

CLINICAL OBSERVATIONS DURING THE RECENT EPIDEMIC OF INFLUENZA.

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The following problems naturally present themselves to the mind of each investigator: First, what is influenza? Second, what pathological changes actually cause death? Third, is it possible to prevent or modify the disease or its course, and if so by what methods?

As to what "influenza" is in its present manifestation, there is as yet no agreement except that it is accompanied by, if it is not entirely dependent upon, a variety of mixed infections in which the Pfeiffer bacillus plays a comparatively unimportant role. The other organisms which have assumed great activity and been associated with very gross pathological changes are the pneumococcus, various strains of streptococcus, staphylococcus and the micrococcus catarrhalis.

It would seem, therefore, but rational in the absence of more accurate and detailed knowledge to antagonize the organisms which we do know and recognize, and to that extent at least, which lies within our power, fortify our patients against the invasion of the mixed infections.

Regarding the second question, what pathological changes actually cause death, we have recognized two distinct clinical pictures: namely, the severe, rapidly progressive, primary, pulmonary inflammation, which within three or four days of the onset develops into an acute condition which may with propriety be termed a hemorrhagic pulmonitis, and in some cases where the streptococcus predominates it would seem as though the term pulmonary erysipelas might be clinically correct nomenclature. These cases are generally associated sooner or later with an endocarditis, with or without thrombi, embolism and very sudden death. The second type is that of the gradually developing debility following an ordinarily mild attack of "Flu," which, after several days or even weeks, is followed by the development of a rather typical bronchopneumonia with the usual pulmonary findings and history, except that the patient does not recover with his accustomed readiness. In the latter cases death usually results in about two weeks from the onset of the disease, whereas in the first group of cases the death

has occurred within about one-half this time. It is with this group of cases, where dyspnoea is an early symptom with hemorrhagic sputum and cyanosis, that the clinician is so nearly helpless. Oxygen is of brief, if any, assistance. The usual stimulants are of no avail, and death generally occurs with unexpected suddenness.

Without discussing the pathology in detail it is sufficient to emphasize the fact that in this rapidly fatal group the infection produces a generalized exudate, covering the bronchial mucous membrane, and by that physical fact alone producing the cyanosis. The hemorrhagic sputum is a concomitant of the violence of the inflammatory reaction and the endocarditis under these conditions is sufficient to explain the sudden termination.

It would seem in the light of these observations that it is almost certainly a hopeless task to combat these violent conditions and that if any prophylaxis may be employed that is the proper field for the physician's efforts.

With this in mind, the observations regarding the condition of the blood stream were conducted. In practically every case observed leukopenia was the rule. This leukopenia developed rather rapidly; a normal count of 8,000 on the first day of the onset would drop to 6500 on the second day, and to 5200 or 5300 on the third, and in many instances would reach as low as 3500 or 3000 and remain at or about this point for days unless some efforts were made to stimulate a leucocyte increase. This fact is sufficient to lead one to endeavor by some measure to stimulate leucocytosis and phagocytosis.

The vaccines have been our main reliance in this work, but in many cases the reaction has been weak or practically nil. To ascertain the cause of this failure to react the experiments tabulated herewith were conducted. As a result of these experiments we concluded that the sensitized vaccines were the most effective. Even with these certain cases showed little response, which led to the employment of various nucleinic principles, which will be discussed late.

In the following set-up the blood serum from each patient was taken in the same volume as the washed corpuscles (white) in emulsion, and the various vaccines so standardized that each cubic centimeter contained 300,000,000 killed bacteria in emulsion. The

phagocytic index is reported in this table. In each case at least 100 leukocytes were counted. Five subjects were used in the study. We would much prefer to be able to report on as many thousand, but as the work was done under unusual stress and during an emergency this report is given hoping that it may furnish a basis for further research by laboratories properly equipped to take the matter up on a large scale. We fully realize that the results given herewith cannot be regarded as of value except as the outline for further work or in such instances as the clinical application of the suggestions contained herein may have been found helpful.

Subject No. 1 had previously received immunizing treatment against the pneumo-streptococci. Subject No. 2 had received no treatment and had not been infected. Subject No. 3 had been infected, suffered a mild attack and received the pneumo-streptovaccine during and subsequent to the attack. Subjects 4 and 5 had suffered concurrently with the influenza, No. 4 having been previously the recipient of one or two hap-hazard immunizing inoculations.

