but on the peritoneal surface in the neighbourhood there were a number of yellowish-grey miliary tubercles. Behind the cæcum there was an abscess of about the size of a hen's egg. Small greyish tubercles were scattered thickly through the retro-peritoneal tissue behind the ascending colon; there were a few also on the under surface of the right half of the diaphragm. There was some general peritonitis, and a few grey miliary tubercles were found on the intestines. The right lung contained three abscesses; there was an abscess of about the size of a walnut in the base of the lung at a point at which the lung was adherent to the diaphragm, there was a smaller abscess on the middle lobe, and a third one in the apex of the lung. Nothing abnormal was found in the left lung or in the other organs. *St. eppingeri* was isolated in pure culture from the pus of the retro-cæcal abscess, from a small tubercle in the connective tissue behind the ascending colon, and from the pus of the pulmonary abscesses.

It appeared clearly that the streptotrichosis was the result of an accidental infection during the performance of the operation, and there is a close parallelism between the history and that of a case recorded by MacCallum, in which infection of the peritoneal sac by *St. eppingeri* occurred during an operation of gastrostomy.

Excluding the two cases—one of pulmonary, the other of peritoneal infection—in which an acid-fast streptothrix was present, the series includes 51 cases in which the infecting parasite was either probably or certainly a species of the first or third group of pathogenic streptotrichæ which have been referred to. It is true that in 10 of the cases neither culture experiments nor animal inoculations were attempted, and that in 21 other cases attempts at isolating the streptothrix which was present resulted in failure. But acid-fast organisms were carefully looked for, and since streptotrichæ of the first and second groups grow with comparative freedom on artificial media it is permissible to presume their absence in the negative cases, and to assume that the infecting organism was in all probability some species of the third group. The 51 cases of streptotrichosis represent a type of infections caused by parasites other than those of the acid-fast group, in which there is little tendency to invasion of parts remote from the seat of primary infection except along continuous or directly across contiguous tissues. Although in many of the cases, and especially in the pulmonary streptotrichoses, the duration of infection was already considerable when the patient first came under notice, secondary foci were found in only four. In two cases of appendicitis there was suppurative thrombosis of the portal vein, with infection of the liver and spleen in one case, and of the mesenteric glands in the other; in one case of pulmonary streptotrichosis there was a single cerebral abscess, and in the other, the only case of lung infection with an acute history, there were secondary foci in the spleen, liver, and brain. On the other hand, a tendency to progressive invasion of planes of connective tissue was noticeable in some of the cases. In one case after an infection of the tonsil there was a slow invasion of the subcutaneous tissue on the front of the neck; in a case of appendicitis there was a widely spreading infection of the retro-peritoneal connective tissue; and in cases of pulmonary streptotrichosis there has been extensive infection of the subcutaneous tissue of the chest, after perforation through an intercostal space. The common streptotrichosis of the ox resembles this type of human streptotrichosis, in that in a very large majority of the cases the disease shows little tendency to spread, except by extension along directly continuous tissue from the primary seat of infection, which in a very large majority of the cases is in or about the mouth and pharynx.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, MARYLEBONE-ROAD, N.W.—The annual meeting of the supporters of this hospital was held on Feb. 22nd, Sir Samuel Scott, M.P., presiding. The report stated that 1793 patients were admitted into the wards last year and 2333 patients were attended and nursed in their own homes. While the total expenditure amounted to £7150, the total income was £5580 only, leaving a deficit of £1570. The chairman pointed out that the total expenditure during the past three years had exceeded the total income by no less than £3287. This position was due to the fact that the amounts received from donations and legacies were much less than formerly. With regard to the legacies there had been a great falling off. He earnestly hoped that a larger measure of public support would be forthcoming, otherwise it would be impossible to continue the work on the present scale. Any curtailment of the benefits the hospital provided would entail great hardship on the poor women who sought its aid.

A Clinical Lecture

ON

A CASE OF INTRACRANIAL TUMOUR WITH ALTERATIONS IN THE COLOUR FIELDS.

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GENTLEMEN,—The patient to whose case I propose to draw your attention to-day is a married man, aged 56 years, a passenger guard by occupation. He was admitted to the infirmary on Nov. 27th, 1909, complaining of attacks of severe crampy pain in the left calf and loss of power in the left leg.

