SOME FEATURES OF THE INFLUENZAL EPIDEMIC IN THE SPRING OF 1935

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(With Special Plate)

In England during the autumn of 1934 and the first three months of 1935 there was a lower incidence of colds and influenza than usual. During these six winter months no well-defined epidemic of an influenzal nature was recorded. In the months of April and May, however, a well-marked epidemic appeared, which continued even into the month of June. April and May were much colder and more sunless than is usual for this time of the year.

The Clinical Syndrome

In this epidemic the chief clinical symptoms in the majority of the cases investigated by us were fever and malaise, lasting for about three days, accompanied by muscular pains in the lower limbs. The most characteristic feature of the epidemic was, however, a severe tracheitis, resulting in a dry, brassy, or croupy cough, with tendency to hoarseness and loss of voice. In many of the cases the troublesome tracheitis and cough persisted for four to six weeks after the initial fever had subsided. This post-influenzal cough may be exceedingly intractable, and in many cases severe whooping-cough-like paroxysms occur, especially when the patient gets up in the morning and again on retiring at night. This cough is more intractable and persistent as a rule in those patients who neglect the initial attack, and is less likely to be severe in those who wisely stay in bed for several days until the febrile attack has completely subsided. Cigarette smoking much aggravates the coughing. This aggravation is caused more by the smoke coming from the paper than from the tobacco itself.

Relapses are common. There may be a return of the febrile symptoms at any time between one and six weeks after the initial attack. On the other hand, there may be no true febrile relapse, but simply an exacerbation of the tracheitis and paroxysmal cough. We believe that neglected attacks of this nature occurring year after year may eventually end up in chronic bronchitis and emphysema.

Bacteriology of the Influenzal Cold

We have made a very careful bacteriological study of many patients suffering from this particular type of influenzal cold. These investigations have been continued over a period of about fifteen years, with the result that we have become more and more convinced that the causal organism of the tracheitis, hoarseness, and persistent cough is Pfeiffer's influenza bacillus. For many years the *B. influenzae* of Pfeiffer was believed to be the cause of true influenza. In recent years, however, this has been doubted, and there is now much experimental evidence to show that a filter-passing virus may be the initial cause. Shope, who has made a careful study of swine influenza, believes that this disease is caused by a symbiotic infection with a virus and a Pfeiffer-like bacillus. We are quite prepared to admit that true epidemic influenza may be caused by a virus, but, on the other hand, there can be no doubt whatsoever that there are

many different clinical varieties of respiratory infection which are classified as "colds" or "influenzal colds." There is every reason to believe that these are not all due to infection by the same organism. After prolonged and careful study we are convinced that very many colds of the toxic type are caused primarily by many varieties of pneumococci. It is also well recognized that febrile respiratory infections associated with tonsillitis are often caused by haemolytic streptococci.

We do not wish to digress from the true purpose of this paper, in which we intend to emphasize the importance of Pfeiffer bacillus infections of the respiratory tract. We believe, however, that it is necessary to check over-enthusiasm for the filter-passing virus hypothesis. In recent years there has been a tendency to attribute all types of colds and influenzal attacks to virus infections, and to relegate dangerous pathogenic bacteria such as Pfeiffer's bacillus, pneumococci, and streptococci to the role of mere secondary invaders. Such a belief might be acceptable were it not for the fact that we have definite proof to the contrary. Thus we believe that Pfeiffer's bacillus can cause, *per se*, a widespread infection of the respiratory tract accompanied by fever, tracheitis, and laryngitis, with hoarseness or loss of voice, inflamed throat and pharynx, nasopharyngeal catarrh, and sinusitis. Various types of pneumococci, *per se*, can give rise to pneumonia, bronchitis, or nasal catarrh with sinus infection. Haemolytic streptococci can, *per se*, cause bronchopneumonia, severe tonsillitis, etc.

It is quite unnecessary to postulate that all of these bacterial infections are the immediate sequel of a virus infection. In our investigations it has been found that the bacterial infection coincides with the very commencement of the clinical symptoms. This demonstrable bacterial infection persists throughout the course of the disease, while the cessation of the clinical symptoms synchronizes with the disappearance of the bacterial infection. Furthermore, during a period of fifteen years of continuous study of the bacteriology of the respiratory secretions, we have never once found an abundant Pfeiffer bacillus or pneumococcal infection in a healthy respiratory tract. A heavy infection with these organisms is always accompanied by clinical symptoms.

