

REPORT ON BACTERIOLOGICAL INVESTIGATION OF CASES OF INFLUENZA DURING THE EPIDEMIC, NOVEMBER, 1918

Owing to the whole staff, with the exception of one man, being down with influenza, the investigations carried out were necessarily not as complete as was desirable.

SOME BACTERIOLOGICAL OBSERVATIONS MADE IN WELLINGTON IN THE INFLUENZA EPIDEMIC.

Observations made between the 9th November and the 2nd December, 1918.

Thirty-eight specimens of sputum, 8 of pleural fluid, 6 of empyæma pus, 4 of blood (post mortem), and 2 of cerebro-spinal fluid (both post mortem) were examined culturally; they were obtained from mild, severe, very severe, or moribund cases, or from cadavera.

Sputum.—In mild cases or cases of “ordinary” severity there were observed to be present microscopically large numbers of mixed organisms; among them were usually a small gram-negative bacillus, a streptococcus, a gram-negative diplococcus, a gram-positive capsulated lanceolate diplococcus, and a staphylococcus; in some a gram-positive diphtheroid bacillus and a large gram-negative bacillus were also seen; in a few (three or four) cases Vincent’s bacillus and spirillum were found.

Culturally from most of these specimens were isolated the small gram-negative bacillus, the streptococcus, gram-negative diplococcus, and the lanceolate diplococcus; from a few the diphtheroid bacillus, and from one specimen each the bacillus coli and Friedlander’s bacillus.

In the more severe and in moribund cases the organisms were not so freely present, and those isolated consisted chiefly of gram-positive, lanceolate, capsulated diplococci and of streptococci and gram-negative diplococci.

The small gram-negative bacillus did not grow in plain agar, nor at room-temperature, but in blood agar at 37° C. It appeared in about forty-eight hours as a very small opalescent colony that did not increase greatly in size on further incubation, but became more distinct. Subcultures even with greatest care usually showed in twelve hours a growth of pneumococci, and the bacillus could not be found, but after twenty-four hours the bacillus was freely present and had quite outgrown the pneumococcus. The young cultures (twenty-four hours) showed a very small immotile bacillus, gram-negative, staining readily with 10-per-cent. Carbo fuchsin. Occasionally a long form, about three or four times the average length was seen. On the very few occasions in which this bacillus was obtained in a state of purity the cultures died out in thirty-six hours, but it could be readily kept alive and subcultured when growing with the pneumococcus.

As already stated, this bacillus was present in all early cases and in cases of ordinary severity, and was the predominant organism; it could be found in every field, and was frequently phagocytized in large numbers; but it was only rarely found in severe or moribund cases.

The streptococcus could be easily isolated and grew well in plain agar. Subcultures showed a pure vigorous growth in sixteen hours; it was of the streptococcus pyogenes class, such as is so frequently isolated from bronchial, pneumonic, catarrhal, or tubercular sputa.

The gram-negative diplococcus was the micrococcus catarrhalis. It was almost always present, and was typical; it was never found alone. Occasionally it was seen to be phagocytized to the exclusion of nearly all the other organisms.

The meningococcus was never found.

The lanceolate diplococcus: This diplococcus appeared in two forms in direct smears made from sputa: (a) Small, lanceolate, and capsulated, not occurring in chains; (b) large, lanceolate, and capsulated, either singly or in short chains consisting of three to five pairs. It grew only on blood agar, never on plain agar. It fermented (with the production of acid, but not of gas) glucose, saccharose, lactose, raffinose, inulin, maltose, and galactose in Hiss’s serum-water. Mannite was not fermented, and there was no reduction of neutral red; litmus milk was acidulated and clotted.

Pleural Fluid and Empyæma Pus from Chest.—In every specimen examined the pneumococcus was present. In thirteen out of the fourteen it was the only organism (in the exception a streptococcus was also isolated).

Blood.—Two specimens taken post mortem were examined. In both the microscopical examination of the direct smears showed a pneumococcus, and the cultures showed vigorous growths in twenty-four hours. In two specimens taken from very severe cases no organism could be found in the direct smears, but light growths of pneumococcal colonies were obtained in twenty-four to twenty-eight hours. (Both these cases died.)

Cerebro-spinal Fluid.—Two specimens from post-mortem cases were examined; both showed much blood and disintegrated corpuscles, but no pus, and the pneumococcus was easily found. The culture-tubes in sixteen hours showed vigorous growths.

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