History.—The patient stated that prior to the present illness he had been a healthy and steady man; he had never suffered from any venereal affection. Two months before his admission to the hospital he was suddenly seized with severe pain in the left calf and shaking (clonic spasm) of the left leg; in consequence of this pain and spasm he was unable to stand. The pain disappeared after about four minutes, but the shaking continued for about an hour. After this attack he returned to work and he continued perfectly well for three weeks. He then had a *second attack*; it commenced with severe pain in the left calf; this was followed by a choking feeling in the throat and by loss of consciousness; there was no shaking of the leg during this attack. Five days after the second attack he had a *third*; it was characterised by agonising pain in the left calf, followed by loss of consciousness; in this attack he fell and hurt the left shoulder. After this attack he had a headache. A *fourth attack* in which he did not lose consciousness occurred a few days later; in this attack, after the cramp and pain in the left calf developed, "he felt," he says, "something rise up the left side of the body to the throat, and then go down the left arm." A *fifth attack* occurred a week before his admission to hospital; it was attended with shaking of the left foot, evidently the result of clonic spasm; he timed the movement and found it occurred 60 times in a minute; this spasmodic contraction of the foot and toes lasted for about an hour. After this attack his leg became paralysed, and for six days before his admission to hospital he was unable to walk.

Now that is a very definite history—recurring attacks of painful tonic spasm (cramp) in the left calf, usually followed by painless clonic spasms in the muscles of the left leg; sometimes attended with loss of consciousness; on one occasion on which there was no loss of consciousness attended by an aura which had a very definite course (a feeling of something passing up the left side of the body and then down the left arm); and finally followed by loss of power in the left leg. The family history was unimportant.

Condition on admission.—The patient walked with difficulty owing to loss of power in the left leg; there was also very decided loss of power in the upper part of the left arm. The knee-jerk on the left side was exaggerated; there was sustained ankle clonus on the left side; the plantar reflex showed active flexion on the right side, no toe movement on the left side. There were no sensory derangements. There was no headache. (Six months before he came to hospital he had occasionally had momentary shooting pain in the head on getting out of bed, but we attached no importance to this.) No vomiting; no giddiness; the optic discs were normal. Lumbar puncture showed a marked lymphocytosis (from 200 to 250 lymphocytes in a field of 450 diameters); the fluid escaped under low pressure. The heart, kidneys, and other viscera were healthy.

Diagnosis.—My house physician came to the conclusion that the symptoms were largely functional. This opinion was based on the general impression which the conduct and behaviour of the patient made upon his mind (the patient was very voluble and described in great detail the most trivial feelings and symptoms) and upon the facts—that the difficulty in walking varied very considerably within short periods of time; that on one occasion the pain and twitching (tonic and clonic spasm) which occurred in the

left leg (both the leg and thigh) while he was being examined were relieved by a hypodermic injection of H₂O, a hypodermic injection into the thigh immediately stopped the twitching in the thigh, and a hypodermic injection of H₂O into the calf, which was subsequently given, immediately stopped the twitching in the calf.

I could never reconcile myself to this diagnosis. The sustained ankle clonus in the left (paralysed) leg; the absence of toe movement on the left side (imperfect Babinski on the left side) with active flexion on the right side; the lymphocytosis in the cerebro-spinal fluid; the very definite character of the spasmodic attacks (tonic spasm with cramp and Jacksonian attacks) in the left leg; the march of the aura (up the left side and down the left arm); the loss of consciousness which attended some of these attacks, and the loss of power in the upper part of the left arm (shoulder and elbow),—all seemed to me to point to an organic lesion. The age and sex of the patient also supported this view. The subsequent course of the case has shown that it is correct.

Subsequent progress of the case.—On Dec. 18th the patient had an attack of what appeared to be influenza, associated with some rise in temperature (100·8° F.), headache, and vomiting. (The headache and vomiting were merely temporary; the absence of headache and vomiting is remarkable seeing that great increase of the intracranial pressure was found at the operation—see *infra*.) On the 23rd I found that the retinal veins were unduly full, but there was no swelling of the discs. On Jan. 3rd, 1910, distinct papillitis was present in both eyes, slightly more marked, I thought, in the left disc. On this day perimeter charts of the fields of vision both for white and for colours were very carefully made by my junior house physician. The field for white in both eyes was considerably constricted; the fields for yellow and blue were markedly constricted and were much smaller than the fields for red; the field for yellow was much smaller on the left than on the right side. The chief point of interest in the perimeter charts is the very marked constriction of the fields for yellow and blue in comparison with the fields for red.

