degree of purity as to lead anyone who did not know the history of the case to conclude that nothing had at any time been amiss with it. Some huskiness—gradually decreasing, however—may remain for a year or longer.

In the case which I have to-day brought under your notice, I propose to perform tracheotomy, but not until the respiration is more markedly affected than it is at present. I shall then allow the tube to remain in the windpipe until the growths have separated, which I feel almost certain will take place within the year.

NOTES ON A CASE OF ABSCESS OF THE LUNG SUCCESSFULLY TREATED BY DRAINAGE.*

By J. W. CRERAR, M.B.,
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THE diagnosis and treatment of abscess of the lung are perhaps not so simple as to make the record of another case either commonplace or superfluous.

A boy, J. P., 9 years of age, was seen on March 2nd, 1898. He was suffering from pneumonia of the right lung. The percussion dullness of the right base became more marked in a day or two, but no fluid was present, as was proved by puncture. In the course of 8 or 10 days he was apparently quite convalescent. He was not seen again until April 1st, when it was at once evident that he was profoundly ill. His mother stated that "he had been failing" for the previous fortnight. He was extremely emaciated; his skin was dry and harsh to the touch, and of a dull yellow grey colour; his pupils were widely dilated, and his expression anxious. The photograph (Fig. 1) taken at this time well illustrates his appearance. He had a harassing cough, but no expectoration. His temperature on this day was 99° F., and his pulse 134.

Fig. 2.—J. P., July 22nd, 1898, 4½ months after operation; note scar and good thoracic contour.

On April 3rd his temperature was 103° F., his pulse 144, and his respirations 36 in the minute. The right side of the thorax did not move freely, and over the nipple measured 27 cm., as compared with 25 cm. on the left. Anteriorly, there was no abnormal percussion dullness except towards the axillary line, where a dull area joined the liver dullness. The left margin of the heart extended just beyond the nipple line. The liver was not depressed. The respiratory murmur on the right side was puerile, with an occasional rhonchus. There was no cardiac murmur. Posteriorly, percussion gave an impaired note over the whole right side, which became absolutely dull from the level of the fifth dorsal spine to the base. Vocal fremitus was present all over the right side. Auscultation revealed well-marked bronchovesicular breathing above the level of the

fifth spine, with bronchophonic vocal resonance. Below that level the breath sounds were more distant, and were almost lost from the level of the eighth spine. The vocal resonance was ægophonic over the greater part of the base. A sharp, squirting, systolic murmur was present over an area, about an inch in diameter, just internal to the vertebral border of the scapula, opposite the fifth spine, the significance of which was not apparent. Examination revealed no abnormality on the left side.

The diagnosis of empyema was made. Early operation was deemed imperative, and on the next day, April 4th, I performed the following operation, assisted by Dr. Bannerman. A large needle of a serum syringe was introduced upwards and backwards through the seventh intercostal space in the posterior axillary line, and pus was at once found. A portion of the eighth rib, 4 cm. in length, was resected. The pleura was thin, and did not bulge; it was punctured with dissecting forceps but no pus appeared; the opening was dilated, and a finger introduced to explore. The pleural cavity was healthy, smooth-walled, and limited by adhesions above. The needle was passed through the upper adhesions, but no pus was drawn off. It was then introduced through the skin over the seventh space, and pus was again struck. Evidently the case was one of localised empyema or one of abscess of the lung. To guard against the risk of infection of the lower pleura, the cavity of the wound was stuffed with sterilised gauze. Through the previous skin incision extended backwards below the angle of the scapula, 4 c.cm. of the seventh rib, and 5 c.cm. of the sixth rib were then resected. The pleura which "underlaid" the sixth rib was bulging and yellow, but no pus escaped on puncture. The needle was then passed repeatedly in various directions without result, until at last pus was struck by puncturing the bed of the seventh rib-fragment, the needle being directed inwards and slightly forwards. The needle was left in as a guide, was followed by dissecting forceps, and the wound dilated. Considerable pus and dark blood clot flowed out, with free bubbling of air. A finger was introduced into the cavity which was found to be rather smaller than a tangerine orange, and to have soft, ragged walls. During these latter manipulations bloodstained mucus was expectorated. A short rubber tube was placed in the abscess cavity, and the lower pleural wound freshly stuffed. The skin incision was mostly stitched up. In the very weak condition of the child, shock was considerable, and hypodermic injections of ether were administered during the operation, and an enema of bovril and whisky given at its close. On reflecting that, next to the shock, the great risk in the case was the danger of septic infection of the lower pleura, and thus of possible superadded empyema, I removed the skin sutures and left the wound open, to allow of accurate plugging of the lower pleural opening. Also, for fear of the drainage tube causing ulceration of any pulmonary vessel which might be in the walls of the cavity, the tube was replaced by sterilised iodoform gauze, which was the dressing employed throughout the course of the case. When the wound was being dressed air whistled and bubbled loudly in the abscess cavity. Fortunately the abscess proved to be single. Nothing eventful marked the future history of the case. The lower pleural wound was healed by May 31st, and by June 21st the child was completely cured. In the pus from the abscess cavity there was a quantity of alveolated elastic tissue, and many pneumococci and a few staphylococcus groups.

