The clinical findings and the age and sex distribution are given.

Climatic conditions and home environment are discussed in relation to the onset of symptoms.

Medical treatment is outlined and the indications for tracheotomy are given.

We thank Dr. E. A. Morgan and Dr. J. A. Turner for their advice in the assessment of the children; the paediatricians under whose care the children were admitted, for allowing us to study their patients; and Dr. A. J. Rhodes, Director of Research, for his constant help and encouragement.

REFERENCES

- Baum, H. L. (1924). *Ann. Otol. (St. Louis)*, **33**, 782.
 Beale, A. J., McLeod, D., Stackiw, D. L., and Rhodes, A. J. (1958). *Brit. med. J.*, **1**, 302.
 Chanock, R. M. (1956). *J. exp. Med.*, **104**, 555.
 Morgan, E. A., and Wishart, D. E. S. (1947). *Canad. med. Ass. J.*, **56**, 8.
 ———, Turner, J. A., Rhodes, A. J., Peach, Ann M., Zaiman, Elisabeth, and Duncan, Darline (1956). *Ibid.*, **75**, 638.
 Neffson, A. H. (1944). *Amer. J. med. Sci.*, **208**, 524.
 ——— (1949). *Acute Laryngotracheobronchitis*. Grune and Stratton, New York.

TRACHEOTOMY IN INFLUENZA

BY

JOHN H. DIGGLE, M.R.C.P.

Senior Registrar in Paediatrics, Sheffield

Obstructive tracheitis and laryngitis have not been noteworthy features in the many accounts of influenza epidemics. Stuart-Harris (1953) stated that influenza did not usually present in this way. He described surface lesions of the trachea which were necrotic and could have been due to the virus or to staphylococci. Roberts (1957) described the post-mortem findings in nine deaths from influenza in previously healthy persons. These patients had become rapidly dyspnoeic and cyanosed, and had severe retrosternal pain. They had coughed up frothy blood-stained fluid, and in all cases at necropsy the trachea contained blood-stained watery fluid and the epithelium showed necrotic ulceration. Roberts considered that suction through a tracheotomy tube would not have helped because exudates and haemorrhages were present in the pulmonary alveoli at the time of death. In subsequent correspondence this view was challenged by Rawlins (1957), who described the case of a dyspnoeic, cyanosed patient who recovered following repeated bronchoscopy and a tracheotomy. He suggested that deaths in the recent influenza epidemic might have been prevented by drainage of the main air passages.

Of the relatively few patients admitted with influenza to the Children's Hospital, Sheffield, in 1957, three required tracheotomy and a fourth had needed repeated laryngeal intubation and suction before admission. These four patients all made good recoveries. The following two cases with which I was concerned illustrate the severe obstruction encountered.

Case 1

In September, 1957, a 9-year-old boy was admitted to hospital with a history of fever and shivering followed by sore throat, cough, and vomiting for two days. Immediately before admission his face became puffy and his breathing noisy and difficult.

On examination he was afebrile but had pallid cyanosis, a loud inspiratory stridor, and considerable recession of the lower ribs, with very poor air entry to both lungs. A few crepitations were heard over the left lung only. The throat was slightly inflamed but there was no visible pus and no cervical lymphadenitis. His condition deteriorated rapidly. Within 30 minutes he was severely anoxic and an endotracheal tube was inserted through the larynx, with difficulty on account of subglottic oedema. This did not improve matters much and so tracheotomy was immediately performed under general anaesthesia administered through the intubation tube.

A large amount of blood-stained frothy fluid was forcibly coughed out of the intubation tube and the tracheotomy tube. Three members of the staff on to whom this fluid was coughed each developed an illness like influenza about 48 hours later. During the night an even greater quantity of thin blood-stained fluid, containing a few flecks of pus, was sucked repeatedly from the trachea through the tracheotomy tube, each time with obvious improvement in respiration. Culture yielded a mixed growth of *Haemophilus influenzae*, pneumococcus, and β haemolytic streptococcus (not Lancefield group A). The blood leucocyte count was 9,000 per c.mm., with 50% neutrophils.

Throughout the night he was nursed on his right side and very frequent aspirations of the trachea were needed. X-ray examination of the chest next day showed an appearance in the right lung which suggested aspiration of fluid into the alveoli. The left lung appeared normal. Some mediastinal emphysema and some surgical emphysema in the neck were also demonstrated. These were complications of the tracheotomy. During the second day his temperature reached 104° F. (40° C.). Obstructive symptoms were again relieved by suction of the trachea. He received intramuscular penicillin, oral sulphadimidine, and oxytetracycline, and his condition steadily improved after the second day in hospital.

A specimen of serum was sent to the Virus Research Laboratory in Sheffield on the day after admission and again two weeks later. Complement fixation against influenza A (soluble antigen) showed a rise in titre from 24 to more than 64. Haemagglutination inhibition against influenza A/Singapore/1957 showed a rise in titre from 40 to 160.

Case 2

A girl aged 11 years was admitted to hospital in September, 1957, late at night, with a history that a tight choking feeling in the throat came on before lunch. After this she felt feverish and developed a severe persistent cough.