Until recently it was supposed that the condition of the fields of vision which is present in this case (constriction of the fields for white and for colours with interlacing of the fields for yellow, blue, and red, the yellow and blue fields being much more constricted than the red fields) was characteristic of functional and hysterical conditions. But quite recently it has been shown by Dr. James Bordley, jun., and Dr. Harvey Cushing¹ that this condition of the colour fields is present in a large proportion of cases of intracranial tumour. They think that the alteration is probably due to increased intracranial pressure; they suggest that, if this is so, this condition of the colour fields will be found not only in cases of intracranial tumour, but in other conditions, such as uræmia, in which the intracranial pressure is increased. With regard to the colour fields in hysteria they state:—

We find, upon a careful review of the extensive literature, that every conceivable alteration in the form and colour fields has been ascribed to hysteria; but there are two conditions emphasised as being distinctly pathognomonic; one of them the view of the Charcot school, which attributes to these states the concentric contraction of the field for form with partial or complete colour reversal (dyschromatopsia); and the other the view that hysterical subjects have a predilection for red—merely another way of saying that the red field may encircle the blue or the blue become inverted.

Their observations on the colour fields in cases of intracranial tumour are summarised as follows:—

The data derived from these 56 cases, owing to these special precautions, may therefore be of special value. The figures relate to the conditions which were present at the time of the first examination, often before the diagnosis of tumour was certified:—

1. Interlacing of colour lines the predominant feature	25
2. Colour inversion the predominant feature	9
3. Hemichromatopsia without corresponding change in form field	4
4. Islands of blue blindness (scotomata)	3
5. Blue blindness	3
6. Complete green blindness	1
7. Complete achromatopsia	5
8. No colour change whatsoever	6

The striking features are: 1. The fact that in many of the charts the fields for form are unchanged, while there is a very definite change in the fields for colour. 50 out of the 56 cases show colour changes; only 18 showed definite form changes. 2. In four of the cases in which the colours interlaced tumours were found, though there was no choked disk. 3. In 41 out of 42 cases examined subsequent to operation,

whether palliative or radical, the colour lines became restored to their normal relative position. The dyschromatopsia seems to depend in some fashion upon an increase of intracranial tension, the relief of which usually causes its early subsidence, and it is possible therefore that it may characterise organic lesions other than tumour.*

* Since these statistics were compiled we have had additional evidence, from sources other than our own clinic, of the correctness of the view that these changes in the colour fields, so long looked upon as peculiar to hysteria, occur with great regularity in patients suffering from the tumour symptom-complex.

But to return to the facts of this case. The optic neuritis has rapidly increased and is to-day (Jan. 21st, 1910) very marked; the fields for white and for colours are much more constricted than they were; the interlacing of the colour fields is still very marked; the fields for green have now completely disappeared; and, what is a very curious feature (if it is a fact confirmed on subsequent examinations), the fields for white are now in places smaller (more constricted) than the fields for red, blue, and yellow. The paralysis of the left upper extremity has now become complete; the hand and forearm are now completely paralysed; three weeks ago the upper arm only was involved. The paralysis of the leg is less than it was on the patient's admission to hospital. The patient continues to be free from headache and vomiting.

I am disposed to think that the paralysis of the leg, which was marked when the patient was admitted to hospital, was probably, in part at least, post-epileptic in character. This would explain the improvement in the condition of the leg. The gradual way in which the paralysis of the arm has extended and increased is highly suggestive of an intracranial tumour. The optic neuritis confirms this diagnosis. There can, I think, be no doubt that we have to do with an intracranial tumour. If this is so, the absence of headache and vomiting is a striking (negative) feature of the case. Headache and vomiting are present in the great majority of cases of intracranial tumour; headache in particular is rarely absent, and I always hesitate to commit myself to a definite diagnosis of an intracranial tumour when there is no headache. In 192 cases of intracranial tumour of which I have notes and which I have recently analysed, headache was absent in 6 cases, or 3·12 per cent.; and vomiting was absent in 42 cases, or 21·76 per cent.²

In my cases of intracranial tumour in which headache was absent or slight there was usually little or no increase of the intracranial pressure. The absence of headache and vomiting in this case is certainly suggestive that the intracranial pressure is not increased, and the low pressure under which the cerebro-spinal fluid escaped when a lumbar puncture was made in this case points in the same direction. But against these facts we have the rapid way in which the optic neuritis has developed and become very marked.

