Malignant Catarrhal Fever of Cattle

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DURING the spring months of this year two widely separated outbreaks of malignant catarrhal fever of cattle were diagnosed in this province. Previous to that the diseases had not been reported since 1934. These facts would suggest that the infection is ever present, becoming manifest only occasionally as a severe and fatal outbreak.

A typical case of malignant catarrh would be quickly recognized by any one having had previous experience with the disease, but to one unfamiliar with malignant catarrh, the disease would be very perplexing. It is also possible that mild cases of the disease not infrequently occur which pass unrecognized or are diagnosed incorrectly. Our primary purpose in preparing the article is not to make a detailed report of the outbreaks studied, but rather to present a faithful picture of malignant catarrh which may be helpful to the practitioner in the recognition and correct diagnosis of this disease. For some of the facts presented we are indebted to Daubney, R. and Hudson, J. R.¹ whose researches into this disease are most valuable and informative.

Definition.—Malignant catarrhal fever is an acute and highly fatal infectious disease of cattle which is characterized by a severe and often diphtheretic inflammation affecting any or all of the mucous membranes. The eye is frequently involved. The disease rarely spreads by direct contact.

Historical.—While the disease has been recognized for many years in Europe, the first outbreak to be reported in Canada was in Ontario in the year 1924². Since then several outbreaks, as well as a few individual cases have been reported from the province³. Sporadic cases and occasional outbreaks have been reported from many parts of the United States.

Etiology.—Until recently the disease was believed to be due to highly virulent colon bacilli. It is now definitely known to be due to a virus which is non-filterable and apparently related to the red blood-cells. It is present in the blood, lymph glands, and brain. The virus is viable in 50 per cent glycerine for about one week.

Occurrence.—The disease occurs chiefly in the sporadic form. It is sometimes seen as a stable infection causing very heavy losses over a period of several weeks. In our experience it is rare for more than one or two animals to be affected at the same time. Most outbreaks occur during the spring and fall months. Of five recorded outbreaks in Ontario all have occurred during the spring.

Susceptible Animals.—Natural infection occurs only in cattle. The goat may be infected experimentally. The rabbit is susceptible to experimental infection, head and eye lesions developing in some cases.

Transmission.—The way in which the disease spreads from animal to animal is not known. There is no evidence that it is spread by the discharges of the body. We, as well as others, have inoculated calves in the nose and

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eye with the nasal discharge from acute cases with negative results. It is generally believed that some insect vector or tick is responsible for transmission of the infection. Likely as this may be there is at present no evidence to support this view. In experimental transmission large quantities of blood (100 to 200 cc.) must be employed to ensure infection. Nothing definite is known as to the reservoir of infection; how or where the virus is carried over from one outbreak to the next. It is of interest to note that in one outbreak, a blind cow had recently been introduced to the herd. The cause of the blindness could not be ascertained.

**Incubation Period.**—This is very variable. The average time in acute cases is twenty-one days. It may be as short as sixteen days or as long as ten months.

**Symptoms.**—These will vary according to the type of disease present. Four types have been described: the per-acute; the head and eye type; the alimentary and the mild. In all types, except the mild, the disease develops suddenly and has the ear mark of a very severe infection. The temperature varies from 105° to 108° F.; the pulse is accelerated; the respiration increased and a slight serous exudate may be present in the nostrils. Anorexia is usually complete, and the milk flow has almost ceased.

Muscular twitching is common especially in the regions of the shoulder and thigh. Nervous symptoms may be prominent in some cases, the animals being either dull and depressed or excitable. Hyperaesthesia has been noticed in several cases. In the head and eye type of the disease, the nasal discharge, within a day or two, becomes muco-purulent, fetid and frequently contains shreds of fibrin, the conjunctiva is congested, the eye lids are swollen and an acute keratitis causing opacity of the cornea frequently develops. Due to the extension of the acute inflammation to the larynx and trachea and the formation of a profuse inflammatory exudate, the breathing may become very rapid and stertorous. An acute stomatitis, with ulceration is frequently observed. Inflammation and ulceration of the lips may occur and extend to the skin surrounding the muzzle causing fissures of the skin and sloughing. In some cases the whole head may be swollen or the swelling may be limited to the intermaxillary space. There is a rapid loss of condition, symptoms of respiratory distress become aggravated due to the formation of diphtheretic membranes in the trachea and bronchi and usually within a week the animal succumbs to a disease which from the commencement is recognized as a most malignant type of infection.

In the alimentary type there is evidence of acute enteritis in the frequent passage of liquid faeces containing shreds of fibrin and clots of blood. In this form the head and eye symptoms are either entirely lacking or mild, but the constitutional symptoms indicate severe infection.

