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PRELIMINARY REPORT OF THE ETIOLOGY OF CAT INFLUENZA.

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The object of this note is to characterise an organism which I believe to be hitherto undescribed, which is obtainable from cats suffering from influenza, and appears to have a causal relation to this condition.

Clinicians have on several occasions called attention to the fact that there exists among cats a disease which, while resembling the respiratory form of "distemper" in some respects, yet shows certain pathological differences, and always presents a definite chain of symptoms. This disease has received the name of "Cat Influenza"; probably because its characteristic is a respiratory catarrh. It has been noticed particularly among animals that have returned from shows, those which have been purchased from dealers, and with special frequency among cats, especially the more delicate breeds, which are kept in numbers together in a warm moist atmosphere, particularly if the ventilation is insufficient. Its occurrence among animals living in the open is extremely uncommon. My attention was first directed to this disease by observing that the majority of cats at these laboratories, if kept for any length of time in the common cat house developed it. The incubation period appears to be usually from ten to fourteen days, and apparently one attack confers but slight immunity. Adult cats may, and frequently do, suffer from as virulent an attack as kittens when brought into an area of infection.

The onset is usually mild in character, and the animal only has periodic sneezing attacks. There is at this stage no nasal or conjunctival discharge. In old cats, and those which have suffered from a previous attack, the infection may end here, or subsequent to this the animal may have a slimy discharge from the mouth, a common indication of sore throat, and show great difficulty in swallowing. All food is refused for from four days to a week, and then there is apparently a sudden and complete recovery. In young animals, and those suffering from a more virulent attack, on the third day from the onset of the sneezing there is a watery discharge from the eyes and marked photophobia, the discharge later becoming muco-purulent. At about this time there is also a profuse nasal discharge of a similar character, great difficulty in swallowing, and all food, even milk, is refused. Usually this condition persists for several days, and is followed by resolution if the animal's strength can be maintained. In some cases, however, the infection extends, involves the pulmonary parenchyma, and death takes place in from 24 to 48 hours after the first signs of pneumonia. I have been fortunate in having at my disposal an almost continuous epidemic, so that the disease was seen in all ages and stages. It is extremely uncommon to find animals affected with influenza suffering from diarrhœa—there seems, indeed, to be a tendency towards constipation.

On post-mortem examination the lesions are found to be confined entirely to the respiratory tract. There is marked injection of the mucous membrane of the pharynx, larynx, and trachea with an abundant secretion of viscid, and sometimes frothy mucus. When the lungs are affected there is a typical croupous pneumonia.

In the early stages of the disease I was able in almost every case to isolate in pure culture from the smaller bronchi, and frequently from the trachea or organism of which the characteristics are given below, and which, so far as I have been able to ascertain, has not been previously described. In the later stages this is rarely possible. When the lungs are involved the organism can invariably be recovered from that situation in pure culture. In advanced cases also the organism can be recovered from the heart blood. The serum of cats suffering from this disease has been examined for agglutinating and complement binding properties with this organism, and has always shown a higher agglutinating and complement binding titre than has that from apparently healthy cats used as controls.

It seems probable that the discharge from the eyes and nose in the later stages owes its muco-purulent character to secondary organisms, because after the onset of these symptoms it is practically impossible to recover the organism from the upper air passages in pure culture.

Morphology of the Organism isolated from Cases of Cat Influenza.

A short bacillus from 1.5 microns to 2.5 microns in length and about .3 of a micron in breadth, rarely found in chains except in artificial media, when they are not composed of more than three or four elements. It shows marked brownian movement, but is not progressively motile, and is aerobic in habit.

Staining Reactions.

The organism does not stain readily with the ordinary aniline dyes but best with Kühne's methylene blue or fuchsin.

Cultural Characters.

Plain agar stroke. In 24 hours at 37° C. there is a moderate growth which is raised, with a moist surface and almost colourless. After 48 hours the growth tends to spread and is greyish-white in colour, and shows a faint yellow tinge at the margin. This yellow colouration becomes more marked in older cultures, and is characteristic of the organism.

Blood agar stroke. The growth is similar in appearance to that on ordinary agar, but shows a greater tendency to the yellow colouration.

Potato. After 24 hours at 37° C. the growth is very meagre and scarcely visible. In 72 hours it is fairly well marked and shows a faint yellow colour.

Gelatin stroke resembles the growth on agar.

Gelatin stab. Growth takes place at the surface and about half of the way down the needle track, but does not show any peculiar character and the gelatin is not liquefied.

Broth. After 24 hours there is a moderate turbidity. After 48 hours a rich growth and some sediment in the bottom of the tube. There is no odour.

Milk is not usually coagulated at the end of 24 hours, two strains, however, show a slight coagulation after from 36 to 48 hours.

Experimental Infection.

It has been found possible to transmit the disease to healthy cats experimentally with a pure culture of this organism—a typical result being obtained by injecting a suspension in saline into the nostrils.

A further communication concerning experimental infection, protection and serum diagnosis will be made at a later date.

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