Mr. A. R. TWEEDIE (Nottingham) mentioned that one of the reasons for lack of success in the operation was a pre-existing collapse of the alae nasi. He referred to the iniquity of operating on the septum in oto-sclerosis and giving the patient to understand that the hearing would benefit. In the case of catarrhal deafness not only did he require improvement in hearing after inflation before advising operation, but also a positive Gellé test and a mobile membrane, always assuming that bone conduction was at least normal. He used local anaesthesia as a general rule, even in children of 8 years. He recommended an operation for access in intranasal operations. After removing the deformity he replaced any cartilage he could.

Mr. KELSON (London) objected to packing the nose after operation.

The PRESIDENT (Dr. Brown Kelly) pointed out that nasal obstruction often varied from day to day, was frequently mainly due to turbinal turgescence, even though the septum was deflected. Submucous resection was performed not only to widen the narrow nostril but also to narrow the too-open side. He deplored mutilating the inferior turbinates, and did not favour operation in patients younger than 17 years of age.

Dr. JOHNSON HORNE in reply, expressed his pleasure at the favourable way in which his paper had been received. One speaker had completely and concisely expressed one contention of the paper—that an operation upon an obstructing nasal septum should aim at a functional and not at an aesthetic result. Regarding the choice of local or general anaesthesia, his guiding principle had been that in hospital such work should be done as would be required in private practice; in the latter general anaesthesia would be preferred more often than not. He was glad that reference had been made to the enlargement of the posterior ends of the turbinated bodies as a factor in nasal obstruction. Had time permitted, that was one of the causes, other than irregularity of the septum, he had intended to touch upon. The importance of posterior rhinoscopy as a routine part of an examination of the nose could not be overstated, and the surprises encountered at times would fill a chapter.

ACUTE RETROPHARYNGEAL ABSCESS IN CHILDHOOD.

BY

DOUGLAS GUTHRIE, M.D., F.R.C.S.,

Surgeon to the Ear and Throat Department, Royal Hospital for Sick Children, Edinburgh.

Two varieties of retropharyngeal abscess are distinguished in most textbooks. Bokai,¹ whose classical paper on the subject deals with 287 cases, showed that many were of lymphatic and not of spinal origin. Indeed, the spinal variety is relatively rare, coming to the notice of the surgeon on account of well marked signs of tuberculosis of the cervical vertebrae, and, as a rule, presenting little difficulty in diagnosis. The acute variety of abscess, on the other hand, is probably fairly common. Insidious in origin and often showing no characteristic sign or symptom, it frequently escapes diagnosis, or is only discovered at *post-mortem* examination. The condition perhaps more frequently escapes recognition than any other acute disease in childhood, and, if untreated, almost invariably ends in death. On the other hand, when a retropharyngeal abscess is recognized and opened the prognosis is good and the patient recovers rapidly.

Anatomical Data.—In order to understand the pathology of retropharyngeal abscess various anatomical facts must be kept in mind. The prevertebral fascia passes in front of the cervical vertebrae and prevertebral muscles, and separates the visceral compartment containing the trachea and oesophagus from the vertebral compartment containing the vertebrae and muscles. In front of the prevertebral fascia, and closely adherent to it in the middle line, is the mucous membrane of the posterior wall of the pharynx. Between the fascial and mucosal layers, in the potential space on either side of the mid-line, known as the space of Gillette, lies a group of lymphatic glands.

Those are retropharyngeal glands, which are present in infancy, but gradually atrophy and disappear as the child grows older. They are in direct communication with that chain of glands which lies behind the internal carotid artery sometimes called the posterior carotid chain.

Pathology.—Infection of these posterior carotid glands may readily pass to the retropharyngeal glands and give rise to abscess formation; this is probably the usual sequence of events in acute retropharyngeal abscess. In two-thirds of the cases there is obvious enlargement of cervical glands; this enlargement may be of tuberculous nature. Although McLean and von Hofe² state that retropharyngeal lymphadenitis is rarely tuberculous, unless accompanied by vertebral caries, we have in two cases of retropharyngeal abscess found definite evidence of tuberculosis in the cervical glands, which were subsequently excised. The most frequent cause of abscess formation, however, is the streptococcus, and this organism may be isolated from the pus in the majority of cases. Waugh³ regards the tonsil as the source of infection, as the condition is never found in children whose tonsils have been removed. Definite enlargement of the tonsils is present in about 80 per cent. of patients who suffer from retropharyngeal abscess. Trauma is a possible cause; thus Alexander⁴ saw two cases following the attempted removal of adenoids, and Bokai includes a case caused by the impaction of a metal button in the nasopharynx. Another possible cause of retropharyngeal abscess is the direct spread of pus from the middle ear. Middle-ear suppuration was present in one-fifth of our cases, but there was also glandular enlargement in each, so that no case could be regarded as "otitic pharyngeal abscess," a rare condition which has been described by Dan McKenzie⁵ and others. Even rarer is the acute non-tuberculous osteomyelitis of the cervical vertebrae observed by Kirmisson.⁶

Etiology.—The condition appears to be commoner in boys than in girls, and is said to be more prevalent in winter, although eight of the twenty patients noted in the accompanying table came to hospital during the months of May, June, and July.

