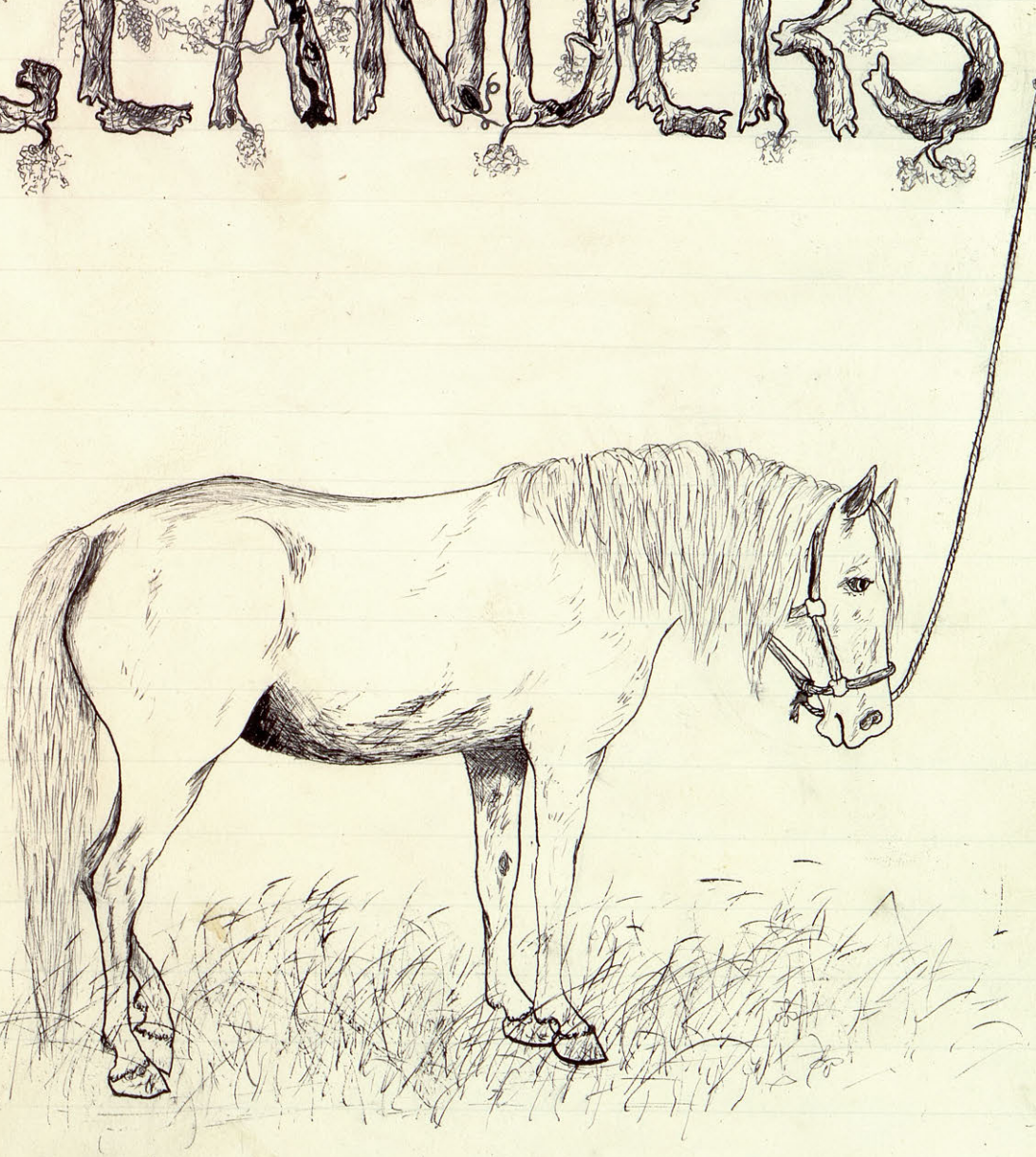
# GLANDERS.



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# Glanders.

The disease known as glanders is a malignant infectious germ disease to which the genus Equus, the horse, the mule, and the ass is most susceptible. It is a specific disease of vegetable origin which is quite peculiar in its form of presentation and in the length of time for it to incubate.

