develop septicaemia, and the mortality is probably 10 per cent. The infection in these cases does not, however, seem prone to invade the respiratory tract.

The diagnosis is based on the coexistence of an acute sore throat, the high temperature, rapid pulse, furred tongue, profuse bloody discharge, and widespread mastoid tenderness. Early operation is indicated with provision of the freest possible drainage. Scarlatinal antitoxin sometimes seems to be helpful in septicaemic cases.

Mastoiditis in Infants with Enteritis.

It has been pointed out recently that many infants dying of an acute gastro-enteritis show, at necropsy, the presence of an acute otitis media and mastoiditis. It has been suggested that this latter infection is the primary one, and that the gastro-enteritis is a secondary result of the acute toxæmia of the middle-ear infection. I am not prepared to offer any opinion on this, but would only emphasize the importance of examining the ears of infants suffering from any acute febrile infection.

Parotid Mastoiditis.

Cases are occasionally met with in which an inflammatory swelling occurs in front of or above the ear as a result of mastoiditis. Such swelling is often associated with some oedema of the eyelids on the same side, and errors in diagnosis are common. The explanation of such cases is that the infection reaches the surface through cells at the root of the zygoma. If this possibility is recognized the diagnosis can be established by the signs or history of the middle-ear disease, together with the presence of some tenderness over the mastoid process.

Bezold's Mastoiditis.

This is a similar type, in which, however, the swelling occurs in the neck, the explanation being that the supuration bursts through a cell at the apex of the mastoid process and on the deep side of the sterno-mastoid insertion. The remarks just made as to diagnosis apply here also.

Tuberculous Mastoiditis.

Tuberculosis of the middle ear and mastoid process is usually met with in the infant. In a typical case, it is characterized by occurring in a child of under 1 year with painless and watery aural discharge, enlarged glands around the ear, and facial paralysis on the same side. The infection has been introduced via the Eustachian tube by infected milk.

Spurious Mastoiditis.

Two conditions may simulate an acute mastoid infection—namely, a furuncle of the posterior meatal wall and the so-called herpes oticus.

A furuncle of the posterior meatal wall not infrequently produces a tender swelling behind the auricle. Owing to the meatal swelling, the membrane is invisible and diagnosis may be difficult. If the hearing is relatively good in the affected ear, otitis media is unlikely. The slight degree, or absence of fever or constitutional disturbance is also helpful. In addition, tenderness on moving the auricle is suggestive of a furuncle rather than of a bone infection. Sometimes, however, it is impossible to decide whether one is dealing with a meatal furuncle or a mastoid suppuration, except by the performance of an exploratory incision. If, as a result of such incision, it seems reasonably probable that the soft parts only are involved—that is, that one is dealing with a meatal condition—it is important to avoid any interference with the bone, owing to the risk of introducing infection. I can remember a case of infection of the soft parts in which a fatality ensued as the result of opening the bone.

Herpes oticus is the name given to a rare condition, in which herpetic inflammation of the ganglia of the seventh and eighth cranial nerves gives rise to intense pain in and around the ear, with a herpetic eruption on the pinna and in the meatus, facial paralysis, and nerve deafness. The combination of earache, aural discharge from the ruptured vesicles, deafness, and facial palsy, not infrequently leads

to a mistaken diagnosis of acute otitis media and mastoiditis. If it is realized that such a condition may occur, it will be recognized.

The diagnosis of an acute infection of the mastoid process, therefore, depends on the recognition of one or more of the many possible signs and symptoms. Pain may be slight or absent. Tenderness is usually present and often strictly localized. Fever and aural discharge are not infrequently absent. Some defect in hearing is more or less constant, and swelling, when present, may be situated behind, in front of, above, or below the ear.

In conclusion, a word or two as to the type of operation to be performed. The object of such operation is to provide drainage. Care should therefore be taken to open up all infected cells. Since, however, the middle ear will recover if not interfered with, it is unwise to pass a bent probe into the aditus to make sure that one has opened the antrum. This proceeding, although commonly done, is extremely liable to dislocate the incus, with resultant permanent damage to the hearing.

It was formerly the practice to pack the operation cavity with gauze and to continue such packing until the cavity had become obliterated. This, in addition to being painful, is unnecessary. In latent cases the incision can be sewn up except for the provision of a small rubber drain at the lower end. In the more acute cases, I find that the best results are obtained by leaving wound and cavity widely open. If, however, instead of filling the cavity with gauze, either thin rubber dam or a strip of oil-silk is used, the pain associated with subsequent dressings is entirely obviated. As soon as the cavity is granulating and showing signs of closing, I believe that there is nothing to be gained by attempting to keep it open with any form of packing.

BRAIN ABSCESS WITH UNUSUAL FEATURES.

REPORT OF TWO CASES.