Table to illustrate the Writer's Series of 20 Cases of Retropharyngeal Abscess.

(Boys 14; Girls 6.)

Age.						
0 to 1 year	...	...	...	...	...	7
1 to 2 years	...	...	...	...	...	4
2 to 3 "	...	...	...	...	...	3
3 to 4 "	...	...	...	...	...	2
4 to 5 "	...	...	...	...	...	1
5 to 6 "	...	...	...	...	...	1
6 to 7 "	...	...	...	...	...	2
Diagnosis.						
Dyspnoea	...	...	...	...	...	All
Dysphagia	...	...	...	...	...	5
Enlarged glands	...	...	...	...	...	13
Otitis	...	...	...	...	...	4
Nasal obstruction	...	...	...	...	...	6
Epistaxis	...	...	...	...	...	1
Temperature over 100° F.	...	...	...	...	...	8
Temperature under 100° F.	...	...	...	...	...	5
Result.						
Abscess opened (cure)	...	...	...	...	...	14
Spontaneous rupture	...	...	...	...	...	2
Swelling subsided	...	...	...	...	...	1
Death (sudden)	...	...	...	...	...	3

The organism was found in 8 cases (streptococcus in 6, pneumococcus in 2).

Age Incidence.—Most of the patients are under 1 year of age. McLean and von Hofe report 77 cases, of which 55 (71 per cent.) were under 1 year, while Frank⁷ relates 74 cases, of which 4 were adults. The remaining 70 were all under 10 years, and 66 (90 per cent.) under 3 years of age, the youngest patient being an infant aged 3 weeks. Koplik⁸ observed 77 patients under 10 years of age.

Symptoms.—The most characteristic symptom, almost invariably present, is difficulty of breathing. This may be attributed to bronchitis or laryngeal diphtheria, and may even lead to the fatal mistake of performing tracheotomy, as in one of the cases reported by Pearson.⁹ If the abscess extends far up into the nasopharynx it will, of course, cause nasal obstruction, but, as a rule, the abscess tends to "point" just opposite the upper aperture of the

larynx. The larynx in the infant is relatively small and is situated at a higher level than in later life, so that dyspnoea is readily produced. Difficulty of swallowing is not so common as dyspnoea. It was noted in only 4 of 77 cases (McLean and von Hofe), and in 3 of the present series of 20 cases. The early stages are often marked by croupy cough and a "throaty cry, resembling the quack of a duck"; the latter is often described, though seldom heard. The head is held stiffly and often inclined towards the affected side. The temperature is seldom very high and may even be normal. The diagnosis, however, is merely a matter of conjecture until the throat is examined. In a good light the observer will note a swelling of the posterior pharyngeal wall to one side of the middle line, but as this is covered by normal mucous membrane it may be difficult by inspection alone to appreciate the altered contour. Digital examination is the most certain diagnostic test, but should not be practised unless one is prepared, if necessary, to open the abscess forthwith, as death during digital palpation has often occurred.

Diagnosis.—Considering the vagueness of the symptoms, and the fact that the abscess may escape notice even on inspection, it is easy to understand why the condition often passed undiagnosed. Nasal obstruction and discharge suggest adenoids, and, in my experience, this is the most frequent diagnostic error. As has already been mentioned, the symptoms may closely resemble laryngeal diphtheria, or a foreign body in the larynx may be suspected. Lymphosarcoma of the retropharyngeal region may, of course, simulate abscess, but is much rarer. Cervical scoliosis causes a unilateral projection of the posterior pharyngeal wall, and even in normal subjects, when the head is strongly turned towards one shoulder, a swelling, caused by the transverse process of the second cervical vertebra, may be seen behind the tonsil, as first pointed out by the present writer.¹⁰ In such cases the swelling is, of course, of bony hardness.

