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THE OCCURRENCE OF PLEUROPNEUMONIALIKE MICROORGANISMS, CAUSING ARTHRITIS, ISOLATED FROM HEALTHY, WHITE RATS.

by

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The isolation of pleuropneumonialike microorganisms capable of causing arthritis, from healthy white rats has not yet been described as far as I know. KLIENEBERGER isolated in 1935 and 1936 pleuropneumonialike microorganisms from strains of *Streptobacillus moniliformis*, originating from the scrapings of the nasopharynx in normal white rats. Together with *Streptobacillus moniliformis* these microorganisms were pathogenic for mice.

The following experiments show the probability of the existence of pleuropneumonialike microorganisms in white rats. The investigations were carried out with animals from the Eijkman Institute, where during many years the rats bred was controlled carefully.

The breeding rooms are ratproof and any contact with wild rats is practically excluded. This is of great importance, because of the occurrence of pleuropneumonialike microorganisms in the wild rat (i.a. isolated by BEEUW-

KES and COLLIER from a sewerrat, spontaneously infected with arthritis).

Control experiments, made by COLLIER, when hundreds of animals were injected intraplantar with tissue from monkeys and rats, demonstrated the impossibility to induce arthritis in this way. However, COLLIER did not examine material from the nasopharynx of white rats, and did not carry out experiments in vitro.

Eighty white rats, 2 months old, from the ratproof rooms were examined in the following manner.

Five rats were killed, the mucous membrane of the naso-pharynx scraped off with a sharp knife and this material suspended in 5 ml 30% horseserumbroth. Next, four white rats were injected intraplantar, into the feet, with 0.5 ml of this mixture.

In this manner 16 experiments were performed. During these experiments the cages

were placed in an animal-room. In this locality a number of white rats were kept, inoculated with strains of pleuropneumonia-like microorganisms.

When after some days arthritis developed on the injected paw, material from this was injected again intraplantar in fresh white rats. At the same time this material was cultivated on horseserumagar and horseserumbroth. In this manner it was possible to produce arthritis in 10 from 16 series (from 64 injected animals 30 developed arthritis). Moreover, pleuropneumonia-like microorganisms were cultivated from the exudate of the rats paw on serumagar and serumbroth. Injecting serumbrothcultures the rats developed arthritis again. In this manner the presence of an arthrotropic agent was proved. By cultivating tissue from the swollen paw pleuropneumonia-like microorganisms were obtained, which after injecting in rats caused again arthritis. From these experiments it is not possible to ascertain whether the microorganisms in the mucous membranes of the naso-pharynx of the white rats were present from birth or came there by contamination in the animals-room. Therefore, another experiment was made with six series of 5 white rats of nearly the same age. This time the animals were kept in an empty room, where contamination with pleuropneumonia-like microorganisms was practically impossible.

Now it was not possible to produce arthritis or to cultivate these microorganisms. These results suggested a contamination in the animals-room, where rats infected with pleuropneumonia-like microorganisms were present.

One could imagine a locus minoris resistentiae, namely the place of injection. However, the negative experiments of COLLIER and STAVERMAN contradict this possibility.

Further the possibility of a litting up of pleuropneumonia-like microorganisms in the white rats must be mentioned. The results of COLLIER and STAVERMAN contradict again.

The opinion that the rats in the ratproof room are carriers is most probable, the second series of experiments, however, points to the contrary.

Experiments performed to cultivate pleuropneumonia-like microorganisms directly from the naso-pharynx, failed. 24 hours old horse-serumbrothcultures from the scrapings of the nasopharynx of 25 white rats were filtered through Chamberland L₂ candles and Zeiss glassfilters (5 on 3). The filtrate was injected intraplantar in white rats and cultivated on horseserumagar and serumbroth. All experiments fell out in the negative, probably owing to the absorption in the filter. Experiments with collodionfilters seem therefore essential but at present these are unavailable.

Moreover, the presence of *Streptobacillus moniliformis* in five pleuropneumonia-like cultures should be mentioned. On serumagar these cultures showed besides pleuropneumoniae colonies, a pure culture of *Streptobacillus moniliformis*, being characterized by their remarkable colonies and morphology, as described by STRANGWAYS and KLIENEBERGER.

Summarizing we may conclude:

1°. The presence of pleuropneumonia-like microorganisms with arthrotropic qualities in the naso-pharynx of healthy white rats is probable.

2°. By injecting exudate originating from the paw of a rat infected with arthritis, and by cultivation on serumagar, it is possible to show the presence of *Streptobacillus moniliformis*.

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