The bacteriological findings in the 16 cases which required a change of treatment were not significantly different from those in other cases, with the exception of three penicillin-treated cases in which resistant forms of *H. influenzae* were found. Secondary infection with antibiotic-resistant organisms, however, was much commoner in all cases given penicillin (28 out of 42) than in those treated initially with chlortetracycline (12 out of 41).

Virus studies showed that there was serological evidence of recent infection by influenza virus A in 10 patients, by influenza virus B in one patient, and by a virus of the psittacosis group in another patient. Of these 12 patients, nine were given chlortetracycline and three penicillin.

Comment

Pneumococci and *H. influenzae* appear to be the most important pathogenic organisms consistently found in the sputa of patients suffering from bronchitis (May, 1953). The frequency with which they may be isolated from the sputum of such patients has been confirmed in the present trial; moreover, out of 10 fatal cases the sputum of nine contained pneumococci and that of four had *H. influenzae*. Clearly, therefore, treatment should be designed to eliminate these two organisms, preferably by using a single antibiotic. It has been suggested (*Brit. med. J.*, 1954; Flint, 1954; *Lancet*, 1954) that the tetracyclines are more effective for this purpose than penicillin. In this series of cases the results throughout favoured treatment with chlortetracycline, and patients who received penicillin more often required a change of antibiotic on clinical grounds alone. It is probably of greater significance, however, that the penicillin-treated cases were more readily infected with *H. influenzae* during treatment than those which received chlortetracycline. Eight of the 10 fatalities occurred in patients who were suffering from heart failure, and there was no apparent difference in the effect of the two antibiotics on these cases.

In the cases which recovered chlortetracycline was apparently more effective than penicillin, whether heart failure was present or not; this result was obtained in spite of the greater incidence of *H. influenzae* in the cases without heart failure. Moreover, there was a higher incidence of recent respiratory virus infection among the cases treated with chlortetracycline. In both diagnostic groups of the series the incidence of pneumococcal infection was equal, thus suggesting that the better effect of chlortetracycline on *H. influenzae* was the deciding factor in favour of this antibiotic. This view is supported by the work of Gabrielsen, Lynn, and Leedham (1954), who showed that chloramphenicol or chlortetracycline was more effective than penicillin in eradicating infection with *H. influenzae*.

Toxic effects were negligible even in those treated with chlortetracycline, thus confirming earlier work from this hospital (*Brit. med. J.*, 1956).

It can therefore be concluded that for routine use chlortetracycline is preferable to penicillin in the treatment of acute exacerbations of bronchitis, regardless of whether the infecting organism is *H. influenzae* or the pneumococcus. All the tetracyclines have similar properties, however, and any one of them could be expected to produce results comparable to those of chlortetracycline.

In this trial no attempt was made to assess the value of penicillin and streptomycin given concurrently; this combination of antibiotics is possibly the most effective treatment for infections with *H. influenzae* (Mulder, Goslings, van der Plas, and Lopes Cardozo, 1952), although large doses by intramuscular injection are essential.

Summary

A controlled trial of chlortetracycline ("aureomycin") and penicillin in 84 cases of bronchitis is reported. There were equal numbers of cases in each treatment group, but 37 patients also suffered from pulmonary heart disease.

Pneumococci and *H. influenzae* were the pathogenic organisms most often isolated from the sputum.

Five deaths occurred with each antibiotic; otherwise the results showed that chlortetracycline was the more effective agent and that it appeared to prevent secondary infection with *H. influenzae* and other organisms more readily than penicillin.

Chlortetracycline rarely produces toxic effects at a dosage of 250 mg. six-hourly.

We thank Dr. C. S. Darke, Dr. K. J. G. Milne, Dr. E. G. Rhind, and Professor C. H. Stuart-Harris for permission to study patients admitted to their care. We are grateful to Dr. E. K. Abbott, Dr. S. Varadi, and Dr. A. J. N. Warrack, who carried out radiological, haematological, and post-mortem examinations respectively. Our thanks are also due to Dr. J. R. Wilson, of Lederle Laboratories, who kindly supplied the chlortetracycline (aureomycin) used in this trial.

