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FOWL CHOLERA

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Among the poultry diseases responsible for losses in Nebraska, the one known as fowl cholera deserves first place. This is evident from the fact that in thirty per cent of all the poultry specimens received by the Department of Animal Pathology and Hygiene the presence of fowl cholera could be demonstrated by bacteriologic methods. The disease has a rather wide distribution in Nebraska and during the three years preceding July 1st, 1921, fowl cholera specimens were received at the laboratory from twenty-nine counties of the state. Those counties include practically those where agriculture is most intensively practiced and in which the poultry population is the heaviest.

Fowl cholera constitutes a source of loss which poultry raisers must reckon with and it is for that reason that the information contained in the following pages might be of interest.

Fowl cholera occurs as an acute, communicable disease and as such is due to a micro-organism and this is the sole cause of the disease. This micro-organism is distributed throughout the body of acutely sick fowls in a general way; thus the disease germs abound in the circulation of the blood and the tissues of the body are teeming with them.

While fowl cholera probably causes the greatest ravages among the common farm yard fowls, geese and ducks are also particularly susceptible and turkeys, pigeons and guinea fowls take the disease readily. The common sparrow and other flying birds are liable to the infection and this should be especially remembered when we attempt to explain the transmission of the disease to isolated farm yards.

It is commonly accepted that the infection of fowl cholera is taken into the body by feed and water, but it is also very well possible that the germs can be introduced through small abrasions of the animal's skin or by infected dust coming in contact with exposed mucous membranes such as those of the mouth, eye, and nose. In many cases the germs are found to be extremely virulent, the prick of an infected needle commonly being sufficient to secure infection. As soon as the organism has gained entrance into the body it rapidly disseminates through all the tissues and swarms in the blood circulation. This fact hence explains why dosing with medicines is of no avail against this disease.

The infection leaves the affected fowl by bowel discharges which directly contaminate the soil and poultry yard or which

by careless arrangement of eating and drinking utensils, infect the feed and water. Another factor in the dissemination of the disease is the careless disposal of the carcasses or the offal of birds coming from an unknown source and which were used in the kitchen.

Fowl cholera germs have a capacity of surviving outside the body for long periods. In the manure they last for at least a month while in the decomposing carcass or in the soil they have been found to remain alive for three months. Those periods, however, are subject to considerable variation on account of the influence of temperature, moisture and the complex processes by which soil and similar substances purify themselves.

The period of incubation which is the time elapsing between the introduction of the infection into the body and the first manifestation of the symptoms also varies considerably, in accordance with the amount of virus introduced, its virulence and above all the method of introduction. When the virus is introduced by direct injection into the circulation the animal may die in the course of twenty-four hours. In natural infection however, it seems the period of incubation averages between four and nine days.

The manifestations of the disease give evidence of great virulence and we believe there is no other disease which in so short a time can bring about such ravages in a poultry flock. Especially in the beginning of the outbreak the advent of the disease is often one of great suddenness. Birds are seen walking around the yard and in a short period are found dead. Often the first indication of the presence of the disease on a farm is that birds are found dead sitting on the nests or lying under their perch in the morning. In such outbreaks sick birds are seldom seen because of the overpowering rapidity by which the disease kills. When the outbreak progresses the virulence may become less marked and sick birds can be found and examined. Then we find the sick fowls to be dull, stupid, sitting about with ruffled feathers, with their heads tucked under their wings while the latter commonly droop and spread out in an unnatural position. Fowls seem to be extremely drowsy and sleepy and if they can be induced to move at all they commonly show a high degree of weakness and lameness, accompanied or not with swelling of the joints. The comb and wattles commonly have a very dull, purple color but not necessarily constantly so. The mouth and nostrils may show a whitish or pinkish froth. Diarrhea is a frequent symptom, often prominent, but not one of constant occurrence. In the beginning of an outbreak fowls are killed so rapidly and so suddenly that there is in many cases no time for diarrhea to develop.

The droppings appear as a profuse bowel discharge of a yellowish gray color and of a watery consistency and during the latter stages of the disease it even assumes a greenish, pinkish color. The bowel discharges soil the feathers and not uncommonly they are glued and matted into a fetid mass. Sick birds not uncommonly show hard, difficult breathing accompanied by a rattling sound indicating the presence of liquid mucus in the air passages. Cases of this kind manage to live for three or four days, but when the disease is in a still more chronic stage the birds may lie around for several days more and then die without eating, without drinking, sleeping profoundly. Recoveries, while they occur, are very rare and it is not impossible that recovered fowls remain the distributors of infection for long periods.

While sudden deaths of poultry stock is commonly sufficient to suspect the presence of the disease under consideration it is not always an easy matter to make an absolute diagnosis without having recourse to a bacteriological examination. The nature of the after death appearance of the fowls, dead with the disease, is not always constant and lesions may not even be present as the marked virulence of the disease commonly leaves no time for any particular changes to develop in a conspicuous manner. Birds which, however, have died after one or more days of sickness may present upon examination of the carcass, certain definite changes which may point toward the existence of this disease. In the more acute cases, hemorrhages in the intestines and lungs are common. There are hemorrhages of the membrane lining the surface of the organs and the body cavities. These cavities may contain a more or less fibrinous substance floating in the liquid contents. This is commonly conspicuous within the sack in which the heart is contained. The membrane in such a condition is commonly dark in color and contains flakes of a whitish, yellowish substance and occasionally the outer surface of the heart is covered with small red blotches as if it has been sprayed with bright red paint. The latter phenomenon is especially conspicuous in the case of geese and ducks dead with the disease. In a few cases the lungs show evidence of pneumonia and present a marked discoloration. In the liver one occasionally finds small, white, ill defined areas caused by the infection while the spleen in a few cases is congested and swollen.

