

Warts on Cattle (Papillomas)

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Papilloma viruses are small, double-stranded DNA viruses of the PAPOVAVIRIDAE family. Some mammals have several distinct papilloma viruses-humans have about 20; cattle have about 6; dogs 3 and rabbits 2. The virus is transmitted by direct contact, fomites and possibly by insects. Papillomas have been reported in all domestic animals, birds and fish. Multiple papillomas have skin and mucosal surfaces generally are seen in younger animals. Papillomatosis is most common in cattle, horses and dogs. Single papillomas are more frequent in older animals, but they may not always be caused by viral infection.

When lesions are multiple they may be sufficiently characteristic to confirm the diagnosis; however, there are many simulants of warts and a definitive diagnosis requires identification of the virus or its cytopathic effects on individual cells.

In cattle, warts are commonly found on the head, neck shoulders and occasionally on the back and abdomen. The extent and duration of the lesions depend on the type of virus, area affected, and degree of susceptibility. Warts appear about two months after exposure and may last up to a year. Papillomatosis becomes a herd problem when a large group of young, susceptible animals become infected. Immunity usually develops three-four weeks after initial infection, but papillomatosis occasionally recurs, probably due to loss of immunity.

Although most warts appear as epidermal proliferations they have a keratotic surface resembling a cauliflower, some bovine papilloma viruses (bovine papilloma types 1 & 2) involve dermal fibroblasts and keratinocytes and appear as papulonodule with a warty surface. Such fibro papillomas may involve the venereal regions where they can cause pain, disfigurement, infection of the penis of young bulls and dystocia when the vaginal mucosa of heifers is affected.

A form of persistent cutaneous papillomatosis with smaller numbers of papillomas may be seen in herds of older cattle. A bovine papilloma virus has been demonstrated in bladder tumors associated with bracken fern ingestion and in upper GI tract papillomas of cattle in Scotland. It is believed that the papillomas virus acts as a co-carcinogen. When bovine papillomas virus 1 or 2 is injected into the skin of horses, a dermal tumor similar to equine sarcoid develops.

Infections papillomatosis is a self limiting disease, although the duration of warts varies considerably. A variety of treatments have been advocated without agreement on efficacy. Surgical removal is recommended if the warts are sufficiently objectionable. However, because surgery in the early growing stage of warts may lead to recurrence and stimulation of growth, the wart should be removed when near their maximum size or

when regressing. Affected animals may be isolated from susceptible ones, but with the long incubation period, many are likely to have been exposed before the problem is recognized.

Vaccines are of some value as a preventive but are of little value in treating cattle that already have lesions. Because wart viruses are species-specific, there is no merit in using a vaccine derived from one species in another.

When the disease is a herd problem, it can be controlled by vaccination with a suspension of ground wart tissue in which the virus has been killed with formalin. Autogenous vaccines may be more effective than those commercially available. It may be necessary to begin vaccination in calves as early as four – six weeks of age with a dose of about 0.4 ml. intradermally given at two sites. The vaccination is repeated within four to six weeks and at one year of age. Immunity develops in a few weeks but is unrelated to whatever mechanism is involved in spontaneous regression. If the animal was exposed to the virus before vaccination, immunity may develop too late to prevent warts. A vaccination program must be in effect three to six months before its preventive value will be evident. Vaccination should be continued for about one year after the wart disappears because the premises may still be contaminated. Stalls, stanchions, and other inert materials may be disinfected by fumigating with formaldehyde.