

Sarcoids are the most common skin growth in horses.

Sarcoids in horses are caused by infection with the bovine papilloma virus, BPV-1 or BPV-2 strain, which causes warts in cattle. Biting flies or flies feeding on wounds is the likely route of entry. The virus also circulates in the horse’s white blood cells. [Note: An Austrian study published in March 2011 also found a link between BPV and the frog disease canker: <http://www.ncbi.nlm.nih.gov/pubmed/21592216>.

There’s a saying, “Once a sarcoid horse, always a sarcoid horse”. This is based on the observation that horses with sarcoids often have recurrences when masses are removed. The virus is circulating in their immune system cells (neutrophils) and also present in the normal skin around lesions.

While it is true that a horse infected with BPV virus may remain infected for life, that doesn’t mean that the lesions cannot be effectively treated. However, we’re a long way from knowing how to beat this virus. As with melanomas, immunotherapy has received a lot of attention but the results from vaccines have been less than exciting:

<http://www.horsetalk.co.nz/news/2008/01/122.shtml>

<http://vir.sgmjournals.org/content/89/1/148.long>

Sarcoids in horses are classified by their appearance and behavior. The table below lists those classifications.

CLASSIFICATION	DESCRIPTION
Occult	Circular hairless patches, often on the face. These are also common on the inner thighs but easily missed there. Skin flaking/scaling common. May regress with no further changes, or change to more obvious sarcoid changes.
Verrucous	Wart-like lesions alone or in groups. May occur as a group of lesions which coalesce.

CLASSIFICATION	DESCRIPTION
Nodular	Raised nodules under the skin, often on the armpit, inner thigh/groin or around the eyes. Overlying skin appears normal.
Fibroblastic	These masses look very much like proud flesh/exuberant granulation tissue. Bleed easily.
Malevolent/malignant	This is a very aggressive growth that causes an inflammatory reaction in all adjacent tissue and can grow in size very quickly. It's very rare and factors other than the BPV virus may be involved.
Mixed	Skin lesions that have more than one type, e.g. occult lesion and adjacent verrucous mass.

Sarcoids may have a flat broad base or be on a stalk (called pedunculated). They may be single or multiple. Sarcoids may remain unchanged for prolonged periods, even the horse's life, or may grow suddenly, even transform their type. Trauma/irritation usually causes them to flare up, and this may explain why they often show up in areas like the arm pit or groin folds where there is a lot of friction.

There are sharply divided opinions regarding what (if anything) to do when a horse has a sarcoid. Veterinarian Derek Knottenbelt in the UK is an expert who developed the classification system and is strongly in favor of early treatment.

However, veterinarians in the field are more inclined to take an initial conservative approach. Fact of the matter is that spontaneous cure/remission is possible, maybe even "common", although there are no solid figures available to define common.

Spontaneous cure rates of up to 15% have been reported during short observation periods

of a few months, which is still a very significant number especially when you consider that aggravating a fibroid commonly makes it worse. The self-cure rate makes it very difficult to evaluate therapies since the horse may have gotten better on its own.

Fibroids usually appear between the ages of 1 and 6 years. It's reasonable (but not proven) to suspect that horses which develop sarcoids have a defective immune response to the BPV virus. Then again, evidence of BPV virus infection is higher in horses with sarcoids than in the general population at large. Horses deliberately injected with the BPV virus typically develop lesions which spontaneously resolve:

J Gen Virol. 2011 Oct;92(Pt 10):2437-45. doi: 10.1099/vir.0.033670-0. Epub 2011 Jun 29.

Inoculation of young horses with bovine papillomavirus type 1 virions leads to early infection of PBMCs prior to pseudo-sarcoid formation.

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Abstract

Bovine papillomavirus types 1 and 2 (BPV-1 and BPV-2) are known to induce common equine skin tumours, termed sarcoids. Recently, it was demonstrated that vaccination with BPV-1 virus-like particles (VLPs) is safe and highly immunogenic in horses. To establish a BPV-1 challenge model for evaluation of the protective potential of BPV-1 VLPs, four foals were injected intradermally with infectious BPV-1 virions and with viral genome-based and control inocula, and monitored daily for tumour development. Blood was taken before inoculation and at weekly intervals. BPV-1-specific serum antibodies were detected by a pseudo-virion neutralization assay. Total nucleic acids extracted from tumours, intact skin and PBMCs were tested for the presence of BPV-1 DNA and mRNA using PCR and RT-PCR, respectively. Intralesional E5 oncoprotein expression was determined by immunofluorescence. Pseudo-sarcoids developed exclusively at sites inoculated with virions. Tumours became palpable 11-32 days after virion challenge, reached a size of ≤ 20 mm in diameter and then resolved in ≤ 6 months. No neutralizing anti-BPV-1 serum antibodies were detectable pre- or post-challenge. BPV-1 DNA was present in lesions but not in intact skin. In PBMCs, viral DNA was already detectable before lesions were first palpable, in concentrations correlating directly with tumour growth kinetics. PBMCs from two of two foals also harboured E5 mRNA. Immunofluorescence revealed the presence of the E5 protein in tumour fibroblasts, but not in the apparently normal epidermis overlying the lesions. Together with previous findings obtained in horses and cows, these data suggest that papillomavirus infection may include a viraemic phase.

This suggests that self-cure is probably the norm and other factors are at work in horses that develop persistent growths. Suffice it to say here that there is a lot more to be learned. There may be a genetic Achilles heel in horses that go on to develop sarcoids, or it may be their immune system was weakened by another challenge, or even a nutritional factor/deficiency.