There can, I think, be no doubt that the tumour involves either the cortical centre for the left upper extremity or the fibres passing from that centre to the internal capsule. The gradual way in which the paralysis has extended is, I think, suggestive of a subcortical glioma, which has destroyed the arm fibres and irritated the leg fibres or the cortical centre for the leg. The severe cramp-like spasm which ushered in the fits, which were the characteristic feature of the case in its early stages, is, to my mind, suggestive of irritation of conducting fibres rather than of cortical grey matter. In typical cases of Jacksonian epilepsy due to irritation of the motor cortex there is no pain. I have, however, seen severe pain and tonic spasm in at least one other case of cerebral tumour in which there were Jacksonian fits; in that case the tumour was a subcortical glioma.

The marked lymphocytosis in the cerebro-spinal fluid is at first sight suggestive of a syphiloma, but the absence of headache and the very definite statement of the patient that he has never had any form of venereal disease are strongly opposed to this view. In all of the cases of cerebral syphiloma of the cortex which I have seen headache has been a prominent symptom. The age of the patient, too (56 years), is against syphilis; he is rather old for a syphilitic growth. There is nothing in the case to suggest a tuberculoma; in fact, everything is against that form of new growth. Both the positive and negative facts (if we exclude the lymphocytosis in the cerebro-spinal fluid) are in favour of a subcortical glioma.

As regards treatment, an operation is obviously indicated. The rapid way in which the optic neuritis is developing shows this. I expected to find a subcortical glioma, but

¹ Archives of Ophthalmology, 1909, vol. xxxviii., No. 5, p. 451.

² Clinical Studies, vol. viii., p. 107.

whether it would be possible to remove it or not was another matter.

Operation.—Mr. J. M. Cotterill removed a large flap of bone over the right motor area. On opening the dura the intracranial pressure was found to be very greatly increased; the convolutions were flattened, but appeared to be otherwise normal; no tumour could either be seen or felt. A large hernia cerebri has since developed at the seat of the exploration; a few days after the operation the patient's mental condition became seriously deranged and during the night he tore off the bandages and made the wound septic. The patient died and was examined post mortem. Below the fungus cerebri there was an area of recent acute cerebritis; deeper down an extensive gliomatous tumour which had extended to the wall of the lateral ventricle and across the under surface of the corpus callosum slightly to the right side. The lining membrane of the ventricles was in a condition of purulent inflammation.

Additional remarks.—The fact that at the time of the operation the intracranial pressure was so greatly increased is a noteworthy point, seeing that there were no headache and no vomiting. We happen to have several other cases of intracranial tumour in the wards at the present time. In all of them the colour fields have been very carefully mapped out by my junior house physician, Dr. H. F. Smith. Let me briefly mention the leading features of those cases.

CASE 2.—This patient, a married man, aged 41 years, was admitted to the infirmary on Dec. 15th, 1909, suffering from headache, vomiting, right-sided hemiplegia, and aphasia. The paralysis had developed gradually six weeks before his admission to hospital; it first affected the right hand, then extended to the arm, leg, and face on the same side. Two weeks before his admission to hospital his speech became affected and his mental condition showed some change—drowsiness, impairment of memory, and irritability of temper. The headache was very severe; it was felt in the frontal and occipital regions and in the nape of the neck. There was double optic neuritis. The visual acuity in each eye was 50/80; there was some constriction of the fields for white and for colours, but no interlacing of the colour fields.

CASE 3.—This patient was a man, aged 22 years, a tin-plater by occupation, who was admitted to the infirmary on Jan. 29th, 1910, suffering from headache, vomiting, and giddiness; these symptoms had developed a month previously. The headache was severe and was referred to the frontal and occipital regions. There was marked double optic neuritis. The visual acuity was 6/9. The fields, both for white and for colours, were markedly constricted, but there was little or no interlacing of the colour fields. The right external rectus was completely paralysed and there was some weakness of the left face (left seventh nerve). The abdominal reflex was brisk on both sides. There was no fine tremor of the hands. The knee-jerks, which were brisk on admission to hospital, rapidly became diminished and could only be elicited on reinforcement. The patient was mentally dull. There was no paralysis of the arms or legs, no hypotonia, no incoördination. When the patient walked he tended to fall to the left side. The symptoms seemed to point to a tumour in the posterior fossa, but the localisation was by no means certain; it is possibly in the frontal lobe.

