

tragus with the crus helix, between the helix and anti-helix, or in the lobule. They seldom call for surgical interference, except when, owing to the closure of their orifices, a cyst is formed and suppuration occurs; or they may be mistaken for sinuses leading to glands. The openings are small and the canals usually of no great depth. They are lined with a considerable number of sebaceous glands, and are, therefore, often covered with an incrustation of dried sebum.

The case which I have the opportunity of showing presents a minute fistula in the helix of the left ear. It is very small, and there is no discharge from it. It has never been the source of any trouble, and was discovered by the mother quite by accident.

The child also has a preauricular fistula on the same side which is much larger and is constantly discharging sebaceous material which becomes dried in crusts about the orifice.

A series of eminences can be recognised at the end of the first month of intra-uterine life round the hyo-mandibular cleft. They are six in number—one for the tragus, one for the anti-tragus, two for the helix, one for the anti-helix, and one for the lobule.

It can be readily understood that the incomplete fusion of these tubercles is the cause of the occurrence of fistulæ between the parts they represent in life.

The fusion of several units in this region of great complexity is, in the words of Mr. Howell Evans, “of great interest in the study of our evolution from aquatic ancestors.”

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ART. IX.—*Influenza*.<sup>a</sup> By JAMES F. CLARKE, M.D.  
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THE recurring epidemics of influenza every winter tend to keep up a certain amount of interest in this disease and

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leave some room for investigation as regards the bacteriological conditions under which they occur. Influenza very soon comes under the notice of every man entering practice, and due care must always be given to its consideration, as it is a great mistake to regard the disease too lightly or to give a careless prognosis.

When we look over the history of the disease we find that far back into the Middle Ages are accounts of epidemics appearing at varying intervals, and as early as the year 1173, in the chronicles of Melrose Abbey, there is recorded an epidemic closely resembling influenza as we know it. These epidemics occurred at longer or shorter intervals, and after an outbreak the disease always assumed an endemic character, gradually becoming less severe and finally passing away till it reappeared again forty or fifty years later. In 1511 Erasmus laid blame on the insanitary conditions then existing, and suggested that the clay and rushes which covered the streets should be changed oftener than once in every twenty years, and also that the people should leave their windows open and admit the fresh air. In the fifteenth and sixteenth centuries several writers drew attention to the evil consequences which attended the treatment of bleeding, as they said "few died except those who were bled"; but in spite of this in 1729 bleeding was still considered the treatment in England. From 1847 there was a period of forty years' quiescence, and the disease was almost forgotten till in 1889 it broke out in Central Asia and, travelling *viâ* Siberia and Russia, it invaded Europe, and then spread the following year all over the world. Since then it has remained endemic, manifesting itself chiefly during the winter months; but statistics and certain bacterial changes, which I will mention later, show that the virulence is abating, and give us leave to look forward to its disappearance.

It is an interesting point to note that the death-rate from influenza per million for 1887-8-9 respectively was 3, 3, and 2, whereas in 1890 it leaped to 157, the follow-

ing years rising to 574 and 533, thus showing plainly the epidemic nature of the disease. Since then the general tendency has been towards a decrease, with the exception of ten years ago, when it mounted to 504, only, however, to fall next year to 174, and to keep getting progressively lower since. This outbreak in 1890 was so sudden and severe that many people considered it a new disease, and it received the name of Russian influenza, which name is still used by some to distinguish the severe cases which one sometimes meets with. It was during this epidemic that the question first arose about infection, and it was conclusively shown that the disease did not travel faster than human communications and that it followed these lines.

This outbreak, occurring at the time which it did, claimed a great deal of attention from bacteriologists, and in 1892 Pfeiffer announced the discovery of an organism which appeared to be the cause. The *Bacillus influenzae*, or Pfeiffer's bacillus, as it is usually called, is small,  $.5 \mu$  in length, and stains deeply at the ends, leaving a clear space in the centre; it is a strict aërobe and grows best at the body temperature on a medium containing hæmoglobin, but the growths are feeble and require great care and frequent transplantation to keep them alive. This bacillus shows very definite symbiotic relations to other organisms, particularly to diphtheria bacilli, staphylococci, and the *Bacillus prodigiosus*. This last Luerssen says is the best nurse for the influenza bacillus, and that it still exhibits this property even after the culture itself has been killed by heat. On the evidence which we have at present Pfeiffer's bacillus cannot be taken as the pure determining cause, for other organisms have been found which resemble it in all its characteristics of growth, staining, and symbiotic relations, but which do not cause influenza. Among these are the *Bacillus pertussis* found in the sputum of patients with whooping cough, the organism of epidemic conjunctivitis, and the bacillus described by Müller which is found in trachoma. The question of the