On the other hand, many apparently healthy individuals carry these bacteria in more or less small numbers for long periods of time after the original heavy infections have passed away. Persons with chronic sinusitis may often carry them in their sinuses in enormous numbers. Such carriers are very liable to more or less acute recrudescences, of their infection, with corresponding acute exacerbations in the symptoms. These are often believed to be fresh attacks of influenzal colds, whereas they are in reality relapses. These conclusions have been reached as the result of the examination of extensive photomicrographic records of primary cultures from the respiratory tract in health and during many kinds of influenzal colds. Two typical photomicrographs are reproduced on the special plate.

DESCRIPTION OF FIG. 1

Fig. 1 is a photomicrograph of a primary culture from the sputum taken at the beginning of an "influenzal" attack with associated tracheitis and cough. It shows very numerous colonies of Pfeiffer's influenza bacillus. Such an infection is never found in a normal healthy individual, and in this case, as in all other cases which we have carefully investigated, the heavy infection disappeared with the cessation of the influenzal cold. So long, however, as the troublesome tracheitis and cough persists colonies of *B. influenzae* (Pfeiffer) are found in smaller numbers. During the height of the infection these bacilli are not usually confined to the sputum, but are also found in the throat, nasopharynx, and nose. The infection is widespread over the respiratory tract, and the bacilli are often found to be plastered over the epithelial cells in large numbers. The immunity produced by an attack does

not appear to last for long, as relapses are quite common. A second attack may occur within six weeks after the first, and the same type of infection may arise winter after winter.

The pathogenic types of Pfeiffer's bacillus may be very fastidious as to their growth requirements, and unless the culture medium is correct may not grow at all. For this reason their presence is often undetected. Frequently they will not grow on blood media unless in close proximity to other organisms. In this particular case the mouth was rinsed out with a fairly strong antiseptic, to get rid of the ordinary salivary organisms before the sputum was expectorated.

DESCRIPTION OF FIG. 2

Fig. 2 is a photomicrograph of a primary culture from the nasal secretion of a case of sinusitis following upon a Pfeiffer bacillus infection of the respiratory tract. Note again the very numerous colonies of this organism. The inset circle shows a smear of this nasal secretion, which confirms the very heavy bacillary infection. The sinusitis, which followed a course of extreme chronicity, eventually disappeared after prolonged immunization with an autogenous vaccine. We have also found that vaccines are of value in the prevention and treatment of the tracheitis cases.

RETROGRADE (TRANSGASTRIC) OESOPHAGOSCOPY FOR CARCINOMA OF THE OESOPHAGUS

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(With Special Plate)

In a recent paper on the subject of carcinoma of the oesophagus¹ it was stated that the introduction of radon seeds through the oesophagoscope was of necessity an empirical procedure, as thereby it was possible to irradiate only the upper end of the stricture. The idea subsequently occurred that it might be feasible to attack the lower end of the growth from below, and experiments were made on the cadaver with the object of determining whether it was possible to pass an oesophagoscope upwards through the stomach, and if so how far.

It was found that with the back supported by a block the instrument could be passed with ease nearly as far as the cricoid (Plate, Figs. 3 and 4). It was then decided to try the experiment on a suitable patient, and one such, who had previously undergone peroral oesophagoscopy and insertion of radon seeds into a growth at the level of the fourth dorsal vertebra, was selected.

Technique

The steps of the operation are as follows. Under intratracheal anaesthesia, with the gall-bladder rest raising the lower ribs, the stomach is delivered through a generous left paramedian incision. A portion of its anterior surface is isolated with a clamp and incised longitudinally for a distance of one and a half inches, the cut edges being oversewn to obviate bleeding, preferably with a buttonhole stitch. The clamp is released and reapplied right across the stomach distal to the incision, and the stomach contents are removed by means of a suction apparatus. The left hand is then passed along the anterior surface of the stomach to the oesophageal hiatus of the diaphragm, in order to facilitate the insertion of the oesophagoscope, which is passed under direct vision through the opening in the stomach and up into the oesophagus.