I may be allowed to indicate some points of special interest with regard to the diagnosis and treatment of the case: (1) That while a diagnosis of empyema was come to, this was in face of the fact that vocal fremitus was present throughout the right side, whereas in empyema, so far as my experience goes, the loss of vocal fremitus, along with the presence of percussion dullness, is the most constant and trustworthy sign of fluid in the pleural cavity of children. (2) That no pus was expectorated previous to the operation, and thus the diagnosis was rendered more difficult. When the gauze stuffing was removed at the "dressings" during the first few weeks some blood-stained muco-pus was usually expectorated. (3) That the systolic murmur, whose presence was noted internal to the right scapula before the operation, was found on subsequent examination, during the progress of the case, to have disappeared. The significance of this murmur was not evident, but in all probability, as the area of the murmur lay close to the site of the abscess, it was due to the bending or tension of a large pulmonary vessel by pressure of the abscess. In a similar case the discovery of such a murmur might assist in the proximate localisation of the abscess.

With regard to treatment, the case illustrates (1) the value of a large easily-manipulated syringe and exploratory needle—in this case a serum syringe—as a preliminary to rib excision, and, unless the diagnosis is beyond all doubt, as it often cannot be, the needle should be left in as a guide to the subsequent steps. Mr. Godlee¹ adversely criticises even this large form of simple syringe, and expresses his preference for the bottle aspirator. The smaller needle certainly does run the greater risk of blocking, but the simple manœuvre, which I first learnt from Mr. C. W. Cathcart, of having some sterilised fluid in the syringe before puncturing, which can be expelled to clear the needle if necessary, to some extent meets this objection, while the greater manageability of the simple syringe in the perhaps numerous attempts to hit the suspected abscess gives it a distinct advantage over the bottle aspirator. (2) The value of sterilised gauze plugging in preventing infection. (3) The superiority of gauze stuffing over the use of a drainage tube in the treatment of abscess of the

* Read before the Border Counties Branch of the British Medical Association.

lung, in that there can be no eroding pressure on any large vessel, and also because it is not liable to extrusion, as so frequently happens with drainage tubes in thoracic surgery.

Fortunately the lung was adherent to the costal pleura, and thus what might have been a very difficult operation was much simplified. Finally, although the consideration is of quite secondary importance, one need not in children, as the later photograph (Fig 2) (taken July 22nd, four and a half months after operation) illustrates, be deterred from excising considerable portions of ribs by the fear of future deformity, an observation which strictly applies also to the surgical treatment of empyema.

REFERENCE.

¹ BRITISH MEDICAL JOURNAL, January 21st, 1899, p. 133.

A MODIFICATION OF NEISSER'S DIAGNOSTIC STAIN FOR THE DIPHTHERIA BACILLUS.

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Now that the Klebs-Loeffler bacillus has been universally regarded as the cause of diphtheria, it is of extreme importance that the physician shall be able to recognise it with certainty.

Unfortunately the bacillus, although it possesses certain morphological characteristics, has, unlike the tubercle bacillus, no definite staining reaction, and in films stained by the ordinary methods it is sometimes very difficult to distinguish it from the so-called pseudo-diphtheria bacillus.

The usual method of staining as recommended in the textbooks is to stain for two or three minutes in Loeffler's methylene blue solution. I find that by this means the contour or general outline of the bacillus is well defined, but the granules contained in its interior are masked by the deep colour. In order to bring out the internal structure more clearly staining for a few seconds in carbo-thionin solution has sometimes, especially in older cultures, very clearly demonstrated the terminal granules, which often show well-marked metamorphatism as well as the involute forms.

Staining in very weak solutions of carbo-fuchsin shows the sheath and the contained granules even better than methylene blue; but none of these stains—at least in my hands—have proved sufficiently diagnostic, especially in films of membrane.

Neisser¹ has somewhat recently introduced a new method of double staining the bacillus, which is regarded as diagnostic.

The method has been described in the BRITISH MEDICAL JOURNAL, 1889, ii, p. 599, by Dr. Hewlett as follows:

1. One gram of methylene blue (Grubler's) is dissolved in 20 c.cm. of alcohol (96 per cent.), and mixed with 950 c.cm. of distilled water and 50 c.cm. of glacial acetic acid.