If a horse has a sarcoid which is not in an area irritated by tack and it seems quiet/not growing, there is no pressing need to try to treat it. In fact, trying to treat it may actually backfire and make the lesion worse. Lesions which are clearly worsening or spreading are a different story and should be treated.



Verrucous (wart-like) equine sarcoid

Before beginning though, you need to understand that the success rate for any therapy is no more than 50%. across the board. Experience of the treating veterinarian with response rates in various scenarios can improve this, but even when two horses seem to have identical sarcoids behaving in the same way, the response to any particular treatment cannot be predicted.

An exception to this is radiation therapy. Brachytherapy (implantation of radioactive wires) or external beam radiation (radiation delivered similar to taking a radiograph) is used. Success rates of 100% have been reported for sarcoids involving the eyelids and skin around the eyes; almost 90% for locations elsewhere. Radiation also works when other methods have failed. It can be used either before or after surgery to improve odds

of cure.

Cost of radiation treatment is high. This is because the radiation must be given in divided doses, called “fractions”, when using external beam or be left in place for 6 to 10 days when using brachytherapy. During this time, the horse must stay at the treating facility and in the case of brachytherapy must have a special radiation proof stall. There are less than 10 veterinary school facilities in this country offering radiation therapy, led by Ohio State and Washington State, but with several others in the late planning stages. Liverpool Hospital in the UK offers this treatment, as does the University of Sydney in Australia.



For pedunculated fibroids, removal by banding is popular. A tight rubber band or heavy suture is placed at the base to cut off the blood supply. For more broad based lesions, surgical excision can be done in any area that has sufficient extra skin to close the wound. When available, laser removal has a somewhat higher success rate. Cryotherapy uses freezing to kill the growth, which then falls off. Recurrences are common with surgery alone.

Chemotherapy, either locally injected or in the form of creams, is a common treatment. Because these are slow growing tumors, topical therapy is typically continued for several months. With injections, tumors are treated at two week intervals for up to 3 to 4 months.

Cancer chemotherapy agents used have included 5-fluorouracil and cisplatin. BCG, an immunostimulant, has also been used and most recently there was a report from Austria that the antiviral acyclovir as a cream was successful. These treatments work best with mild disease. Larger lesions should be surgically removed or reduced first.

The mistletoe extract has been tried with sarcoids in horses, with a success rate similar to chemotherapy:

J Vet Intern Med. 2010 Nov-Dec;24(6):1483-9. doi: 10.1111/j.1939-1676.2010.0597.x. Epub 2010 Oct 12.

Treatment of clinically diagnosed equine sarcoid with a mistletoe extract (*Viscum album austriacus*).

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Abstract

BACKGROUND: Equine sarcoids (ES) are common, difficult to treat, and have high recurrence rates. *Viscum album* extracts (VAE) are used in human cancer treatment.

HYPOTHESIS: That therapy with VAE (Iscador P) is effective in the treatment of ES.

ANIMALS: Fifty-three horses (444 ES); 42 were treated with VAE or placebo as monotherapy; 11 were treated with VAE or placebo after selective excision of ES.

METHODS: Prospective, randomised, blinded, clinical trial. Horses were randomly assigned to treatment (VAE; n=32) or control group (Placebo; n=21). One milliliter of VAE (Iscador P) in increasing concentrations from 0.1 to 20 mg/mL or physiological NaCl solution was given SC 3 times a week over 105 days. Number, localization, and type of the ES were documented over 12 months. A subset of 163 clinically diagnosed equine sarcoid (CDES) lesions (95 VAE, 68 Placebo) was evaluated in detail, considering clinical findings and tumor volume.

RESULTS: No undesired adverse effects were observed except for mild edema at the injection site in 5 of 32 horses (16%). Complete or partial regression was observed in 13 horses of the VAE group (41%) and in 3 of the control horses (14%; P<.05). After VAE treatment, 48 of 95 CDES (57%) showed an improvement compared with 17 of 68 CDES in the control group (40%; P<.01). Twenty-seven CDES had disappeared completely in the VAE group (38%) compared with 9 CDES in the control group (13% NS).

CONCLUSIONS AND CLINICAL IMPORTANCE: VAE (Iscador P) represents a safe and effective treatment for CDES.

Another topical approach is to chemically destroy the sarcoid. The herbal bloodroot (*Sanguinaria canadensis*) is the most well known and is available as a cream, mixed with zinc chloride solution. Xxterra is the most well known product in the US, and is available through veterinarians. There are others on the market as well. In the UK, there is a product called AW4-LUDES, commonly known as Liverpool Sarcoid Cream, developed by Dr. Knottenbelt. It contains 5-fluorouracil as well as caustic chemicals and herbal extracts.

The appeal of the caustics is how quickly they work. Small growths may dry up and fall off in a matter of days. Larger growths may take a few weeks. The downside is the local inflammation and pain they produce. When the destroyed sarcoid falls off, you are left with an open wound that must heal by granulation. There are no formal studies available

but the success rate appears to be higher than either surgery or other topicals used alone. However, recurrence is possible.

There are sporadic anecdotal reports from owners that toothpaste applied topically to sarcoid works! [Click To Tweet](#)

Finally, there are sporadic anecdotal reports from owners that toothpaste applied topically works. Some claim it has to be Crest, but other brands have been used. A theory is that the fluoride may be the effective agent. Some have claimed success with fluoride mouth washes. Responses are seen in the same time frame as with the caustics above. There is no information on the success rate or recurrences.

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