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THIRTEEN CASES OF INFLUENZAL BRONCHOPNEUMONIA IN CHILDREN

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During the recent influenza epidemic 13 children whose ages varied between 7 months and 14 years were admitted to hospitals under our care suffering from influenzal bronchopneumonia. Twelve were admitted to the Pontefract General Infirmary and one to the Wakefield General Hospital. Although the epidemic appeared to affect these adjoining towns to the same degree, the incidence of severe cases was much greater in Pontefract and the surrounding area than in the Wakefield district. Four of these children died within 12 hours of being admitted and another died 36 hours after coming into hospital. Of the 13 children, seven were under 3 years of age, of whom one died. There were four deaths in children between the ages of 9 and 14 years.

Only 5 of the 13 children were completely fit before they were overtaken by the influenza, and two of their number died. Of the other eight children one had bronchiectasis together with diabetes; one had a right hemiplegia following birth trauma; one had had measles encephalitis five years previously which had left her with residual bilateral pyramidal tract signs (these three children died); one had residual weakness of both legs following an attack of poliomyelitis one year previously; another had bronchiectasis and a mild anaemia; and the remaining three children had severe anaemias.

Symptoms and Signs

The illness was characterized by its sudden onset, its rapid progression, and the paucity of physical signs in the chest. The longest history was seven days and the shortest a matter of 12 hours. Where the history was longer than four days

the child was first seen following a relapse. In all 13 cases the symptoms were very similar. The child started with a febrile illness, vomited, became listless and dyspnoeic, and, in the untreated case, progressed to delirium, convulsions, coma, and death within 48 hours. In six cases the child complained of a sore throat, five had a cough, and two complained of chest pain. Only 2 of the 13 children were slightly cyanosed. Headache was a presenting symptom in only one case admitted to hospital, although one of us (J. D. P.) found headache and muscular pains common presenting symptoms in children seen on domiciliary visits.

All but one of the children had elevated temperatures and increased heart and respiratory rates. The case of the one exception is briefly reported.

A boy of 11 had a history of mild fever which settled down after four days, but 36 hours before admission he started vomiting and for 12 hours before admission he was mentally disturbed. On physical examination, however, absolutely nothing was to be found apart from the fact that he resented being examined and voiced his disapproval with high-pitched shrieks. Twelve hours later, however, he developed a spastic paralysis of all four limbs and for the first time signs were heard in the chest; death followed soon afterwards—36 hours after he had been admitted. At post-mortem examination there were solid haemorrhagic patches in the lungs and the trachea and bronchi contained bright pink purulent froth. There was considerable engorgement of the cerebral veins, with moderate flattening of the cerebral convolutions; on section the grey matter appeared pink with diffuse engorgement of the venules certainly not *post mortem* in origin. On microscopy of the brain sections there was no perivascular cuffing and no evidence of encephalitis.

Injection of the throat and eardrums, pallor, and dyspnoea were common findings, but basal rales and harsh breath sounds were heard in only six cases at the first examination. However, all the children developed bilateral chest signs later. Three were admitted in coma, one had convulsions, and another, who later died, developed a purpuric rash. Two children developed an apical systolic murmur before death and we also heard similar murmurs in a number of children recovering from influenza during routine examinations in the out-patient clinics. These murmurs proved to be temporary on further follow-up and were presumably due to a transient myocarditis.

Investigations and Treatment

Investigations were carried out on 9 of the 13 children; four died before any investigations were implemented. The white blood cell count was high (up to 25,000) in five cases and within normal limits in the other four. The haemoglobin level was below 65% in six cases and blood transfusions were given to two children whose haemoglobin levels were 35% and 55% respectively. Lumbar puncture was carried out in six cases, but on each occasion the cerebrospinal fluid was found to be normal, including that obtained from the 11-year-old boy mentioned above. X-ray examination of the chest was carried out in nine cases and reported as normal in four; doubtful basal shadowing in two, bilateral basal inflammatory lesions with collapse of one lobe in one, shadowing of the left lower lobe in one, and shadowing of the left mid-zone in one.

It is interesting to note that on subsequent post-mortem examination of one of the children submitted to x-ray examination before death the lungs were found to contain large solid haemorrhagic patches throughout the lung fields, although the x-ray film showed only doubtful shadowing at one base. Post-mortem examinations were carried out in two cases; both showed solid haemorrhagic patches in the lungs measuring up to 6 cm. across, and the trachea and bronchi contained blood-stained purulent frothy material. The larger areas of consolidation were associated with recent fibrinous exudate of the visceral pleura. A swab from the lung produced a pure growth of *Staphylococcus aureus* in only one case. The post-mortem appearances of the brain in one case have already been described.

