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THE INCIDENCE AND EFFECT OF SOME DISEASES ON OTHERS.*

By J. R. CHARLES, M.A., M.D., M.R.C.P.

It will be generally agreed, I think, that it is an unusual event to meet with two acute diseases running their course concurrently in the same patient, although, as is well known, such an event may be occasionally encountered. With regard to the co-existence of infectious diseases, Caiger, in his article on this subject in Allbutt's *System of Medicine*, quotes many cases, including one in which the unfortunate patient was suffering from four such diseases at the same time. He says that "the symptoms of one disease are neither delayed in their appearance, nor mitigated in their severity by the presence of another." I shall, however, return to points in this connexion later on. On the other hand, acute secondary infective disease very frequently arises during the course of chronic diseases. It is, indeed, so often the immediate cause of death in some of these conditions, that the mortality from this cause, combined with the number of deaths due to certain mechanical causes—for example, aneurysm or cerebral haemorrhage in chronic interstitial nephritis—has led to the saying that people rarely die of the disease from which they suffer. Like many of such sayings, this statement contains only a half-truth. Without doubt, while the supervention of a secondary infection is extremely harmful in almost all cases, there are instances in which the occurrence of a second disease may so mitigate the symptoms of the first, that the former disease may be much ameliorated, and its symptoms, for a time at any rate, wholly in abeyance.

I propose, first, to deal with the incidence of secondary infections in chronic disease. By far the most frequent infective organisms are the pyogenic cocci, the pneumococcus, and the tubercle bacillus. Some years ago I examined the *post-mortem* records of all the subjects of chronic disease who had died in the previous ten years in the General Hospital, Birmingham; of these there were 488. These numbers are sufficiently large to deduce results from them with fair accuracy, and the information so obtained is not only of some interest in itself, but the knowledge of it is a considerable help when estimating a prognosis in any given case—a most important part of our work.

Chronic Nephritis.

Dealing first with the subjects of chronic nephritis, there were 156 patients who died with the interstitial form of the disease. Of these no fewer than 52, or exactly one-third, succumbed to the results of secondary infections, which included 31 cases of lobar pneumonia, 3 of bronchopneumonia, 6 of pericarditis, 1 of pulmonary gangrene, 1 of pleurisy, 4 of empyema, 4 of phthisis, and 2 of general miliary tuberculosis. Of 37 cases of chronic mixed nephritis, 35.8 per cent. died from secondary infections, consisting of 6 of lobar pneumonia, 2 of pericarditis, 1 of pyaemia, and 4 of phthisis; while, of 22 cases of chronic parenchymatous nephritis, 31.8 per cent. died from secondary infections—namely, 3 from lobar pneumonia, 1 from bronchopneumonia, 2 from pericarditis, and 1 from peritonitis.

These figures show that the incidence of secondary infections in the different forms of chronic nephritis is practically the same in each—that is to say, at least a third of these patients die from the result of the supervention of a further

malady. On the other hand, as we should expect, the relative proportion of patients dying from uraemia in the various forms of chronic nephritis varies very considerably in these different forms, being greatest in those cases in which the parenchyma is most involved. Thus, in the same series of cases, uraemia was the cause of death in 66 per cent. of the patients who suffered from the parenchymatous form of the disease, in 32 per cent. of those who had the mixed form, and in only 13 per cent. of those who had typical granular kidneys.

Cirrhosis of the Liver.

With the exception of congenital heart disease, to cirrhosis of the liver must be assigned the worst place as acting as a predisposing factor for the entrance of pathogenic organisms; for of 45 cases there was a death roll of a little over 44 per cent. from secondary infections—namely, 7 from lobar pneumonia, 3 from bronchopneumonia, 1 from empyema, 1 from pyaemia, 2 from tuberculous peritonitis, 4 from phthisis, and 2 from general miliary tuberculosis. And, again, very similar events were met with in a further series of 17 cases in which cirrhosis of the liver was associated with cirrhosis of the kidneys.

