September 28, 1918

The Prevailing Pandemic of Influenza

During the past two weeks, August 28 to September 11, there has begun a severe and rapidly spreading epidemic of influenza in the First Naval District. More than 2,000 cases have been reported in these two weeks, and there are indications of a rapid spread of the infection. This is undoubtedly the same disease which, first heard of in Spain last spring, and hence called Spanish influenza, has in recent months spread over nearly all of Europe, including Germany, Italy, France, England and Ireland, attacking from 30 to 40 per cent. of the people. The outstanding feature of this epidemic is its high degree of communicability; in fact, in pandemics of this nature, influenza is the most contagious of all infections. The last pandemic (1889-1890) also moved from east to west along the lines of travel. We, therefore, have every indication that this outbreak will soon spread all over the United States. It doubtless has been carried to this country by patients or carriers aboard vessels. In fact, definite histories to this effect have been obtained from officers aboard vessels.

The disease is similar to the familiar endemic influenza, except that it is often more severe, the complications are more frequent and serious, and it shows an extraordinary degree of contagiousness. The number has increased to more than 2,000 within two weeks, in spite of early recognition and reasonable precautionary measures. It has attacked many of the physicians, nurses and hospital apprentices, thus unduly taxing the hospital service, in spite of the use of gauze masks and other precautions by all those in contact with the patients.

Characteristics of the Disease

The incubation period is from one to two days. This was demonstrated by the first cases that developed in the hospital staff after the arrival of the first group of fifty patients. These patients were received Thursday afternoon, August 28, from the receiving ship at Commonwealth Pier, Boston. Blood cultures, blood counts and throat cultures were immediately taken by the laboratory officers, one of whom was suddenly taken sick with the disease the following Saturday morning. Another medical officer, who made the first physical examinations on Thursday, was also sick Saturday.

The onset is very sudden, the patient sometimes passing from an apparently well condition almost to prostration within one or two hours. There is no complaint of sore throat at any time, and no initial localized symptoms. In a few cases the patient attributes the attack to a slight sore throat or ill feeling a few days previously, but the majority give no such history. The fever rises rapidly to from 101 to 105 F. (38.3 to 40.6 C), the patient usually complaining of severe headache, weakness, general malaise and pains of varying severity in the muscles and joints, especially in the back. As frequently described, the patient feels as though he had been beaten all over with a club.

The course is fairly constant. The patient lies in bed in a semistuporous condition, doubled up, with the covers pulled tightly over his head and neck. There are alternating chilly and warm sensations, but no paroxysmal chill. The face is flushed, the pulse from 100 to 120, the respiration from 20 to 30, the temperature from 101 to 105 F. A few have nausea and vomiting. Epistaxis is not uncommon. There are usually no gastro-intestinal symptoms, the tendency being toward a slight constipation.

After these initial symptoms, which are quite constant, a remission frequently occurs in the morning of the second or third day. In a small percentage of the cases the temperature may continue normal, with recovery. More frequently there is a secondary rise of temperature following the remission, accompanied by a coryza and slight bronchial cough. It is during this period that the disease probably is most contagious, being transmitted almost entirely by direct contact, and by droplet infection within a radius of a few feet.

Following this secondary rise, the temperature in uncomplicated cases gradually returns to normal within a week, but the patient is usually still coughing, and feeling rather weak. It requires another week of convalescence before returning to duty is advisable, and then the patient fatigues very easily, and shows distinct effects of the infection. Relapses have not occurred in the short period covering this report.

The laboratory findings in the cases described above are rather constant and characteristic. Blood cultures taken at all stages of the disease have been negative. Improved technic may change this result, but this now appears doubtful, for the disease seems to be a toxemia. The white blood cell count in uncomplicated cases is below normal. The differential leukocyte count is essentially normal....

...Of the ninety-five cases of pneumonia in the hospital developing from the influenza, thirty-five patients have died, and another fifteen or twenty are desperately ill. This would indicate a final mortality of from 60 to 70 per cent. In a case of progressive or extensive involvement, the patient rarely recovers. The bronchopneumonia appears as a continuation or extension of the bronchitis, present in a large percentage, so that there is rarely any remission of the symptoms after the second or third day, and physical signs of pneumonia develop....

Bacteriologic Findings

The bacteriology of this epidemic has been the subject of special study, on account of the unusual severity and communicability of the disease, and its disputed relation to the common endemic disease known as influenza. The influenza bacillus has been generally accepted as the etiologic microorganism of influenza. Pfeiffer discovered the influenza bacillus

in 1892, two years after the great pandemic of influenza of 1889-1890. This pandemic spread rapidly over all parts of the world, attacking between 40 and 50 per cent. of the inhabitants and having a comparatively high mortality. The present pandemic is undoubtedly of the same character and is in all probability the same disease.

The reports of the bacteriology of the present pandemic in Europe serve only to confuse on account of their incompleteness. THE JOURNAL and the London *Lancet* have given the most recent reviews of the conflicting opinions in Europe, including the opinions of the French and the German investigators. The influenza bacillus was found only occasionally. Streptococci, pneumococci and the *Micrococcus catarrhalis* were recovered more frequently from the throat and sputum and occasionally from the blood. Little, Garofalo and Williams selected a pleomorphic gram-positive coccus as the probable etiologic microorganism, this in all probability being a pneumococcus of the mouth. Gotch and Wittingham are inclined to attribute the disease to the *Micrococcus catarrhalis*....

Summary

A rapidly spreading pandemic disease was first recognized at the U. S. Naval Hospital, Chelsea, Mass., Aug. 28, 1918, the first patients coming from the receiving ship at Commonwealth Pier, Boston. It has been carried to this port from Europe, both by patients and by carriers. It promises to spread rapidly over the entire country, attacking between 30 and 40 per cent. of the population, and running an acute course of from four to six weeks in each community.

This disease is characteristic of the ordinary endemic influenza, but is more severe and much more contagious. It is caused by a specific virulent strain of the influenza bacillus, against which individuals of the younger generation have relatively no immunity.

In from 5 to 10 per cent. of the persons afflicted, it develops into a massive and very fatal bronchopneumonia. This pneumonia is primarily caused by the influenza bacillus, this micro-organism being recovered from 82.6 per cent. of the lungs at necropsy, in 31.6 per cent. of which it is found in pure culture. The pneumonia is frequently complicated by pneumococcus or streptococcus infection.

The disease is characteristic of a sudden and severe toxemia, the influenza not being in the blood at any stage. It is not due to a filtrable virus. This was determined by introduction of the filtrate of nasal and throat washings from two typical cases into the anterior nares of nine volunteers, with negative results.

J. J. Keegan, M.D.
Lieutenant (Junior Grade), M. C., U. S. Navy
Chelsea, Mass.

Note: See complete article and references online.

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