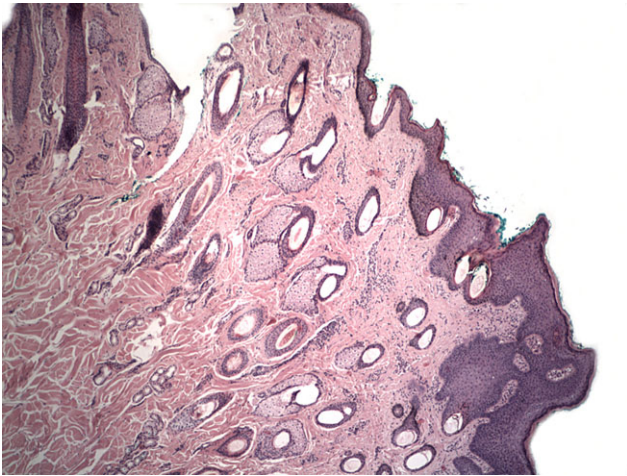


Fig 7: Same horse as in Figures 5 and 6. Histology of a biopsy shows moderate to severe hyperplasia of well differentiated cornified squamous cell epithelium on the right hand side (courtesy of H. de Cock, Labo Med Vet, Antwerpen¹).

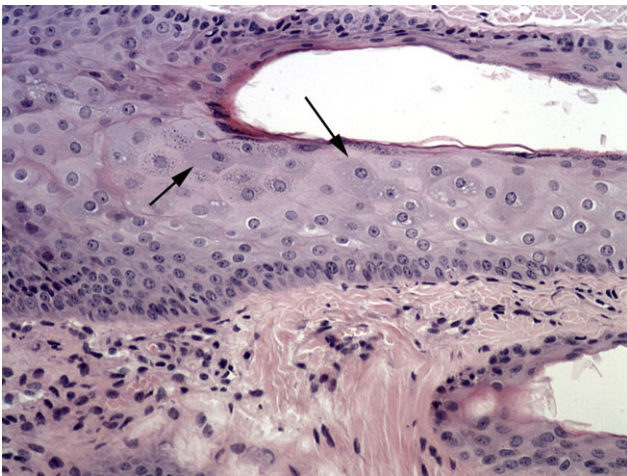


Fig 8: The same horse as in Figures 5–7 with a higher magnification of the biopsy showing fine granular blue-grey colour of the cytoplasm of several cells (arrows) in the stratum spinosum; this aspect of the cytoplasm is the result of the cytopathogenic effect of a papilloma virus (courtesy of H. de Cock, Labo Med Vet, Antwerpen).

issues; it may also precipitate a form of headshaking. In most cases, the lesions persist for years either as a proliferative state or as a pink mildly hyperkeratotic scar. If an owner insists on treatment various human wart ointments and lotions can be used. The antiviral, antitumour compound imiquimod (5% cream) is also used as a possible option. All these medications are usually very painful and can increase the resentment and behavioural avoidance of the horse.

Molluscum contagiosum

This wart-like condition is caused by an unclassified pox virus (Fig 16). The condition produces small grey-white papules with a waxy surface, on the head, penis, prepuce, udder and medial thighs and on areas with little or no hair cover. The



Fig 9: The same horse as in Figures 5–8 6 months later fully recovered without any treatment (courtesy of R. de Moree).



Fig 10: The same horse as in Figures 5–9 6 months later fully recovered without any treatment (courtesy of R. de Moree).



Fig 11: Papillomata around the eyes of a 16-year old Warmblood mare following lengthy transport and intensive training; after a few months the warts had completely disappeared without any treatment.



Fig 12: Papillomata on the nose of the same mare depicted in Figure 11.



Fig 13: Papillomata in the mouth of an 18-year-old pony gelding referred because of weight loss; gastroscopy revealed that the horse had widespread squamous cell carcinoma of the stomach.



Fig 14: Aural plaques (acanthosis) in an adult horse anaesthetised for a different reason.



Fig 15: Aural plaques (acanthosis) courtesy of N. Slis).



Fig 16: A 3-year-old stallion suspected of having molluscum contagiosum (courtesy of J. Melissen).

papules do not itch and are not painful. Diagnosis can usually be confirmed by biopsy because the histological features are typical.

There is no specific therapy and the lesions tend to recede spontaneously over years; some lesions do not disappear completely.



Fig 17: An adult horse with lesions that later proved after biopsy to be a pox infection on the skin and in the mouth (courtesy of Veterinary Centre Oosterwolde Friesland).

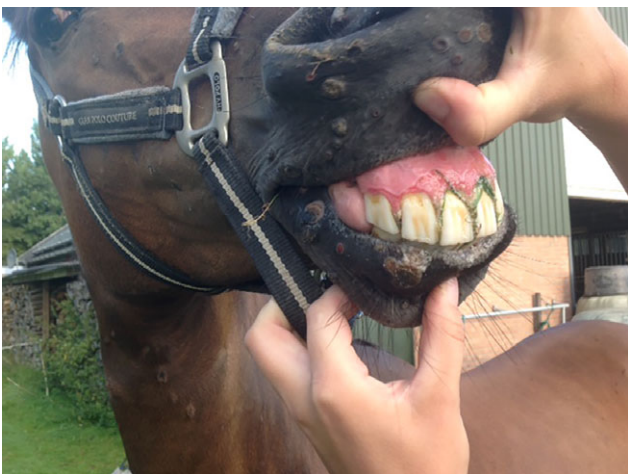


Fig 18: In the case featured in Figure 17 widespread lesions were also found at the mucocutaneous junctions and in the mouth (courtesy of Veterinary Centre Oosterwolde Friesland).