Treatment consisted of large doses of tetracycline, penicillin, and "eucortone" by intramuscular injection for (on

the average) five days followed by a further course of oral tetracycline. Four of the severely ill children were given intravenous tetracycline and large doses of penicillin by intramuscular injection on admission, together with nikethamide and oxygen, but all died. Apart from the children who died, all except two responded to the regime described above within two to three days. The two exceptions were given chloramphenicol instead of tetracycline and the temperature then settled within 48 hours. As already mentioned, two of the children had severe anaemias and required blood transfusions. The haemoglobin level was on the low side in four other cases, so oral iron therapy was instituted. The average length of stay in hospital was nine days, although the two children who were given blood transfusions were kept in for a further 10 days.

Complications

Of the 13 cases admitted to hospital, 5 died, 6 made complete and uneventful recoveries, 1 was left with a hemiplegia, and 1 was left with a collapse of 1 lobe of the lung which we thought was probably an old lesion and present before the onset of the influenza. The child who subsequently developed a hemiplegia was admitted in convulsions with twitching of the left side of the body, which were controlled by chloral. Five days later, however, she developed a flaccid paralysis of the left arm and leg and was unable to talk. She gradually improved and on discharge there was a spastic paralysis of the affected limbs. On subsequent follow-up some improvement had occurred and she was able to talk as well as she ever did before her illness. This case is also interesting in that at one point before the flaccid paralysis developed the child stopped breathing and became pulseless and was revived after being given nikethamide and artificial respiration by the ward sister.

Discussion

A great deal has been written about the epidemic, and at the time of writing 14 letters, three leading articles, and one detailed report in the Vital Statistics section have appeared in the *British Medical Journal* alone. Contrary to the views expressed by Fielding (1957) at the onset of the epidemic, and in complete agreement with Cantor (1957) and others, we felt that the epidemic was anything but mild, especially when it attacked children, and more so in children with a pre-existing illness.

Generally speaking, the symptoms and signs described by us are in agreement with those described by others (Atkinson, 1957; Mann and Pasha, 1957; Vital Statistics, 1957). Unlike Atkinson, however, who reported shivering, severe sweating, headaches, and muscular pains as symptomatic of the illness in adults, we did not find these in the children who were admitted to hospital, although severe sweating was noted as a terminal event in two cases. One of us (J. D. P.), however, found headache and muscular pains common presenting symptoms in children seen on domiciliary visits. We were impressed by the paucity of physical signs in the chest, as were Atkinson and Mann and Pasha. We found that the highest death rate amongst children took place in those aged 8 to 14, as was stated in Vital Statistics (1957). We also found that in the fulminating cases with a short history the children succumbed despite the most energetic treatment. We were also impressed by the varying incidence of complications following an attack of influenza in adjoining towns despite the fact that the number of cases of influenza was more or less comparable.

Summary

The symptoms, signs, and complications, together with the investigations and treatment carried out, are described in 13 cases of influenzal bronchopneumonia occurring in children. The disease was characterized by its sudden onset, its rapid progression, and the paucity of physical signs in the chest. Deaths amongst the children we saw were most common in those aged

8 to 14. The post-mortem findings in two cases are described. Two deaths occurred in previously healthy children and three in children with a pre-existing illness.

We wish to thank Dr. E. L. Simons for the pathological and post-mortem reports.

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A WOMAN WITH THE STIFF-MAN SYNDROME*

BY

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"A curious condition of progressive, fluctuating muscular rigidity and spasm has recently been described by F. P. Moersch, and H. W. Woltman, of the Mayo Clinic, as the 'stiff-man' syndrome." These were the opening words of an annotation in the *British Medical Journal*† that I was reading in January, 1957, when I realized they were a clear description of the case of a woman whose extraordinary spasms had puzzled me ten years previously. Luckily my ward sister remembered her name; the notes were traced and revealed that the lady had continued to suffer from "hysterical spasm" which had disabled and deformed her till she had become a bedridden cripple cared for in Leamington Park—a geriatric annexe to the Central Middlesex Hospital. Dr. A. Abdullah, the physician in charge, kindly allowed me to review her case. Everything fitted the description in the annotation, and later the annotator himself came and agreed that this woman had the stiff-man syndrome.

I wish to report this case (a) because I made the diagnosis ten years late; (b) because it appears to be the first case of stiff-man syndrome reported in England; (c) because it shows that syndromes are sometimes labelled hysterical for no better reason than that they are not yet officially described, even in this case where the patient's hysterical spasms were so titanic (and that is not a misprint for tetanic) that with their power she bent a Smith-Petersen pin and fractured a steel plate and screws; (d) because it shows the value of annotations in keeping physicians in touch with rarities and novelties; and (e) because since I recognized the diagnosis the patient has died and the necropsy findings are now known.