Farcy is a name which is often used as one stage of glanders or a disease that is apt to develope into glanders. Let all such erroneous ideas be abandoned at the out set. They are one and identical. The only difference being in the form of presentation.

Glanders is a term applied to this in whatever form it may appear, while farcy is generally applied to the disease when its principal manifestation is an out break of the lesions on the extirior of the body, but even when it does only show upon

the skin there are always internal lesions although they are not apparent.

The disease is readily communicated to man, goat, hog, and dog. It runs quite a variable course until gradually produces death. Death must be the inevitable end of this dreadful disease when inoculated in the genus Equus.

Glanders is one of the oldest diseases of the horse of which we have deffiniate knowledge.

Absyrtus, the Greek veterinarian in the army of Constantine the Great, described this disease with considerable accuracy and recognized the infectiousness of its character. Another Greek veterinarian, Vegetius Renatus, who lived in the time of Theodosius (381 A.D.) described under the name of Malleus Humidus a disease of the horse characterized by the nasal discharge and accompanied by

superficial ulcers. He recognized the infectious property of the discharge of the epizoal ulcers, and recommended that all animals sick with the disease should be separated from other animals at once; and that great care should be taken to keep sound animals from feeding after them. In 1682 there was an account published by Sallysel, the stablemaster of Louis XIV in which he considered glanders and farcy closely related, but did not recognize them as the same disease presented in different forms. He admitted the existance of a virus which communicated the disease from an infected animal to a sound one. He also knew how the disease was transmitted.

In 1746 a writer held, that, since one diseased animal could infect a prodigious number of horses by means of the

discharge which they might pick up, the diseased horse should be distroyed.

Glanders was imported to America at the close of the last century and before the century was half past it had spread to a considerable degree among the horses of the middle and immediately adjoining southern states. The disease was unknown in Mexico until carried there by Mexican war by the badly diseased horses of the United States army.

During the first half of the present century a large school of veterinarians and medecine men protested against the infectious character of this disease to such an extent as to prevail against the common opinion. So several of the governments of Europe, in order to find out definitely, undertook a series of experiments, and determined between the the two contesting parties.

At a veterinary school in Alfort and at a farm of Lamerault, in France several hundred horses which had passed the examination as sound had placed among them Glandered horses under various conditions the result of these experiments proved conclusively the infectious character of the disease.

In 1881 a French school undertook a series of experiments with matter taken from the farcy ulcer of the human being.

They afterward continued their experiments with matter taken from the animals of the Equine Genus in 1883 they presented their results to the public, conclusively demonstrating that the disease was caused by a bacterium of a low of parasitic organism which was capable of propagation and reproduction if placed in the proper media.

Eteology:- The contagious nature of the glanders in no matter what form they appear, being definitely demonstrated, we can recognize but one cause for all cases and that is infection by means of a specific virus.

In studying the authors who wrote years ago we find predisposing causes assigned as factors in the development of the malady. While virus, from a case of glanders will invariably produce the disease, if inoculated into an animal of the genus Equus; we find a great variation in the manner and rapidity of the development of the disease in different individuals. We find that the virus is much more apt to be carried to sound animals under certain circumstances than it is under others. Only certain species contract this disease and in some of these

it only develops as a local, and in time this heals and leaves the animal sound as before; but in others it develops into a constitutional malady which leads to death.

In acute glanders the infectious character is found in its most virulant form, as it inevitably inoculates an animal infected with it; but some times the discharge from a chronic case will not produce the disease. And in acute glanders we have a much greater discharge. much more virus bearing matter is scattered among its fellows, and chances for other animals to become inoculated is very much enhanced in such a case. Farther, the chances for inoculation is much increased when sound horses, mules, or asses are brought in the immediate neighborhood of a glandered animal, drink from the same bucket, fed from the same trough or bale of hay which has been

saturated with the saliva of the diseased animal, or work in the same wagon. In order that this disease can spread the discharge must come in direct contact with the with the tissues of a sound animal. Stable attendants serve as one of the most common carriers of the virus. Dried or fresh discharges are collected from infected animals in cleaning, harnessing, feeding, and by means of the hands, clothing, the teeth of the curry comb, the bridle and halter are carried to other animals.