BY

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BRAIN abscesses may be classified under the three headings of adjacent, traumatic, and metastatic. The two cases which are here recorded belong to the last group, for, although the second case is of aural origin, yet pathologically and clinically it falls into the metastatic class. In both instances the main cerebral infection was contralateral to the original focus.

CASE I.

A man, aged 24, was admitted to the Northern Infirmary, Inverness, on May 25th, 1929. Ten days before admission he had received a punctured wound of the right lower eyelid from a garden stake. The wound oozed a little, and he had some headache, especially on the right side, for a few days afterwards. His vision was not affected. He had had a similar accident to the left upper lid ten years previously.

Examination revealed a punctured wound of the inner half of the right lower eyelid extending upwards and inwards for half an inch, but apparently not perforating the conjunctiva. Both lids showed some inflammatory oedema, and pus was present in the conjunctival sac. The bulbar conjunctiva showed chemosis and generalized congestion. The remaining structures of the eye were normal.

Progress Notes.

May 26th to June 3rd: The chemosis and discharge disappeared, but there was some bleeding from the nose, and severe frontal headache, worse at night. He vomited twice. The general condition improved.

June 4th: Pressure below the supraorbital margin revealed considerable tenderness on both sides. No pus was seen in the middle meati, and no oedema or redness of skin over the frontal sinuses. Transillumination and x-ray examinations showed relative obscurity. The diagnosis made was double acute frontal sinusitis, and conservative treatment was ordered.

June 6th to 12th: Headaches not so severe; less tenderness on pressure over the sinuses. He complained of stiff-neck and tenderness of the muscles of the nape of the neck, giving pseudo-head retraction. There was some pain in the epigastrium.

June 13th: The patient was generally irritable. The knee-jerks were not elicited, but the Babinski test gave a flexor response. Some paresis of the right side of the face was noted. At no time was there any convulsion.

June 14th: An exploration was made for orbital abscess, but no pus was found. Paralysis of the muscles of expression of the right side was observed.

June 19th: The patient became drowsy and resented being moved. The tongue was furred. There was now complete paralysis of the right side of the body, gradual in development. Slight tenderness still persisted over the frontal sinuses. The right pupil was rather larger, and reacted more sluggishly. There was slight papilloedema of the right disc, but cerebraction too poor to permit determination of the visual fields. The Babinski reaction was extensor, and marked ankle-clonus on the right side was noted. Optic aphasia and perseveration were present; the abdominal reflex was indefinite. Pain was produced by tapping over the left temporal region, but further examination of the nose and ears was negative. Marked emaciation was noticed from the date of the previous examination.

A, Exploration for orbital abscess. B, Lumbar puncture; operation; atropine 1/100 grain, morphine 1/6 grain.

June 23rd: Incontinence of urine and faeces supervened. A lumbar puncture was performed; the spinal fluid was under marked pressure, but clear. The cytological and bacteriological examinations were negative. The procedure was followed by a convulsion, but no further paralysis.

June 24th: Under local anaesthesia a horseshoe incision was made over the left temporal region, and a flap was reflected downwards. The skull was trephined, and the opening enlarged downwards towards the ear. The membranes were under tension, and no pulsation was present. The dura was incised, and the brain explored; at a depth of 1½ inches about a drachm of thick pus was evacuated. A drain was inserted, and the wound partially closed.

June 26th: Secondary haemorrhage occurred, probably from the dural vessel.

July 4th: The patient died, seven weeks after the accident.

Post-mortem Report.

The brain showed generalized oedema and a temporo-sphenoidal abscess 1 inch in diameter, involving the left internal capsule and spreading towards the base. There was very little attempt at encapsulation. The frontal sinuses were not apparently inflamed, and no pus was present in either of them. No thrombosis of ophthalmic veins was present.

Comment.

At first sight this would seem to be a metastatic brain abscess originating from the septic focus in the right lower eyelid and carried through the circulation to the left cerebral hemisphere. A consideration of the usual characteristics of metastatic brain abscesses reveals, however, some unusual features.

Wells Eagleton,¹ in his monograph, states that metastatic brain abscesses have an apoplectic onset, and are usually situated in the white substance of the brain. It is true that this apoplectic stage may be of very short duration, but careful watch was kept in this case for that symptom.

There would appear to be three possibilities for the spread of infection in this case.

1. An examination of the anatomy of this area shows that the veins of the lower lid join the angular vein, which passes through the foramen caecum to enter the superior ophthalmic vein, and thence the other venous sinuses. Experimentally² it has been shown that, in the presence of a disturbance of the circulation such as a thrombosis of the flow from one venous sinus to another may follow abnormal paths. It would therefore be possible for a retro-thrombophlebitis to spread by this vein to the left cerebral hemisphere. This route of infection is mere conjecture, as

specimens for pathological examination could not be obtained. On its assumption, however, it would seem that the condition that was taken to be a double acute frontal sinusitis was really a thrombosis of these veins, causing the frontal headache and pain on pressure over the sinuses. This would account for the absence of any macroscopical changes in the frontal sinuses.