Case History

A housewife of 50 was admitted to hospital in May, 1946, with painful spasms in her legs, abdomen, and back which had been present for two days. She gave a history of "lumbar fibrositis" for six years, treated at another hospital with physiotherapy, and for three years had had increasing back stiffness, which confined her to the house, punctuated by acute attacks of "cramps" in the abdomen, legs, and back similar to the one which brought her in.

Examination showed a dull-witted, distraught woman who groaned continually. The muscles of her abdomen, thighs, and calves were rigid and hard. Her whole body was so stiff she could scarcely move. At intervals acute spasms would come on her with tetanic severity. She would scream and sweat, clutching bystanders, contorting her limbs, and becoming pulseless for a while.

*I cannot avoid the paradoxical title; those who named this illness called it "stiff-man syndrome"—stiff-person syndrome might be a better name.

†*Brit. med. J.*, 1956, 2, 1478.

Apart from a generalized rigidity and these remarkable muscular spasms there were no findings except for a colostomy which had been done for ulcerative colitis eight years previously. She had had no bowel troubles since.

She stayed in hospital a month. Every relevant (and irrelevant) biochemical and radiological investigation was negative. Her spasms gradually became less and she was discharged on June 11. I wrote to her doctor, "I am unable to make a definite diagnosis in this case." I made an indefinite diagnosis of spasms secondary to spinal arthritis with hysterical overlay.

Two years later she was admitted to a mental hospital with depression and "troublesomeness." The latter was shown by attacks of spasm and screaming. A month after admission she felt her femur snap during a spasm. The x-ray film showed a subcapital fracture of the neck and she was transferred back to the Central Middlesex Hospital, where a 3½-in. (9-cm.) Smith-Petersen pin was inserted. The notes record that next day she was "very troublesome with emotional crises" and subsequent x-ray films showed gross varus deformity with bending of the pin and a per-trochanteric fracture through the pin track.

The pin was removed and a nail plate inserted. Again her troublesomeness continued, the deformity recurred, and the screw and plate were broken. A third operation was done two weeks later, but gradually the gross adduction deformity of the right hip recurred. Many attempts were made to mobilize her, but they provoked further spasms and screaming. She developed increasing varus deformity of the feet and her rigidity became worse than ever. She became a chronic case and stayed for five years in the wards before being discharged to a geriatric annexe.

In May, 1955, she was readmitted to the Central Middlesex Hospital for assessment. The houseman's note was: "Condition worsening. Hysterical outbursts on little or no provocation—hyperpnoea, rolling up eyes, clutching fiercely at bed, locker, or bystanders, voluntary rigidity of muscles with opisthotonos, becoming worse if soothed, gradually quietening if ignored."

I was asked to see her, and wrote: "I am most interested to see this woman after nearly ten years. Her condition seems very much the same as when I last saw her. I still feel there must be an organic basis for her symptoms—a sort of dystonia musculorum deformans but without movement."

A psychiatrist was later called, and wrote: "Whatever her difficulties are she appears to be completely lacking in insight and therefore psychologically inaccessible. It is obvious that her rehabilitation is a formidable proposition; she appears to have satisfied some emotional need in her illness. I do not think that any psychiatric approach is likely to be effective and that her treatment is mainly one of general management. I feel the prognosis is bad."

The deformity of the feet induced by constant spasm had now produced a gross talipes equinovarus. This was partially corrected by manipulation and plaster, and while in plaster she succeeded in walking a little with a stick, but when the plaster was removed the deformity recurred, so in November, 1955, an arthrodesis of the left ankle was done and further attempts to mobilize her were made. These achieved little success, so she was transferred to Leamington Park, where they continued for another six months to try to get her up. All efforts at salvage were abandoned finally in August, 1956, when the house-physician wrote: "Very difficult and uncooperative. Prefers to stay in bed. As this makes it much easier for sister and as the patient obviously does not want to get better, it is time we realized we have lost this battle."

Thereafter she remained bedridden—rigid and deformed but moderately content, provided she was not moved, when "hysterical" spasm would recur.

Four months after therapeutic defeat had been openly admitted I visited her again because I had read the annotation mentioned above. The many tattered pages of notes