An animal inected with chronic glanders in a latent form is moved from one part of the stable to another, or works hitched with one horse then with another may be an active agent in the provocation of the disease without the cause being known or recognized.

Glanders is found frequently in the most insidious

forms and it is an acknowledged fact that it can exist without being apparent; that is it may affect a horse for a long period without showing any symptoms that will allow even the most experienced veterinarian to make a diagnosis. Such cases are, however, active in spreading the disease to sound animals. If suspicioned animals are put to hard work, exposed, and poorly fed the latent form of glanders is very likely to develope. Or an autopsy of such an animal may show the glander lesions of an acute form grafted on chronic lesions consisting of old tubercles which has existed for years.

The time required for incubation is very variable within the same genius. This difference in the length of time that is required for it to develope gives rise to the two forms in which it exists namely chronic and acute.

When the germs of this disease are inoculated in the horse it is quite apt to develope into a chronic form; and thus the horse, though apparently sound, may be an instrument for sowing the glander germs broadcast. These germs may light in some feed box or trough and may remain there for months and even years, and afterward be taken into the system and produce the disease which may develope as a skin eruption or an internal eruption in either the chronic or acute form. The primary lesion in any form is a local point of eruption in which we have a rapid prolification of the cell elements which make up the animal tissue with formation of new connective tissue and with a crowding together of other elements until their own pressure on each other cut off the circulation and nutrition, and death of the

parts in the form of ulceration or gangrene takes place. Following this primary lesion we have an extention of infection by means of those tissues which immediately surround the lesion, which is most suitable for the development of the specific virus.

The primary symptoms are the result of inoculation developed at the point where the virus comes in contact with the tissue, but at a later time the virus is carried by means of the blood vessels and lymphatic vessels to other parts of the body and becomes lodged at different places and develops in them; again when the disease has existed in the latent form in the lungs of the animal and the virus is wakened into action from any cause we have it carried to various parts of the body and developing in the most favorable localities. The points of development are most frequently determined by the

activity of the circulation, an the effect of exterior irotants, for example if a horse which has been so slightly affected with the virus of glanders that no symptoms are visable is exposed to cold, rain, or sleet, or by the rubbing of the harness on the body and irrotation of mud on the legs, the disease is apt to develope on the exterior in the form of farcy which a full blooded horse which is employed at speed and has has its lungs and respiratory track gorged with blood from the extreme use of these organs will develope glanders as the local manifestation of the disease in the respiratory tract.

Symptoms of Chronic Farcy.

This is first observed in the form of small nodes on the under surface of the skin which rapidly infringe on the tissues of the skin. These nodes or buttons, as they are commonly called, are about

the size of a good sized marble but they vary considerably in size. They are hot and sensative to the touch, at first elastic and then becomes soft and finally develops in the form of an ulcer. This ulcer has the characteristic ragged edges and irregularity in shape, the edges over hanging the ulcer. The ulcer has a dirty gray bottom. The discharge is sometimes thin and sometimes purulant; in either case it is mixed with a viscous, sticky, yellow material which has about the same consistancy as the white of an egg. To the expert the discharge is diagnostic. This discharge accumulates on the hair about the ulcer and forms a scab which is constantly growing thicker by discharge being applied continually to the under surface until they fall off, only to be replaced by another. Eventually the discharge becomes purulent in character, the bottom of the ulcer has its gangrenous appearance changed into a rosy

granulation the ragged edges smoothed off, and the chancre is changed into a simple ulcer which heals rapidly.

The lymphatic vessels close to these chancres becomome swollen and then harden and appear like great ridges under the skin. They are hot and sensative to the touch. They may remain for a considerable time and then gradually disappear, or they ulcer and have all the characteristics of a farcy ulcer.

The diagnostic are the farcy buttons, the chancre, the cord and the discharge. We have in addition to these, however, certain accessory symptoms which are of value in diagnosing a case when the above are not characteristic. The following are those refered to:

Epistxis or bleeding at the nose without any apparent cause. Such a hemorrhage from the nostils should always be regarded as suspicious. An animal with farcy frequently develops a short,

dry, aborted, hacking, cough much like that found in a case of heaves with no discharge from the nostril. Another common symptom is the swelling of one of the hind legs. It is suddenly found swollen in the region of the cannon the enlargement extending down to the paston and above as high as the stifle. This swelling is hot and painful. A pit in it caused by pressure soon fills up after the pressure is removed. In severe cases it may ulcer or serum may ooze out from the surface. The swollen leg in farcy is frequently followed by an out break of farcy ulcers over the surface of the body. In the entire horse the testicles are frequently swollen, hot, and sensative to the touch, but they have no tendancy to suppuration.