These figures prove, I think, the great frequency of secondary infection under these circumstances. It is to be remembered, however, that the reaction of the body in the presence of these chronic diseases is frequently extremely defective, not only against the entrance of pathogenic organisms, but also against their toxins, and that under these circumstances lesions of importance may easily be overlooked, unless carefully sought for. Thus, although double lobar pneumonia developed in a man who was the subject of chronic mixed nephritis, his temperature remained normal, and his respiration-rate only about 30 per minute. Again, a man with arterio-sclerosis and dilated heart died with extensive grey hepatization in his right lung. His temperature was subnormal for the four days he was in hospital before death, although in his case the respiration-rate varied between 40 and 54 per minute. Frequently, however, the respiration-rate in the pneumonic cases did not exceed 32 per minute. Further, as would be expected, a defective leucocytosis was found in those cases in which the white cells were counted.

Arterio-sclerosis.

Of the cases which might be classed as primary arterio-sclerosis, 19 per cent. died from pneumonia.

Heart Disease.

Only 1 among 8 deaths from congenital heart disease was due to phthisis, although 3 others died from cerebral pneumonia, and infantile diarrhoea respectively. Here the incidence of tubercle was less than we should have anticipated, but the number of deaths dealt with is too small to be of much value from the statistical standpoint. Secondary infections were responsible for over 15 per cent. of the deaths which occurred among 109 subjects of chronic valvular disease. Here pneumococcal infections were much the most numerous, being 14 times more common than tuberculous infection. These figures certainly bear out the old view that chronic valvular disease is antagonistic to the invasion of pulmonary tubercle.

Although some authors—Potain, Teissier—maintain that pulmonary tubercle is frequently associated with mitral stenosis, I can find little evidence to support their statement, for of 53 deaths from mitral stenosis, including 6 cases in which the tricuspid was also stenosed, tubercle did not occur once as a terminal infection.

That tubercle should so frequently be the cause of death in cases in which the amount of blood supplied to the lungs is much diminished, as in pulmonary or tricuspid stenosis, is what might naturally be expected, and in pulmonary stenosis, at all events, this seems to hold good, but the condition of the lungs under these circumstances is very different from that met with in chronic left-sided endocarditis.

Diabetes.

Turning to diabetes, the incidence and virulence of phthisis is well known. Six were directly due to this cause among 31 deaths, while of 18 patients who died either from coma or convulsions recent pulmonary tuberculous lesions were found in 4; non-tuberculous gangrene of the lungs and pneumonia occurred in 2 cases.

Pavy, in a paper which appeared in the *Lancet* last year, maintained that phthisis nowadays becomes very much less frequently developed among the well-to-do who adhere

* Read before the Chichester and Worthing Division of the South-Eastern Branch of the British Medical Association.

strictly to their dietetic regulations than of old, and that among the class of patients he sees it is almost a negligible quantity. He quotes cases, moreover, to show that should it supervene the diabetic symptoms are considerably mitigated. He also maintains that diabetes tends to decrease, or even to disappear, in patients who develop Bright's disease concurrently with the diabetes, and he refers to one such case in which dietetic restrictions were no longer required to keep the urine free from sugar. He further quotes von Noorden as saying, "It is interesting and noteworthy that the glycosuria very often disappears in patients in whom granular atrophy of the kidney has developed. The diabetes is cured, but we do not know the connexion." The existence of diabetes may be entirely masked during an attack of enteric fever, as the excretion of sugar frequently disappears, while the thirst and increased output of urea may easily be accounted for by the presence of the fever.

Epilepsy.

The manifestations of epilepsy are curiously modified by the presence of other diseases. I have been most impressed by this in the case of patients suffering from enteric fever in hospitals. When such a patient is well advanced in convalescence one is surprised to find he suffers from fits, and on inquiry one learns that he was previously epileptic; in other words, the fits have been in abeyance during the febrile and early post-febrile stages. I have never seen a fit during the febrile period. The depression of the cerebral activity in typhoid very fortunately seems sufficient to avert the nervous discharge necessary for an epileptic fit. This depression, in a sense, is protective, since the occurrence of a fit during the ulcerative stage would surely in many cases be attended with disastrous results. Clinically, I think another sign of the diminished cortical activity is the great ease with which ankle clonus can be elicited after an attack of enteric. This influence of enteric on epilepsy is all the more interesting as epilepsy may appear for the first time after an attack of typhoid fever.

I remember reading, although I cannot put my finger on the reference, that the onset of malaria very materially diminishes the frequency of epileptic seizures. Of this I have no experience.