In the mild type which has been reported from South Africa, the symptoms are less severe and the course of the disease prolonged for several weeks. Skin eruptions are frequently present in the mild or sub-acute type. The hair in the affected areas is tufted or slightly matted due to the presence of desiccated exudate. Complete recovery occurs in about 50 per cent of such cases. In the acute forms the mortality is very high, from 90 to 100 per cent.
Daubney and Hudson emphasize the fact that the lymphatic glands are enlarged, the superficial glands being readily palpable. Nervous symptoms were frequently present while diarrhoea was conspicuously absent in most of their acute cases.

Treatment.—No satisfactory treatment is known. Blood transfusions from recovered cases might be tried.

Post-mortem appearance.—The most typical lesions are seen in the head and eye type of infection. The mucous membrane of the nasal chambers is acutely inflamed and covered with a purulent exudate which may contain shreds of fibrin or pieces of diphtheretic membrane. Ulcers may also be present. The purulent inflammation may extend to the sinuses of the head. The pharynx, larynx, and trachea are frequently involved in the same acute inflammation. It is not uncommon to find a diphtheretic inflammation extending from the larynx throughout the trachea and terminating in the smaller bronchioles. Perfect casts of the trachea and bronchi may be thus formed which are easily removed by slight traction. In most cases the lungs are not severely or extensively affected, which is in marked contrast to the extremely severe inflammation of the respiratory passages. The eye is frequently acutely inflamed, the anterior chamber containing a turbid exudate while the cornea is opaque. The regional lymph glands are enlarged oedematous and haemorrhagic. The meninges of the brain are markedly congested.

The abdominal viscera show marked changes, especially in the alimentary type of the disease. The abomasum is acutely inflamed and may be "peppered" with petechial haemorrhages. Ulcers may also be present. Areas of acute inflammation may be found throughout the intestine, even in the rectum. The enteritis may be either diphtheretic or haemorrhagic or a combination of both. The liver is pale and degenerate, haemorrhages may be numerous throughout the parenchyma. The kidneys have the appearance of cloudy swelling. The mucous membrane of the bladder, urethra and vagina may be the seat of mild or acute inflammation. Marked mottling of the liver and kidney which Daubney and Hudson emphasize as being characteristic has not been observed.

Histopathology.—As our purpose in writing this paper is to present those aspects of the disease which are of most importance to the clinician in arriving at a correct diagnosis we will refer but briefly to one of the most significant microscopic changes. Round cell infiltration of the peri-vascular connective tissue, and lymphatic spaces commonly known as 'cuffing' of the capillaries, is found in the brain, liver and kidney. Daubney and Hudson refer to this condition as being constant, well marked and of diagnostic importance. We have not observed the mottling of the liver and kidney due to cell infiltration which they state may easily be seen in the gross specimen. Slight cuffing only has been observed.

Differential diagnosis.—The diseases which may be confused with malignant catarrh are haemorrhagic septicemia, encephalitis and acute conjunctivitis. The two latter diseases are easily differentiated by the absence of the acute respiratory or alimentary symptoms which usually accom-
pany malignant catarrh. In haemorrhagic septicemia several animals are usually affected at the same time, there is marked lung involvement, the nasal discharge is not so copious, the eye is rarely affected, nervous symptoms are absent, and the disease in most cases, lacks the severity of malignant catarrh.

In closing we would emphasize the necessity of bearing in mind the fact that the infection of malignant catarrhal fever exists in the province of Ontario and may be more widely distributed in Canada and that individual cases or serious outbreaks may occur at any time.

Especially must we be on the lookout for the mild or chronic type of infection. For correct diagnosis of this type it will be necessary for the practitioner not only to know that the disease exists, but to have become familiar with its diagnostic features.

References

A Method of Treatment of Haematoma of the Dog's Ear

In THE "Veterinary Record" 13th September, 1941, L. G. Anderson, B.V. Sc. M.R.C.V.S., reports success from a new method of treating haematoma in the ears. The haematoma was opened and the lining curetted lightly under aseptic conditions. When haemorrhage was controlled a small pad of cotton was placed over the incision and the ear, in an unwrinkled condition, was placed in a light plaster cast (Cellona bandage was wrapped around four times). As the cast set, the ear was bent over the head and considerable pressure applied until the plaster was hard. The cast was then held to the head by bandaging and left for one week. Healing by first intention was noted and even in two "prick eared" dogs the results were such that the animals could have appeared in show rings after the hair had grown in.

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