In the more chronic forms of the disease there may be contained in different parts of the body small areas composed of a cheesy substance, yellowish gray in color and rather dry in consistency. In such cases, swollen joints, filled with the same substances are frequently met with.

While these lesions are somewhat characteristic, their presence in the animal cannot always be depended upon to recognize the disease definitely. This however is most commonly made possible by having recourse to a microscopic or bacteriologic examination. In the large majority of acute cases of fowl cholera there is no difficulty in finding the germs in the blood by the use of the microscope. In other cases a more extensive bacteriologic examination must be undertaken. The Department of Animal Pathology and Hygiene of the University is prepared to make these examinations for those who have no recourse to the necessary facilities in the field.

The course of the disease in the flock may show considerable variation. In some cases the disease disappears as suddenly as it came, after killing about half the birds. In other cases there is an overpowering progress of the disease and within a comparatively short period of time, the entire flock may be wiped out.

The common behavior of the disease is that it begins with great virulence and subsequent fatality among the fowls and then slows down to finally disappear, leaving half or less than half the flock intact, yet recurring from time to time in the form of chronic cases. This behavior of the disease must be particularly kept in mind when examining the claims made for certain remedies. As a rule the introduction of infection into a flock must be looked upon with apprehension.

In dealing with this disease no dependence can be placed upon the use of medicinal agents. Medicines given to fowls with a view of curing cholera are as futile as medicines given to children for the purpose of curing the measles. In the light of our present knowledge infectious diseases of this type are not amenable to medicinal treatment and fowl cholera is about as conspicuous an example as we can find.

In facing the fowl cholera situation we are entirely dependent upon preventive measures. Poultry yard cleanliness is the first measure which tends toward preventing the occurrence of the disease. Birds should not be confined and fed in soiled yards where it is impossible for them to eat except feed usually contaminated with droppings. Some type of self feeder in which the contamination of the feed is impossible should be used. The drinking water should be carefully guarded against outside contamination. Pools and puddles in the yards where poultry have access should be drained and the drinking water should be provided in such a way that it cannot be soiled by fecal matter. The use of antiseptics in the drinking water is a common practice, but is not recommended, because if chickens are supplied with clean water and care taken against contami-

nation the use of chemicals becomes entirely superfluous, while on the other hand, the effect of such chemicals may render the birds particularly susceptible to this disease or other infections to which they might be exposed in some other way.

In regions where fowl cholera is prevalent we believe the keeping of pigeons is a menace. Those birds are very susceptible to the disease, fly far and wide and are excellent vehicles of transmitting the disease from farm to farm and the same is also true of the common sparrow.

A further factor in keeping away fowl cholera is the management of the newly purchased poultry stock or such stock as is being returned from fairs and shows. It is advisable to keep such fowls in quarantine for three or four weeks before admitting them to the general flock. Offal of birds from outside sources killed for the table should never be disposed of by throwing it in the garbage where perhaps the chickens may feed on it, but should be destroyed by burning.

It likewise should be remembered that eggs of fowls carrying infection have often been found to contain the organism causing cholera. Eggs should not be purchased for setting unless one knows exactly the sanitary conditions of the flock from which they are derived.

Dealing with this disease when it has once arrived on the farm is a much more difficult task, yet certain measures may be taken which tend to check its spread. In the first place, dead or sick chickens should be destroyed immediately by burning, and when this is done care must be taken that neither the droppings or the blood or any part of the carcass should contaminate the yards or premises. Remember a drop of blood may contain millions of germs and that the same is true of other parts and excretions of the body. The healthy birds, so far as can be determined, should be immediately taken away from the yard or premises in which the disease has gotten a foothold and be taken to some place where the fowls composing a given flock have not been at any time. This may be difficult on the average farm, yet if it can be brought about it should be done and if in addition to this the healthy fowls can be divided into as many isolated groups as possible, further advantages will be obtained. This being done, the eating and drinking utensils, poultry houses and whatever else has been in intimate contact with the affected flock should be carefully disinfected. The yard on which the disease has occurred should be left unpopulated by a new flock until at least it has had the benefit of from four to eight weeks of warm weather. When a yard is repopulated again it is suggested that only a dozen or so of fowls be introduced and that no other fowls be purchased until these test ani-

mals have survived on the premises for at least three or four weeks.

Consideration must also be given of the slaughter of the entire lot of the still healthy birds. This is particularly the case when the disease shows evidence of being extremely virulent and of rapid spread, because by slaughtering the healthy birds then, one preserves their meat and at least saves that much out of what might often be a general wreck.

At the present time there are no vaccines or sera available that can be recommended. It is probable that there is some prospect that by the use of serum it may be possible to at least defer or check the disease for some time. Experiments are now in progress at the Nebraska Experiment Station, in order to find out definitely what can be done along these lines.

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