2. Two grams of benzoin are dissolved in 1,000 c.cm. of boiling distilled water, and the solution is filtered. Coverglass specimens prepared from fresh serum cultures are stained in No. 1 for 1 to 3 seconds, rinsed in water, counterstained in No. 2 for 3 to 5 seconds, washed in water, dried and mounted in Canada balsam.

So treated, the diphtheria bacillus appears as a slender longish rod, stained brown, and generally containing granules of a deep blue or ink tint. There are usually two granules, situated at the poles; occasionally a third at the middle of the rod.

The value of Neisser's stain has been borne out by Fraenkel.²

Having had the opportunity of seeing a slide so stained, I tried to get similar results from a pure culture of the diphtheria bacillus, and found that although occasionally successful, more frequently I met with failure. To anyone who has experienced the difficulty of double staining—say the leucocytes of the blood with eosin and methylene blue—this is not surprising. I therefore regarded Neisser's method as most unreliable in cases in which one has to determine the presence or absence of the bacillus.

My friend, Mr. F. Tanner, of Bournemouth, after experiencing similar failures, suggested modifying Neisser's method by treating the films with a solution of iodine after staining with methylene blue. The following is the method which we have found to give absolutely constant and reliable results:

1. The films from a culture or membrane are spread on slides or cover glasses, preferably the former.

2. They are fixed in the ordinary way by heat or by immersion for a few minutes in equal parts of ether and absolute alcohol.

3. Stained in Neisser's acid methylene blue (the formula given above) for 10 to 30 seconds.

4. After washing they are immersed in Gram's iodine solution or Weigert's modification (namely, iodine 1, potas. iodid. 2, water 200) for 10 to 30 seconds.

5. Again, thoroughly washed in water and stained in the vesuvium solution (formula as above, or preferably double this strength) for 10 to 30 seconds.

6. Dried and mounted in Canada balsam.

We have found that the exact time for immersion in these three solutions seems of little importance, except as regards the depth of colour, but half a minute in each gives good results.

The diphtheria bacilli thus stained appear as slender rods of a yellowish-brown colour, each containing a granule at both ends, with sometimes one in the centre. The granules are always contained in, and appear somewhat larger than, the bacilli. They are said to be oval, not round; but as far as I can determine they are perfectly round.

This modified method, like the original process, is extremely useful in films from a culture, as by its means no granules are demonstrable in the pseudo-diphtheria bacillus. I have also succeeded in films made from the membrane or from swabs of the throat in cases of the disease, but here a difficulty may arise from the resemblance that fragments of certain forms of leptothrix bear to the Klebs-Loeffler bacillus.

The ordinary form of leptothrix is never likely to be confused with the diphtheria bacillus, but small pieces may appear as narrow short rods having round granules of a bluish-black colour at their extremities, and in a film made from a swab taken from the throat a single bacillus may be either leptothrix or the diphtheria bacillus. If a group of eight or ten bacilli about the same size are seen together the case is almost certainly one of diphtheria.

Two cocci placed some distance apart may, when stained by Neisser's original method, appear somewhat like a diphtheria bacillus; but if one remembers that the granules are never found free, and that the fact that the cocci—even if they retain the methylene blue—are separate, no difficulty will be experienced.

REFERENCES.

¹ Zeits. f. Hyg., 1897, p. 443. ² BRITISH MEDICAL JOURNAL EPITOME, January 22nd, 1898.

MEMORANDA:

MEDICAL, SURGICAL, OBSTETRICAL, THERAPEUTICAL, PATHOLOGICAL, Etc.

NEUROTIC ULCERS OF THE MOUTH.

IN connection with Dr. Sibley's interesting paper on this subject, may I venture to suggest the possibility that the affection may be due in some cases to a perversion or partial failure of the thyroïdal functions? Cracks and fissures of the tongue have often been observed in myxœdema, and an elderly patient of mine suffered at intervals from a burning pain in the tongue for years before being put on thyroid treatment. Singularly enough, the day after Dr. Sibley's article appeared a lady of 40 years consulted me about profuse menstruation, and she stated that during the last period she had had a burning pain in the tongue and roof of the mouth, with swelling of the lower eyelids and the lips, so that she had even experienced a temporary difficulty in speaking. I believe there may be symptoms of thyroïdal disease long before the development of general myxœdema, and that there may even be cases in which the latter never appears at all. It is impossible to enter at length into the question; but numerous circumstances related by Dr. Sibley, especially in connection with the stomatitis which he describes, seem to me very significant; indeed, it is probable that the state of the tongue and parts of the mouth in two of his cases was really due to a localised, if temporary and recurrent, myxœdema.

Turning now to Dr. Jacobi's cases, for the reference to which I beg to thank Dr. Sibley, this view of the pathology receives further confirmation. The first case he describes occurred in a man who, though fairly well developed, had no whiskers, no hair on the pubes nor in the axilla, whose sexual organs were those of a child of ten years, and who had great difficulty in