Horse pox

This is a very rare highly contagious disease and it is questionable whether a real horse pox virus exists or whether horses are infected with the cow pox virus. The virus is transmitted by direct contact with an infected horse, or indirectly by fomites.

Two clinical forms are recognised: a cutaneous form affecting the limbs in which pustules occur in the pastern and a buccal form with pustules starting inside the lips and spreading over the mouth. The latter form may result in a painful stomatitis which may be accompanied by salivation and anorexia. In serious cases the inflammation spreads through all mucosae.

Pox virus infection is characterised by small papules on the skin (**Fig 17**) on which a small vesicle filled with clear fluid develops. The vesicle subsequently develops into a pustule which dries up and forms a crust.

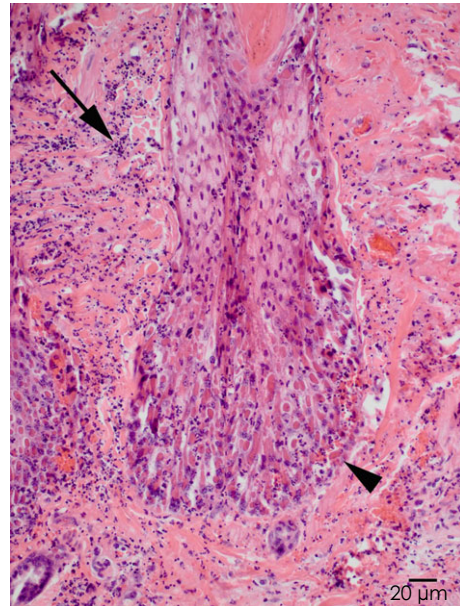


Fig 19: A skin biopsy of the case featured in Figures 17 and 18 showed an acute dermatitis with necrosis (arrow) and in the hair follicle (arrowhead) with many epithelial cells containing viral eosinophilic intracytoplasmic inclusion bodies; a PCR indicated the presence of cow pox virus (courtesy of J. van der Lugt, Idexx²).

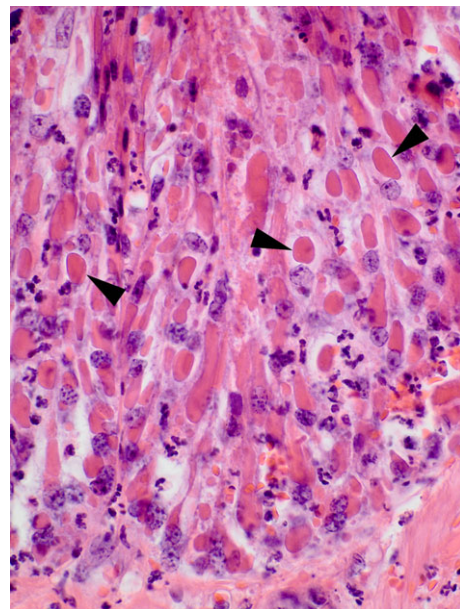


Fig 20: A microscopic image of Figure 19 in detail showing many viral inclusion bodies; arrowheads indicate three very nice examples: pink more or less round figures in clear cytoplasm of the cells where the dark purple nucleus is also still visible (courtesy of J. van der Lugt, Idexx).

Diagnosis is based on the history and clinical features (**Fig 18**). Histological examination of biopsies can support the diagnosis (**Figs 19** and **20**). Affected horses must be isolated and measures taken to disinfect the premises to prevent virus spread.



Fig 21: Equine coital exanthema in a Warmblood mare; leucoderma resulting from a previous EHV-3 infection (courtesy of H. Jonker).

Treatment is generally not necessary. The lesions in both forms of horse pox disappear spontaneously after 2–4 weeks. Astringents such as 4% potassium permanganate can be applied topically and may shorten the healing process.

Equine coital exanthema

This skin disease is caused by the equine herpesvirus-3 (EHV-3) virus. The infection can be spread by natural coitus, but also by indirect contact. The incubation period is 5–7 days.

Clinical observation shows rapidly developing papules on the penis, prepuce, vulva and perineum which soon become necrotic and with pustule formation. Lesions sometimes also occur in the mouth or nose. After a few days the penis or the vulva becomes oedematous.

The condition may cause some itching, but is not usually painful. After a few days the oedema disappears and

granulation tissue appears at each site; healing in 10–14 days is usual. There is sometimes a loss of pigment and multifocal leucoderma persists (**Fig 21**).

Typically for any herpesvirus infection, recrudescence can occur if the animal is under stress, but most affected horses develop a long standing immunity.

The diagnosis is usually based solely on the clinical features, but the virus can be detected in fresh lesions. Alternatively, seroconversion can be identified using paired serum samples.

There is no specific therapy, but lesions can be cleansed locally with a hydrogen peroxide or iodine solution. Affected horses should not be used for breeding until at least 3 weeks after the lesions have healed completely. The lesions can be cleansed locally with a hydrogen peroxide or iodine solution. There is no vaccination against EHV-3.

Authors' declaration of interests No conflicts of interest have been declared.

Authors' declaration of interests

No conflicts of interest have been declared.

Ethical animal research

All cases described were patients collected over the last 35 years and all work done was on request of the owner. There were no experiments involved. In our clinic all owners signed a form at admittance of the patient that all material may also be used for teaching and non-experimental case-studies.

Source of funding

None.

Authorship

Both authors prepared the manuscript

Manufacturers' addresses

¹AML-MEDVET bvba, Antwerpen, Belgium.

²Idexx, Hoofddorp, The Netherlands.