No. of patients tested	Vaccine No. 1 Vaccine with serum and washed corp.	Vaccine with washed corp. and normal salt	Vaccine No. 2 Vaccine with serum and washed corp.	Vaccine with washed corp. and normal salt	Leukocyte count
1	1.84	0.06	4.00	1.21	8600
2	1.86	0.06	3.40	1.21	5000
3	1.92	0.06	3.93	1.21	8400
4	1.15	0.04	2.50	1.90	5000
5	1.21	0.06	3.40	1.19	9200

The foregoing indicates a rather constant phagocytic index in both reactions to sensitized or non-sensitized bacteria, with a very remarkable increase in the percentage of bacteria engulfed where they have been sensitized. It shows also a very decided increase in the phagocytic index in the presence of the subject's blood serum, and it shows further a phagocytic index more than twice the preceding where the patient's serum and corpuscles are acting in conjunction with a sensitized vaccine.

In those cases where a defective reaction occurred I followed a method which was original with me between four and five years

ago in the routine use of various vaccines. In the management of the present problems it has seemed to be of even greater value than when used with the old fashioned non-sensitized vaccine.

The following table will illustrate the point:

Date	No. of patients tested	Vaccine No. 1 Vaccine with serum and washed corp.	Vaccine with washed corp. and normal salt	Vaccine No. 2 Vaccine with serum and washed corp.	Vaccine with washed corp. and normal salt	Leukocyte count	
Oct. 24	4	1.15	0.04	2.50	1.90	5000	
" 25		1.04	0.06	1.97	1.21	4600	
" 26		Nuclein injection given.		1.17	0.87	2.80	1.20

The above table shows a decided increase in the phagocytic activity of the washed corpuscles with the vaccine and the normal salt (after the nucleic acid administration) which may possibly indicate that the nucleic acid furnishes stimulus to the leucocytes which is lacking without it. It shows also a decided increase in the leukocyte count. It was given primarily for this purpose and I have found in a large series of untabulated cases that this increase in the leukocyte count does occur following the hypodermic administration of nucleic acid. The nucleic acid employed was given in a 5 per cent. solution and the dosage in each case was 1 c. c.

In conclusion, I wish to emphasize the following opinions: First, that a large percentage of the vaccine which has been administered as a prophylactic measure has been ineffectual, both because of the selection of an inactive vaccine or one which was not prepared from the proper strains of organisms, and because of a failure to get the proper reaction in the subject. Second, that the sensitized vaccines are by far the most effectual in immunizing against pneumococci and streptococci. Third, that in a very large percentage of patients there is something lacking in the blood corpuscles or the tissues which is necessary to produce an immunizing reaction after the vaccine has been introduced. This may be complement, or some other closely related substance, but seems to bear a distinct relation to the number of leucocytes in the circulating blood. Fourth, it is my opinion that nucleic acid overcomes this defect when administered hypodermatically at the same time (but not in the same spot) that the vaccine is administered. I can form no opin-

ion other than a clinical one as to how this is accomplished, but it is very evident that it is accompanied by an increased leukocyte count.

It may be of interest to know that by the employment of these suggestions in handling my own cases fully fifty per cent. of those seen during the first twenty-four or forty-eight hours of their illness will have a normal temperature on the third or fourth day, and that subsequent progress of the cases is so uneventful as to require nothing except rest and careful nursing. I do not wish to convey the impression that I do not use internal remedies concurrently. To discuss the details of the management which has given the best results in my hands at various periods of the attack would exceed the purposes of this paper.

I wish to acknowledge my indebtedness to Mr. Frank E. Challis for the technical work which he so ably carried out at my suggestion, and for that hearty cooperation which is so encouraging when making special investigations. Every case has had daily blood counts where it was possible, and the findings have been noted in coincidence with the clinical phenomena present. We fully appreciate that this is not possible in a general family practice, and therefore feel the more anxious to place the results of our investigations at the disposal of those who are interested in our work.
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**CHRONIC GASTRIC ULCER WITH ADHESIONS—
A CASE REPORT.**

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Mrs. L., age 45. Housewife. Family history negative. Personal history: Aside from the usual diseases of childhood this patient has had no serious illness but gives a history of "stomach trouble" extending over a period of many years.

For the past three years she has had intermittent attacks of pain and soreness in the epigastrium. Both pain and tenderness are more pronounced in the left hypochondriac region and while the rhythmic character of the symptoms has not attracted her attention, she thinks they are more apt to occur from one to two hours after eating.

The pain and discomfort are followed by nausea and the vomiting of sour material until the stomach is empty when she experi-