According to M. Voisin, the frequency of epileptic seizures is much reduced by the following diseases:

- (1) Anthrax. The author quoted a case in which weekly major and minor attacks were entirely suspended till death six weeks later.
- (2) Measles. In 3 cases the fits ceased entirely during the rash, but were worse afterwards.
- (3) Erysipelas. During the acute stage in 4 cases there was an absence of fits; these, however, subsequently returned.
- (4) Acute pneumonia has the same inhibitive effect during the febrile stage; and the same is also seen in
- (5) Diphtheria. Antitoxin injected as a prophylactic against diphtheria in 63 epileptic children had no effect on the occurrence of the fits.

In phthisis, during the stage of excavation and during acute exacerbations, he says the fits are arrested. The same author also states that the attacks are increased during scarlet fever, influenza, and typhoid. This last statement hardly agrees with what I have previously said about the influence of typhoid in epilepsy, but the evil influence of scarlet fever in epilepsy is well illustrated by the following episode. Some years ago an epidemic of scarlet fever broke out in the Salpêtrière, in which 4 epileptic patients were attacked and 15 others. The 4 epileptics all died in four or five days in status epilepticus, while all the others got well.

Blood Diseases.

Among diseases of the blood some extremely interesting facts have been brought to light, one of which is the apparent antagonism between splenic leukaemia and phthisis. Parker described a most interesting case in the *BRITISH MEDICAL JOURNAL* of 1902.

His patient came to him complaining of pain in the left side of the abdomen. He at that time had signs of old phthisis with excavation, chiefly in the right lung, over which the chest wall had been noticed to be flattened and contracted for ten years. Seven years before he was seen he had been treated with success for tuberculous laryngitis. The history and signs of old disease were therefore clear. There were also some signs of active disease in the lungs, although his general health was not interfered with. In the splenic region was a tumour, the nature of which was doubtful. The possibility of leukaemia being considered, his blood was repeatedly examined, but no evidence of this condition could be found. Exploratory laparotomy was performed, and the tumour proved to be the spleen rotated on its axis and bound down by adhesions. The patient improved after the operation, but fourteen

months later the white cells were found to number 238,000 per c.mm., including many myelocytes. In fact, the number and the differential count of the leucocytes left no doubt as to the diagnosis of leucocythaemia, while the presence of tubercle bacilli in the sputum made the correctness of the diagnosis of the pulmonary condition equally certain. In this case the phthisis almost certainly preceded the leucocythaemia, but they existed for a considerable time together, during which the pulmonary disease made relatively little advance.

It is probable, indeed, that the patient was suffering from leukaemia when he first came under the notice of Dr. Parker, although at that time the blood gave no indication of his disease, in spite of the enlargement of the spleen. This probability is based on analogous cases; for in two other cases which have been recorded, in which phthisis occurred concurrently with leucocythaemia, it was noticed that, as the tuberculous process advanced, there occurred a steady decrease in the total number of leucocytes, including myelocytes, with a relative increase in the number of neutrophils and lymphocytes. In one case of lymphatic leukaemia the state of the blood after tubercle had supervened was such that no one seeing the case for the first time would have arrived at the diagnosis of leukaemia from the condition of the blood. Typhoid, sepsis, and influenza all cause a temporary diminution in the number of the leucocytes during the fever, but, if the patient survives the attack, the condition of the blood returns to its former state. During a case of pneumonia the number of leucocytes in the blood of a leukaemic patient fell in a few days from 393,000 to 4,000 per cubic millimetre. Several other similar cases are quoted in the same paper.

The quantity of uric acid produced in splenic leukaemia and excreted in the urine is greatly increased. Although this is so, such patients rarely suffer from gout, though they may go on excreting enormous quantities of uric acid for years. Perhaps, however, it is this excess of uric acid in the blood during leukaemia which is inimical to the development or advance of tuberculosis, for phthisis is undoubtedly rare in the gouty, and I know of cases where complete arrest has taken place exceptionally satisfactorily in patients with a gouty family history; and I am inclined to think that the arterio-sclerosis which is described as not uncommon in chronic phthisis results rather from the treatment than from the disease, for a great deal of the successful treatment of incipient phthisis has been along lines highly productive of the gouty diathesis.