actual identity of these organisms is difficult, but they are supposed to be all modifications of the same species, and thus we have some ground on which to explain the presence of bacilli which are potentially those of influenza during a non-epidemic period. Another fact is the occurrence of typical clinical influenza with the absence of Pfeiffer's bacillus. Dunn and Gordon published the report of an epidemic in which it was absent but the *Micrococcus catarrhalis* was frequently present. On the whole it is rare to find Pfeiffer's bacillus at present, though earlier in the epidemic it was common, and was usually obtainable in pure cultures; later on it was found in conjunction with the *Micrococcus catarrhalis*, both organisms often occurring in the same patient, or one patient would have one, the other another. Nowadays the latter organism is usually found alone, and following it in frequency are pneumococci, streptococci, and pseudodiphtheria bacilli. These bacterial changes, considered in conjunction with the statistics, I think would justify the question as to what the cause of the condition really is. We must either assume that it is a specific disease due solely to Pfeiffer's bacillus, and group those cases which are clinically identical, but in which this bacillus is absent, as pseudo-influenza, or consider it not as a pathological entity, but as a group of diverse diseases due to various organisms. As there is no vaccine or antitoxin prepared from Pfeiffer's bacillus we cannot say how the various causative bacteria would react to serum-therapy, thus giving us some indication of their relations; also in the absence of this treatment an accurate bacterial diagnosis does not interest the practitioner. Whatever the causative agent the mode of infection is through one of the mucous membranes, practically always the respiratory mucosa, but rare cases have been recorded in which the conjunctiva was primarily affected, and there is at least one case on record of infection through the urethra. Pfeiffer's bacillus has been obtained from the blood, the cases usually showing signs of general toxæmia or severe

nervous symptoms. Such complications as pneumonia may be caused by this organism alone, but inflammatory sequelæ, as otitis media, are due to a secondary infection.

After an incubation period of two or three days, in which the patient feels out of sorts, there is a more or less definite invasion. He experiences a sensation of general depression and discomfort, he feels giddy, his head aches, there are pains in the eyeballs or behind the eyes, rheumatoid pains in the body, particularly in the nape of the neck and lumbar region, he feels cold and may have a definite rigor, he feels very weak and is glad to take to his bed, there are insomnia, feverishness, and restlessness, anorexia and vomiting are frequently present. The temperature rises suddenly and remains up for a couple of days and then falls to normal, but latterly the tendency is for the fever to be slight, but to last longer—nine or ten days—the pulse is never at any time much increased in frequency. Clinically, influenza divides itself into three types—(1) The gastro-intestinal; (2) the pulmonary; (3) the cerebral, according to the system which is most affected.

I have had under observation lately several cases of the gastro-intestinal type, in which all the general features were well marked—headache, pains in the back and down the legs, shivering, a feeling of depression, weakness and lassitude, restlessness and insomnia, with slight elevation of temperature of pulse. The symptoms which characterised the condition, however, was the sudden onset of an attack resembling acute gastritis coupled with diarrhœa. After a feeling of nausea lasting some hours the patients vomited, and when the stomach was cleared of its contents they felt much easier. Soon afterwards diarrhœa commenced, and lasted for some days. There was abdominal pain of a colicky nature for a day or two. The best means of treatment I found was complete starvation, or at most a little milk; any food given only causing a recurrence of the vomiting. If treated in this way

the patients could be gradually allowed back to ordinary diet after a few days. In spite of the apparent slowness of the attack it was always followed by marked weakness—it being ten days or a fortnight before they regained their strength.

The pulmonary type is by far the most common and also the most dangerous, including as it does cases varying from a slight pharyngitis to most severe pneumonia. In addition to the general symptoms these cases are characterised by nasal and pharyngeal catarrh with a cough and scanty expectoration which lasts some nine or ten days. This, of course, is the ordinary type of the disease and needs no further reference. But instead of stopping here it may progress and cause the complications of bronchitis and pneumonia which are nothing more or less than an extension downwards of the original condition. In a case in which I was interested some time ago influenza was diagnosticated and the patient was put to bed, but did not progress favourably—the temperature and pulse still kept going up and he became delirious. Up to this time no definite clinical signs could be discovered except that a slight trace of albumen had been found in the urine, but on the fifth day he developed a basal pneumonia. In addition to this the nasal mucous membrane and pharynx became inflamed and extremely congested, and epistaxis occurred. The patient also became temporarily deaf. His condition was very grave, and the hope of saving his life was almost abandoned, when about the tenth day the symptoms began to abate. There was no definite crisis. Convalescence was slow but uninterrupted, and led finally to a perfect recovery, his hearing being restored and the albuminuria clearing off in time. Another somewhat similar case which was treated for influenza for some days developed pneumonia, death occurring within four days of the onset of the serious symptoms. The prognosis of influenzal pneumonia is very grave, and as this condition is present in 7 per cent. of the cases it is quite sufficient to justify us in not treating