2. The second possible route of infection is from the frontal sinuses. Infection may have occurred here, and a thrombosis of the veins which drain these sinuses have followed, leading to the left-sided brain abscess by a retro-thrombophlebitis. In this eventuality, owing to the absence of any macroscopical changes in the sinuses, we must assume that the sinusitis subsequently cleared up.

3. The third possibility is that the infection was purely haematogenous; although some of the usual phenomena were not observed, this was owing to their transient nature.

I am indebted to Dr. T. Chalmers, under whose care this patient was admitted, for permission to publish this case.

The second case which I am reporting is of interest more from the clinical picture it presents than from any pathological consideration.

A woman, aged 21, was admitted to the Northern Infirmary on September 27th, 1929. She had had an intermittent discharge from the right ear since an attack of measles at the age of 7. Since August the discharge had been worse, and she had had pain in the right ear from the fortnight preceding admission. Two days before admission her local doctor was called in because she was feverish. He found she had a temperature of 104° F., and on examination of the ear he pulled out a piece of cotton-wool and obtained a copious discharge of foul-smelling pus. The evening previous to admission he had noticed some mental confusion. The patient, who had recently graduated M.A., was of considerable intelligence.

Examination showed that the tongue was coated and there was sordes in the mouth. The right drum showed destruction in its lower half; some granulations were present on the inner tympanic wall, and there was a suspicion of cholesteatoma present. The discharge was moderate in amount, and of foul odour. No bulging of the posterior meatal wall was observed, but there had been a recent furuncle there. No mastoid tenderness was present; she heard a whisper at 3 ft. The left ear was normal.

The patient showed marked mental confusion and could not reply to questions, although it was obvious that she understood them. She appeared to have lost all memory for words. Given a pencil she indicated its use, although not able to state its name. Asked her own name, she understood the question, but gave a little nervous cough, and could not reply. She wrote in a good hand, but the letters formed a mere jumble and made no sense. The abdominal reflex was present, and a Babinski extensor response; there was no real Kernig sign, but a slight head retraction. The pupils were equal and reacted to light. A suspicion of facial paresis was noted on the right side. No dysidiadokokinesis and no difference in the pull of the two hands could be detected; past pointing was normal. She had vomited that morning.

A lumbar puncture was performed; the cerebro-spinal fluid was not under pressure. It was sterile, and slightly turbid, and the cell count was 580 per c.c.m. The blood film showed a leucocytosis—90 per cent. polymorphs. No growth was obtained on culture.

On the same day an operation was performed under chloroform and ether anaesthesia, the usual post-auricular incision being made. The cortex was thick and sclerotic, with few cells. The sinus bulged far forwards into the antrum, which contained pus and cholesteatoma under pressure. There were a few granulations on the sinus wall, otherwise it appeared healthy. The dura of the middle fossa was exposed, and found to be bulging, but there were no granulations present on its surface. The radical mastoid operation was completed, and the cavity, after cleaning, was packed with eusol gauze; 100 c.c.m. of 10 per cent. hypertonic saline solution was injected intravenously at the conclusion of the operation.

Progress Notes.

On September 28th the condition was unaltered; the packing was removed from the ear, and the temporal lobe was explored, but no pus was found. A further 100 c.c.m. of hypertonic saline solution was given intravenously. The temperature was 101° F. and the pulse 124. In the afternoon the patient was very restless and had a slight convulsion, but did not lose consciousness. The temperature was then 102° and the pulse 160.

September 29th: She had a convulsion at 2 a.m. lasting two minutes, with twitching of face and arms; she was very restless, but quite conscious. The temperature was 100° and the pulse 124. The wound was dressed, and a further 50 c.c.m. of saline solution was given. In the evening the cerebral irritation became more

marked, and the patient died at 11 p.m. She was conscious until the last half-hour.

Post-mortem Report.—The brain showed generalized oedema, and the abscesses were present in it as follows. (1) A large subdural abscess covered the whole surface of the superior part of the left hemisphere, extending towards the base, and especially marked at the anterior part of the frontal lobe. (2) A left frontal lobe abscess, half an inch in diameter, contained thick grumous pus. There was some attempt at encapsulation. No stalk connecting it with the subdural abscess was found. (3) A right temporal lobe abscess, three-quarters of an inch in diameter, was situated nearer the occipital lobe, and not immediately adjacent to the mastoid region. This appeared to be more recent than the frontal lobe abscess, as there was very little attempt at encapsulation. The left mastoid and the sinuses showed no evidence of infection.

Comment.

It is obvious that the history given of this patient's illness was totally inadequate, but further inquiry from her doctor and relatives failed to elicit any other facts.