On examination her temperature was 102° F. (38.9° C.) and she was pale and sweating. Her throat was merely reddened and there were no moist sounds in the chest. Breathing, however, was laboured and an inspiratory and expiratory whistle emanated from the larynx. Indirect laryngoscopy revealed reddened non-oedematous cords which moved with respiration. Beneath the cords there was a grey curtain of dry hard mucus stretching across the trachea. In the centre of this was a small hole through which respiration was taking place. The curtain descended with inspiration and rose with expiration. At this stage there were no signs of anoxia. She was given oral oxytetracycline and nursed in steam. During the next eight hours breathing became more difficult and there was a persistent difficult cough with restlessness and anxiety, intermittent cyanosis, and severe inspiratory recession of the lower ribs and suprasternal notch.

A general anaesthetic was given and then an intubation tube was forced with difficulty through the membrane of dry mucus beneath the larynx, but this did not produce the expected improvement. Tracheotomy was therefore performed, and this resulted in no improvement until some hard greenish brown material had been removed from the trachea through the tracheotomy tube. After this a large quantity of slightly blood-stained thick rubbery material was sucked off the tracheal wall and then the patient's respirations

became almost normal. Section of this rubbery stuff showed dense mucus which appeared stratified and apparently consisted of a conglomeration of mucoid plugs from a number of bronchi. Entangled in the mucus were many necrotic cells, including some resembling epithelial cells. Culture of a laryngeal swab yielded *H. influenzae*, *Staphylococcus aureus*, and Friedländer's bacillus, but some intratracheal pus produced on culture only *Staphylococcus albus*.

Frequent aspirations were needed through the tracheotomy tube. The temperature remained at about 101° F. (38.3° C.) for the next few days, but the chest remained clear and the respiration rate was not raised. X-ray examination of the chest showed no abnormality. After two days she suddenly became distressed again and all the signs of anoxia returned. The night sister succeeded, after about 15 minutes with the electric suction machine, in bringing out a large blood-stained mixture of mucus and pseudomembrane which had apparently been obstructing the trachea lower down than the end of the tracheotomy tube. After five days in hospital the temperature had settled and phonation was normal. The tracheotomy tube was removed and she remained very well.

A specimen of serum was sent to the Virus Research Laboratory three days after the illness started and again after a fortnight. Complement fixation against influenza A (soluble antigen) showed a rise in titre from 12 to more than 64. Haemagglutination inhibition against influenza A/Singapore/1957 showed a rise in titre from 40 to 240.

Comment

It seemed likely that these patients would not have survived if tracheotomy had been withheld, and the surgeons who performed the operations were in agreement with this view.

Tracheotomy has almost certainly been indicated in cases of obstructive influenza in the past, but these two examples seemed worth recording because of the paucity of previous reports in proved cases of influenza.

Case 1 had subglottic oedema and probably oedema of the tracheal mucosa with copious outpouring of fluid into the trachea. Case 2 by contrast was obstructed by dessicated mucus which adhered to the trachea in thick layers.

I thank Dr. T. Colver for permission to publish these cases under his care, and also Dr. R. N. P. Sutton, of the Virus Research Laboratory, for his serological estimations.

REFERENCES

- Rawlins, G. A. (1957). *Lancet*, 2, 1169.
Roberts, G. B. S. (1957). *Ibid.*, 2, 944.
Stuart-Harris, C. H. (1953). *Influenza and Other Virus Infections of the Respiratory Tract*, pp. 73, 191. Arnold, London.

The value of inquiring into the patient's geographical history is stressed by Professor B. G. MAEGRAITH, Dean of the Liverpool School of Tropical Medicine, in the School's recently published annual report. "So far as I can see," he writes, "one of the bad gaps in the teaching of medical students in this country is the inadequate stress placed on the importance of a patient's geographical history. Failure to understand this may end in tragedy, as it did recently in the Midlands, and very nearly in our own clinic, where a European was admitted suffering from advanced malignant malaria which had been treated elsewhere for a week or more as influenza. In the latter case I found that the patient had told the doctor nothing of his recent visit to the tropics, and, I suspect, the doctor himself may not have thought of asking. One day I hope the importance of the geographical history in medicine will be emphasized at the right level—in undergraduate education."

A CASE OF EARLY YAWS

BY

JACK BARROW, M.B., B.S.

Medical Officer to the Department of Venereal Diseases

H. J. WALLACE, M.D., F.R.C.P.

Physician-in-charge, Department of Dermatology

AND

C. S. NICOL, M.D., M.R.C.P.

*Physician-in-charge, Department of Venereal Diseases
St. Thomas's Hospital, London*

With the immigration of so many West Indian negroes, the diagnosis of latent yaws, based on a history of the disease in childhood and positive serology, is being made more often. Occasional cases of clinical late yaws have also been seen in England (Laird, 1955), and one patient with early (secondary) yaws has been shown at the Section of Dermatology of the Royal Society of Medicine (Erskine, 1956), but clinical details of the case were not published. For these reasons it is felt that the following case may be of particular interest.

Case Report

On January 9, 1958, a negro boy, aged 10, from Dominica, was seen at St. John's Hospital for Diseases of the Skin, and was subsequently admitted to St. Thomas's Hospital.

He had a rash which his mother said had been present for about a month. It involved the scalp, trunk, and upper limbs. The scalp was almost completely covered by heavily crusted purulent lesions and there was a papular rash on the chest and back (see Fig.), these papular lesions also being partially crusted. In addition there were a few

Papular rash on back.

papules on the palms of the hands and one perianal condylomatous lesion but no involvement of mucous membranes. A few small glands were present in both posterior cervical triangles, but none elsewhere. Removal of the crusting from one of the papules on the trunk