it lightly or giving an unguarded prognosis till they have been under observation for a couple of days. A rare sequel is neuritic changes; these may be evidenced by the onset of spasmodic asthma in people who previously showed no signs of it, or it may be the cardiac nerves which are affected, neuralgia and angina showing themselves and sometimes leading to a fatal termination. There are cases recorded of apparently a chronic form of influenzal pneumonia which simulated phthisis closely, even causing hæmoptysis, recovery as a rule taking place in a couple of months; but some terminated fatally, and *post-mortem* cavities were found which contained an organism of the influenza group, tubercle bacilli being absent.

The depression, which is usually a prominent symptom of the disease, shows that the toxin always exerts some influence on the nervous system. As a rule it stops here; sometimes neuralgia, herpes zoster, or similar conditions occur as complications. But outside of these there are a group of cases in which the main symptoms are nervous or mental, and which I wish to include in the cerebral type of influenza. Neuralgia, especially of the fifth nerve, is fairly common. I was interested in several cases in which it was the prominent symptom, attacking the patient one or two days after the onset of the general symptoms. It usually lasted about ten days, and the only drug which I found controlled the pain was aspirin in 15 gr. doses. Neuritis may occur in any nerve, sometimes attacking the cardiac nerves, with fatal results; but this is rare, and is really a sequel and not a primary evidence of the disease. Another sequel of a similar nature, and one which is fairly common is anosmia. The more serious forms of this type resemble attacks of acute meningitis, and have recently caused some interest on account of the great difficulty in their diagnosis. A case of this kind came under my notice some time ago. The patient was a woman, aged twenty-three, and she came to hospital complaining of the usual symptoms of

influenza, and, in addition, marked headache and vomiting. The temperature was  $102^{\circ}$ , and the pulse 66. She was admitted, and the next day the head was retracted, the pupils unequal and sluggish in reaction. The headache continued to be very severe, and she had developed a meningeal cry. She continued in this condition for eleven days, and then the headache ceased and the retraction passed away; but it was found that she had developed a convergent strabismus, and that the right patellar reflex was lost. On examining the eyes at this stage there was double optic neuritis, a white exudation on and around the disc, and retinal hæmorrhages in both eyes. A week later she was almost all right again except the eye symptoms, the patellar reflex having been restored in a couple of days; the optic neuritis was disappearing, but there was still some exudation present, and the hæmorrhages were not completely absorbed. The strabismus lasted for about two months before it finally disappeared. The diagnosis of the case was extremely difficult, and was largely based on the duration of the symptoms, the rapidity with which they disappeared, and the speedy and complete convalescence, the eye symptoms being the only ones which lasted more than two weeks.

Mental changes manifest themselves usually as sequela, but sometimes they occur soon after the onset of the symptoms, as in most of the toxic insanities the tendency is towards recovery, which, however, may be delayed for a considerable period. I recollect two cases which had temporary mental aberrations, one patient lost her reason for about twenty-four hours, getting up and wandering round the house accusing and threatening punishment to people for things which were not happening; the other was a patient who for some days suffered from a slight attack of influenza, and, losing her memory, one morning she left the house and wandered for nearly ten hours on the streets till, almost collapsed, her appearance attracted the notice of a policeman, who took her to



the Station where, some hours later, she recovered herself and was able to give her name and address.

A startling variety of the disease is the comatose, in which the person suddenly becomes giddy, then passes into convulsions followed by a long period of unconsciousness which is accompanied by a high temperature, useful as a diagnostic point. Hysteroid convulsions, the recrudescence of epilepsy and catalepsy have occurred as complications. In Switzerland in 1899 there were reported several cases of *nona*, a condition of apparent death—several times the death certificate having been signed, the person subsequently recovering consciousness. Bulbar paralysis, anterior poliomyelitis, Landry's paralysis, disseminated and ascending myelitis, have all been recorded as sequels. The more severe mental sequelæ are specially liable to occur in those who continue at their work during the course of the disease. Melancholia is the rule in about 70 per cent. of post-influenzal insanities—the prognosis is good, but the cases require careful watching. In the other 30 per cent. mania occurs, and is more liable to be a permanent condition.

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