The case was diagnosed as meningitis, with the suspicion of a right temporo-sphenoidal abscess, but the possibility of a contralateral brain abscess was not seriously considered. The facial paralysis was taken to be due to involvement of the nerve in its canal, and not to a cortical disturbance. It was the only real localizing sign present, and in view of the post-mortem findings this is rather remarkable, as there must have been considerable pressure over the whole motor area from the very large subdural abscess. The infection here was haematogenous, but again we were unable to obtain any history of an apoplectic onset. Since the cerebral condition was of several days' or weeks' duration, during which time the patient was not under medical observation, this fact may be discounted. The duration of the illness would also account for the fact that the blood cultures were sterile, as organisms are soon eliminated from the blood once the cerebral infection has commenced. The findings in the cerebro-spinal fluid are what one would expect in view of the pathological findings.

The aphasia stands out pre-eminently in the clinical picture. This should have directed our attention to the left hemisphere, especially when we had ascertained that the patient was right-handed. It differs, however, in some respects from the aphasia observed in a temporo-sphenoidal abscess of the left side. Obviously several of the higher centres³ were involved, and if we analyse her symptoms we can pick them out.

1. She had a motor aphasia, since she could not repeat sentences, or, indeed, speak at all. This centre is usually said to be located in Broca's area; Marie and Head contend, however, that motor aphasia is not caused by interference with a specific area or tract, but that the area of the cortex involved is in relation to the squamous suture.

2. Whether she had a partial word-deafness is more difficult to determine, owing to the above symptom. At any rate, she had not a total word-deafness, since some questions asked were certainly understood.

3. She had a sensory agraphia, since she could not write a sensible sentence; this centre is in the angular gyrus. It does not appear that she had a word-blindness (alexia), which would have indicated involvement of the second occipital convolution.

4. There was probably involvement of some of her association tracts, but this is impossible to determine.

It is rather remarkable that with a subdural abscess of such a size the patient remained conscious until the end of her illness. One would have expected her to be far more drowsy and comatose than she was.

The post-mortem findings call for little comment. Jobson⁴ and others have recorded cases of contralateral brain abscesses, but it would seem that these were not true metastatic abscesses, but rather due to a retro-thrombophlebitis. I have been unable to find a reference to a chronic otitis causing metastatic abscesses in the brain, without showing any other evidence of the generalized pyaemia, but no doubt it has occurred.

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A SIMPLE AND SAFE METHOD OF OESOPHAGEAL INTUBATION.

BY

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A PATIENT reduced to fluid nourishment is immeasurably better off when he can take this by the mouth than when he must receive it directly into the stomach—in other words, a tube in the oesophagus is far preferable to a tube in the stomach, all things being equal. This qualification is necessary since intubation of the oesophagus may involve difficulty and danger in the introduction of the tube, and discomfort and uncertainty afterwards. Unless these defects of intubation can, to a great extent, be eliminated the procedure will not commend itself as a substitute for gastrostomy. It is the purpose of this short communication to describe a method of intubation which in large measure, I think, disposes of these objections.

In the first place, several concessions to gastrostomy should, in my opinion, be made. Gastrostomy is, I consider, the best treatment when the stricture is at the cricoid end of the oesophagus, and, except as an emergency or in special circumstances, it is preferable to the use of long flexible feeding tubes which extend from the mouth to the stomach, and to the use of those made of perishable material, or of such as are employed with anchoring threads in the mouth. After conceding so much to gastrostomy, however, there still remains a considerable field for intubation in those cases where the obstruction is in the thoracic part of the oesophagus or at the cardiac end, and especially where the growth is not very extensive and where the condition of the patient is good.

The suitability of the case for intubation having been determined, the object in view is to traverse the stricture with a tube of suitable size by means of a technique that is as quick and simple and safe as possible. The best tube to use is the one devised by Souttar. Being a closed

The drawings illustrate the method of intubation described. A, Wool-carrier. B, Cannula. C, Wool plug. D, Souttar's tube. E, Gum-elastic tip.

spiral of wire it is flexible and it is made with certain tortuosities which favour retention. The average length of the tube should be about 2½ inches, but on occasion a longer one up to 3 inches could be used. The lumen should not exceed 6 mm. at the lower end and 10 mm. at the expanded end. The larger sizes of Souttar's tubes I consider dangerous, requiring as they do considerable stretching of the friable stricture and the use of a very large oesophagoscope tube.

The essence of the method of intubation now to be described is the fitting on the lower end of the tube of a gum-elastic tip which guides the tube safely and surely through the stricture, and then, having done its work, is disengaged from the tube and passes down into the stomach and intestines. The gum-elastic tips are conical in shape and about 3½ inches long. Their bases are specially made to fit into the lower end of the tubes, the latter being filed