Treatment.—If left to itself the abscess will cause death from suffocation, or it may rupture and flood the air passages. Should the patient survive this event, death from septic bronchopneumonia may follow, although it is noteworthy that two patients in the present series survived

FIG. 1.—Acute retropharyngeal abscess in child aged 14 months, who died on the way to hospital.

after spontaneous rupture of the sac. In one case the swelling subsided, apparently without rupture, while awaiting operation. While all observers are agreed that the abscess should be opened as soon as diagnosis is certain, there is some difference of opinion as to the method of procedure. It is generally agreed that the acute abscess should be opened from the mouth, external operation being reserved for the chronic variety of abscess consequent on bone tuberculosis. No anaesthetic should be used; this is a maxim of great importance, as a general anaesthetic increases the risk enormously, and, in any case, the pain is only momentary. The child should lie on his side, wrapped in a blanket with the arms fixed to the side. A gag is then inserted and the point of a long sinus forceps or peritonsillar forceps plunged into the most prominent part of the swelling and opened in a vertical direction. The operation must be performed rapidly, as the introduction of the gag may arrest respiration by pressing the abscess against the larynx. At the moment of opening the child is turned on his face with the head slightly dependent and the gag is removed. Pus flows

from the mouth and nose and relief is immediate. Convalescence is surprisingly rapid in many cases.

Fatal Cases.—Fatalities during the operation will be largely avoided if the above method is adopted. Of three fatal cases in the present series, the first patient died on the way to hospital (see figure), the second immediately after admission, and the third, a feeble infant, died just after the abscess had been opened. Fatal haemorrhage has been recorded by Sokoloff¹¹—a child aged 2—and also by Wylie and Wingrave¹² in a woman aged 21.

Conclusions.

1. Retropharyngeal abscess is not an uncommon disease, but is very liable to be overlooked.
2. For the anatomical reasons described, infants are the chief sufferers.
3. Dyspnoea is the principal, and often the only, symptom.
4. The abscess should be opened from the mouth, but no general anaesthetic should ever be used.

REFERENCES.

- ¹ Bokai: *Jahrb. f. Kinderheilk.*, vol. 10, 1876, p. 108. ² McLean and von Hofe: *Amer. Journ. Med. Sci.*, 1925, p. 540. ³ Waugh: *Lancet*, September 29th, 1906, p. 845. ⁴ Alexander and Montague: *New York Med. Journ.*, vol. 98, August 2nd, 1913, p. 227. ⁵ Dan McKenzie: *Journ. of Laryngol.*, vol. 30, January, 1915, p. 12. ⁶ Kirmisson: *Presse Méd.*, 1909, No. 38, p. 337. ⁷ Frank: *Journ. Amer. Med. Assoc.*, vol. 77, August 13th, 1920, p. 517. ⁸ Koplik: *New York Med. Journ.*, vol. 30, January, 1915, p. 12. ⁹ Pearson: *Lancet*, October 26th, 1901, p. 1117. ¹⁰ Guthrie: *Journ. of Laryngol.*, November, 1916, p. 479. ¹¹ Sokoloff: *Monatsschr. f. Ohrenheilk.*, vol. 45, 1911, p. 333. ¹² Wylie and Wingrave: *Lancet*, 1906, vol. 1, p. 1042.

DISCUSSION.

Mr. BELL TAWSE (Nottingham) referred to a child, aged 4, who developed a retropharyngeal abscess after tonsils and adenoids had been removed.

Mr. E. D. D. DAVIS (London) had seen retropharyngeal abscess develop some time after efficient enucleation of tonsils. One case was possibly tuberculous. He advocated the use of the Davis gag in opening such abscesses. The head was extended over a sand-bag so that it was lower than the larynx; the gag was then inserted and an excellent view obtained.

The PRESIDENT (Dr. Brown Kelly, Glasgow) asked Dr. Guthrie if it was a fact that the pharynx was attached posteriorly to the prevertebral fascia in the middle line. He did not think so, nor was it his experience to find the abscess on one side or the other of the middle line, but rather diffused behind the pharynx. This was important from the diagnostic standpoint: deep cervical abscesses pointing in the pharynx pushed the deep cervical fascia and the deep vessels towards the middle line and were confined to one side; retropharyngeal abscess pushed these vessels outwards. He emphasized the importance of opening retropharyngeal abscesses without an anaesthetic.

Dr. DOUGLAS GUTHRIE, in his reply, said he was quoting Waugh in suggesting that detonsillized patients were immune from retropharyngeal abscess. He would further investigate the anatomy of the part concerned in view of the President's criticism.

CLINICAL MEETING.

DURING the afternoon of July 21st and 22nd a number of extremely interesting and instructive cases were shown by Mr. A. R. TWEEDIE and Mr. BELL TAWSE.

Four cases of laryngo-fissure for epithelioma of the larynx were demonstrated. Periods of from ten years to six months had elapsed since operation without recurrence. Three of these had had one and a half vocal cords removed.

Regeneration of the front of the skull was exhibited in the case of a young man, the subject of acute frontal sinus suppuration in 1923. Osteomyelitis of the frontal and parietal bones developed before operation. The affected areas were incised and drained. The sinusitis was attacked by resecting the septum, clearing out the ethmoids, and performing Howarth's operation on both frontal sinuses, the intersinus septum not being present. X-ray photographs showed the progress of bony restoration.