During this manoeuvre the beak of the instrument must be kept close to the lesser curvature of the stomach, as

otherwise it is liable to slip into the fundus and the direction is lost. The appearance of the oesophagus and its respiratory excursions are exactly similar to those seen from above, but the pulsation transmitted from the heart to the oesophagoscope is much more forceful, as the proximal end of the instrument is not fixed as it is in the mouth. The radon seeds are inserted into the growth by means of a Jobson's trocar and cannula, as described in the aforementioned paper, and the oesophagoscope is withdrawn.

The opening in the stomach is sutured and infolded in the usual manner and the abdomen closed. A gastrostomy tube can be left in if required, but should not be necessary if the patient has been fit enough to undergo the laparotomy.

Case Records

The above procedure has been carried out on two patients who had previously had peroral seeding, with recovery from operation in both cases. It is, of course, only justifiable when inspection of the upper end of the irradiated growth shows healing of the ulcer as evidence of the radio-sensitivity of the growth.

In the first case ulceration was visible at the site of the lower end of the growth, and a subsequent skiagram showed that the distance over which the shadows of the radon seeds were visible had been increased from 1½ to 3 inches. (Figs. 1 and 2.) This patient died later from ulceration of a tracheal extension of the growth into the innominate artery, and at post-mortem examination it was seen that the oesophageal ulcer was fairly well healed and had a smooth base and edge, although there was extensive peri-oesophageal growth.

In the second case inspection from below showed that the lower edge of the ulcer had been healed, but there was a stricture which would not admit a No. 25 bougie. More seeds were inserted in case there was growth beyond the line of vision. In this case the length of oesophagus irradiated was one and a half inches, the vertical extent of the growth being small. This patient is still alive and well nine months after the commencement of treatment, and can swallow bread-and-butter, mince, potatoes—in fact, anything except lumps of meat.

Comment

Although oesophagoscopic irradiation of carcinoma is still obviously suitable only for cases where the growth has not spread beyond the wall of the gullet, combined irradiation from above and below is a step in advance of the restricted and somewhat haphazard irradiation which results from attack on only one edge of the tumour. In conjunction, however, with deep x-ray therapy, which is the only means of irradiating the peri-oesophageal region without having recourse to a serious operation, the method appears to have distinct possibilities. The x-radiation must, of course, take place before radon seeds are inserted, as otherwise harmful secondary radiations would be set up by the rays impinging on the platinum seed-capsules which are left in the oesophageal wall.

W. W. Spink and D. L. Augustine (*Journ. Amer. Med. Assoc.*, May 18th, 1935), who record their observations on thirty-five sporadic cases of trichinosis occurring in and around Boston during the last three years, maintain that the disease is common in the United States, and that the majority of cases are mild. The commonest sources of infection were raw and cooked pork sausages, pork chops, boiled ham, and raw pork sandwiches. The most reliable diagnostic sign was the presence of eosinophilia, which usually began in the second week, reached its height in the third to fourth weeks, and then gradually declined. The skin test usually became positive about the seventeenth day of infection and the precipitation test at the end of the fourth week. Other laboratory tests, such as search for the parasite in the stools, blood, or cerebro-spinal fluid, were usually unsuccessful.

¹ Jobson and Steele: *British Medical Journal*, 1934, i, 233.

• JOHN ALEXANDER MACKENZIE: CONGENITAL MALFORMATION OF LARGE BOWEL

FIG. 1.—Shows barium meal leaving stomach and descending straight to pelvis on right side and filling all the small intestine lying there.

FIG. 2.—Shows barium enema passing upwards and filling all the large bowel to the caecum, which is to the left of the descending colon.

DAVID THOMSON: SOME FEATURES OF THE INFLUENZAL EPIDEMIC IN THE SPRING OF 1935

FIG. 1.—Sputum from case (W.H.P.) of influenzal cold; May 3rd, 1935 (three days in bed with pyrexia and tracheitis). Three days aerobic primary culture in Thomson's medium (12.5 diameters). Very heavy infection with Pfeiffer's influenza bacillus; very bacteriophile strain; would not grow alone.

FIG. 2.—Dr. C.'s case. Coryza with sinusitis. Culture from nasal secretion, February 7th, 1934. Primary culture three days aerobic, Thomson's medium (12.5 diameters). Inset circle: smear of the nasal secretion from which the culture was made (750 diameters). Note large numbers of *B. influenzae*, also pneumococci.