Unfortunately, no such antagonistic process as exists between leukaemia and phthisis exists between chlorosis and phthisis. In fact, the very reverse is the case, and I think that Gee's aphorism, "we should never see anaemia in a young woman without thinking of phthisis as a possible cause," is one of the most important in his book, and that if it were always acted upon and the lungs thoroughly examined in every case of chlorosis, there would be fewer cases of incurable consumption.

Cancer and Tubercle.

The relation of cancer to tubercle is remarkable. It is concisely summed up in the statement of Sidney Martin, who, after pointing out the great frequency with which retrograde pulmonary tubercle is found in cancerous patients, says, "although the condition induced by cancer tends to the invasion of the body by the tubercle bacilli, it is inimical to the spread of the disease." In fact, the tuberculous process is rarely found in an active state.

Antagonism of Infectious Diseases.

I do not propose in this paper to discuss the interaction of one organism on another, or of the action of one toxin on another, as this would lead us into the realm of experimental bacteriology, rather than into that of clinical medicine. Still it is as well to remember that the chemical products of organisms, and also the bacteria themselves, may modify very profoundly the effects of others (for example, erysipelas cocci injected with anthrax bacilli are protective against the anthrax poison, while the virulence of diphtheria bacilli is greatly increased by the concurrent inoculation of bacillus pyocyaneus); and it will be further remembered that the beneficial effects of erysipelas noticed in some cases of eczema, lupus, and sarcomata, the so-called curative erysipelas, led up to the production of Coley's fluid (a mixture of the toxins of the streptococcus of erysipelas with that of bacillus prodigiosus). Erysipelas occurring during the course of phthisis is said to cause an amelioration of the symptoms, including the cough. I do not remember having seen a case.

That the infectious diseases may occur together has already

been mentioned, and, as a general rule, the prognosis is more grave, especially when each of the combined diseases tends to cause lesions of the same parts—as tonsils, lungs, or kidneys. This is, after all, only what would naturally be expected; neither is it surprising that some of the infectious diseases favour the occurrence of others. Thus scarlet fever favours the onset of diphtheria owing to the faucial condition being favourable for the growth of the diphtheria bacilli, while the converse also holds good, that the diphtheritic patient is unduly susceptible to an attack of scarlet fever. Scarlet fever and enteric are rarely seen together, a fact which was noted by Murchison. In his day the two diseases were treated in the same wards, and yet in twenty-three years he only came across 8 cases in which these two diseases were coexistent. The relation of whooping-cough to measles is well known. When scarlet fever develops during the course of whooping-cough, the characteristic whoop of the disease is lost during the fever, to return again when the temperature becomes normal.

The relation of chorea to rheumatism is now on a very much more satisfactory basis than it was a few years ago, before the micrococcus of the disease was described, and they can hardly be spoken of as two diseases. But I remember seeing a very striking transition of one to the other. The patient was a young adult, who was suffering from such severe chorea that, after many methods had been tried in vain to control her movements, she was subsequently wrapped round with a damp sheet. Very shortly afterwards the choreic movements almost entirely ceased, though simultaneously she developed an acute attack of rheumatic fever.

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THE NATIONAL IMPORTANCE OF THE THOROUGH AND SYSTEMATIC REMOVAL OF ADENOIDIS IN CHILDHOOD.*

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THE high pressure at which those of us who live in large towns are existing necessitates the frequent demand for the reason why.

I venture to ask whether this question, at least in medicine, has been put frequently enough.

In towns help is so near to hand that one imagines all must be equally well placed in this progressive age; and yet if you go into the country far from any town of size, and live amongst the people, you will quickly realize that the contrary is indeed the fact.

Addressing as I am a medical audience it would seem almost impertinent to say that to neglect to remove adenoids and enlarged tonsils in early life is most culpable. If we allow this then must the State plead guilty. The medical questions that come before the State are referred by it to those in high authority in the medical world. To these great men such small and unimportant matters as throat, nose, and ear disease make small appeal. Nor is it to be greatly wondered at, seeing the enormous amount of gratuitous work that they in common with all medical practitioners are called upon to perform. It therefore behoves the profession to act again for itself in this matter, remembering that to it as a body the people of our empire look, and not to one or two of its members.