Chronic glanders or glanders in a chronic form which attacks the air passages. In this we have the same train of inflamitory phenomena, and the only varying

in appearance is due to the difference of the tissues in which they are located.

The node in this, though, is somewhat smaller than in farcy. This node may be located just inside the wings of the nostrils or on the septum which divides one nostril from the other and may be easily detected in these places; but they may also be located along the trachea or possibly deep in the lungs. In fact they may be located any place along the air passages.

The tubercles are first red and hard, but soon turn yellow, soften and break. This ulcer also has the characteristic dirty gray bottom and the ragged edge and pours out a viscid discharge the same as the farcy ulcers do.

These ulcers also irritate the lymphatics and in the intermaxillary space, deep inside the jaws we find an enlargement

of the glands to about the size of an almond, which becomes expendingly hard and nodulated. This enlargement is found firmly adhearsing to the base of the tongue.

The essential symptoms then of this form of glanders is the chancre, the tubercles, the enlarged glands, and the discharge. With this form of the disease we may have several different kinds of coughs depending on where the lesion is located. In chronic glanders we have the same accessory symptoms which we have in chronic farcy, the hemorrhage of the nose, the swelling of the legs and in the entire horse the swelling of the testicles, and the chronic cough.

In chronic glanders and in chronic farcy the animal rarely shows any amount of fever; but he does have a general depraved appearance. It looses flesh and becomes hide bound.

The skin becomes dry and the hair stands on end. There is a cachexia, however, which resembles greatly that of any chronic organic trouble; but this is not diagnostic although it has in certain appearances and conditions which often render the animal suspicious to the eye of an expert veterinarian, while without the presence of local lesions he would be unable to state upon what he bases his opinion.

Glanders in the chronic state is often very deceptive as has been previously mentioned and often animals pass the examination and receive a certificate of soundness after which it is found that the examiner was mistaken and that the animal had it at the time of examination.

There is believed to be a test now that is absolutely certain in its effects. It is called the mallein test. In this the germs are grown in artificial culture

and after they have secreted the usual virus they are destroyed without changing the character of the poisonous discharge and this is injected under the skin. If there is any form of glanders present there will be a marked rise in temperature of the animal in the course of a few hours, but if glanders is not present there will be no change.

Acute glanders:— In the acute form of glanders we have the symptoms which we have previously given in a more acute and aggrevated form. We have a rapid out break of tubercles in the respiratory tract, which rapidly degenerate into chancres and pour out a considerable discharge from the nostrils. We have the cough more or less severe. We have swellings over the body which are rapidly followed by farcy buttons which break into chancres, and the indurated cords and enlargements of

lymphatics soon follow.

Bleeding of the nose, sudden swelling of one hind leg and other swellings are apt to precede an acute eruption of glanders as the symptoms become more marked the animal has difficult respiration, the flanks heave, respiration and heart beats increase, and the temperature rises to 103° to 105° F.

The animal appears as though he was suffering from acute pneumonia. But upon examination we fail to find the tubular murmur or the large area of dullness on percussion over the sides of the chest which belong to simple pneumonia.

Treatment:- The treatment of this disease is quite unsatisfactory. Fully the entire list of drugs in the pharmacopoeia have been tested in the treatment of glanders and none have effected a cure. However, good hygienic surroundings

good food with alterratives and tonics frequently improves the health and renovates the system to such an extent that the animal would pass the examination of an expert as a perfectly sound animal. But while in this case the number of tubercles in the lungs, which are invariably there, are so few that they do not cause sufficient disturbance in respiration to attract the attention of the examiner. They do exist there though and will remain there indefinately with the constant possibility of a return of acute symptoms.

In several celebrated cases horses which have been affected with glanders have been known to work for years and die from other causes without ever having had a return of the symptoms; but, allowing that this may occur, such cases are so few and far between and the danger of infection from glanders is so great that no such animals should be allowed to live.