Some years ago, my health breaking, I left London, where I had practised as a specialist on the throat, nose, and ear, holding the post of surgeon to the London Throat Hospital, and went to practise in a country village in Somersetshire. In the different villages in my district I found a great number of children suffering from adenoids with or without enlarged tonsils. On some of these operations were performed; many, on account of the misguided opposition of the father, had to be left alone. From the Board of Guardians no help could be obtained. From this southern and beautiful country fate took me to a Northamptonshire village. Here again chance favoured me, and throat work, operative and consultative, seemed to spring up around me. In a like manner innumerable

cases of adenoids came under my observation, some in my own practice, some in that of a colleague. The yokel is generally depicted as a man of heavy, slow action, having, as a rule, his mouth open and breathing heavily, with an absolutely vacant expression. Is not this almost the exact description to be given of a patient suffering from adenoids?

Passing for a moment from the present day, take the paintings of beautiful ladies by the old masters; are not numbers of them shown with the nostrils of their well-shaped noses pinched and their lips parted, clearly showing that these growths are no new trouble?

For generations all classes of society have suffered in this way, the members carrying with them behind the nose, situated at that part of the pharynx where disturbance is least likely to occur, a hot-bed for the germination of the seeds of disease, and, when the nose is completely blocked, compelling the sufferer to breathe through the mouth the air of our cities. In the early days, before the enormous growth and multiplication of the large towns, and the consequent depopulation of the country, the matter may not have been so important, but to-day, in my opinion, it is of the utmost moment, deserving and requiring immediate attention.

No one will deny that a nation depends for its greatness on its people. The early days of human life are entirely one with the mother. On her manner of life—eating, drinking, sleeping, and thinking—what greatness may not hang? Then comes that wonderful change when, without a break in continuity of life, the child, separated from its mother, is yet for years, in ever-decreasing degree, dependent on her loving care—care such as no foster-mother can give and on which the health of the child, mental and physical, almost but not entirely depends.

Given two children, boys of 3 or 4 years old, the one having perfect power of nasal respiration, the other with his nasopharynx blocked with adenoids, forced to respire through his mouth—is there any doubt which of the two will, other things being equal, turn out physically, mentally, and morally the finest specimen of humanity?

What wonder that consumption is to-day so prevalent? Those who are affected with adenoids are the very ones who are always hawking and spitting, the habit being undoubtedly caused by the presence of some irritant in the pharyngolaryngeal passage.

Is it right for the profession to allow the country general practitioner to contend single-handed with these so-called minor ailments? He is by no means an idle man. Commencing with his surgery in the early morning, followed by his morning rounds, often without an interval for refreshment, continued late into the afternoon, doing Branch work whilst the horse rests or is changed, this with his nights often broken by confinements, as well as his day work so interrupted, where is his time for the more delicate throat and ear work or for the finer branches of diseases of women? Too much is asked from the man who, seldom getting bare justice, deserves the very greatest honour.

To meet the necessity properly I would suggest that centres be founded over Great Britain and Ireland, from which once a year medical inspectors properly qualified for the post should be sent out into the surrounding district, with power, in conjunction with the medical officers of the part, to visit the schools and examine the school children for throat, nose, and ear troubles, and to arrange with him for the proper treatment of the cases. This must be done under the authority of the law, and all proper care and precautions not to wound the susceptibilities of the parents must be taken. Some are apt to think that the country people are of little importance and may be treated anyhow. Kindness with firmness is as much appreciated in the land as in the town, and the successful man everywhere is he who is gentle, kind, and firm. Everything to-day is being done for the halt and maimed, little for the child who may become, if properly looked after, a good and capable citizen.

The large centres of life—our great cities—are fed by the country, and if the child life of the country is dwarfed and crippled by a plug and hot-bed for the germination of all that is foul placed at the back of its nose, what wonder that the nation is stationary, and how long can it be so?

FOOD LABORATORIES IN THE UNITED STATES.—A New York bureau for the examination of imported food stuffs was established about six months ago as an experiment. Apparently the result has been satisfactory, for it is now announced that food laboratories are to be established in Boston, New Orleans, and San Francisco.

*Read before the South-Western Branch of the British Medical Association.