CASE 4.—The patient, a single woman, aged 43 years, was admitted to the infirmary on Dec. 20th, 1909, suffering from fits and complaining of headache and occasional vomiting. The fits, which had commenced a year previously, were of two kinds—ordinary epileptic fits attended with loss of consciousness and localised clonic spasms affecting the right hand and arm, unattended with loss of consciousness and apparently of the nature of Jacksonian attacks. The headache was referred to the left temple; there was occasional giddiness. The optic discs were clear on admission, but a fortnight later slight optic neuritis (observation confirmed by Dr. A. H. H. Sinclair) developed in the left eye. The fields of vision showed right-sided hemianopsia with marked constriction of the fields for white and for colours on the left side. There was no interlacing of the colour fields. The abdominal reflex could not be obtained on either side. The plantar reflex showed an extensor response on the right side. There was no fine tremor of the hands. Under large doses of iodide of potassium the headache and vomiting have subsided; the patient feels very much better. The Jacksonian attacks have ceased. The condition of the optic discs and fields of vision remain as stated above.

THE TREATMENT OF TUBERCULOUS ABSCESES OF BONY ORIGIN BY CONSERVATIVE METHODS.¹

THE TECHNIQUE OF ASPIRATION.

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The Treatment of Tuberculous Abscesses.

A FIRST principle governing the treatment of tuberculous abscesses is the avoidance of their spontaneous opening and subsequent sinus formation. The formation of a sinus is almost always followed by secondary infection not only of the sinus itself but also of the focus of origin of the disease, and when this focus is an extensive bony one, as in cases of hip disease and spinal caries, the consequences which ensue are often disastrous. Profuse suppuration and fever exhaust the patient and may themselves cause death, while a general infection is not uncommon. The danger of a tuberculous abscess does not lie in its specific infection: closed, such an abscess is harmless; opened, the prognosis becomes serious. Long before the true nature of a tuberculous lesion was understood the serious results of the spontaneous opening of the abscess were recognised. In 1858 Bouvier said: "It is common to see both children and adults in whom a large abscess causes little inconvenience, but when this abscess is opened acute pain and extensive inflammation gradually exhaust, and may even kill, the patient." But if at all times there has been agreement as to the dangers of the open tuberculous abscess, there has been by no means universal agreement as to the best means to avoid this complication and the dangers to which it gives rise.

During the last century many variations have taken place in the treatment of tuberculous abscesses, owing to the different conceptions which have been held as to their nature and evolution. Three chief epochs may be considered. The first corresponds with the time before Pasteur's great discoveries, when tuberculous bony disease was not separately classified but was commonly confounded with a diffuse group of bony inflammatory conditions. During this period, in the total absence of any conception of sepsis and asepsis, treatment was almost futile. The certainty of the consequences of infection prevented rational attempts at surgical interference. Dupuytren, Larrey, and Michel, indeed, employed large incisions, but David, on the other hand, was strongly opposed to any intervention. Indeed, he states, "I have always observed that patients die in whom an abscess has been opened," and he insisted upon the avoidance of all interference.

At this time the gradual opening of the abscess by the application of caustics was in vogue, but the results were by no means satisfactory. Simple puncture, with or without aspiration (Boinet, Pelletan), had already convinced partisans. Abernethy, in England, practised the "valvular system," which consisted in evacuating the contents of the abscess by introducing the blade of a tenotome obliquely into the tissues in such a way as to form a valvular track between the skin incision and the point of penetration of the abscess cavity, this valve preventing the entrance of air. Boyer, in France, imitated this practice, naming it the "subcutaneous method," but in spite of some passing success the mortality, according to Follin's classical figures, was always considerable, being from 56 to 70 per cent. in hip disease and spinal caries. The failure of a method, which later, when better understood, was to give such marvellous results, was due to many reasons, of which the principal were imperfect local treatment: absence of or inefficient immobilisation, deplorable hygienic conditions, and, above all, complete ignorance of the necessity of adequate sterilisation of skin, instruments, and dressings.

A new era opened with the works of Lannelongue in France and Koenig in Germany. Tuberculous disease of the bone

¹ In this article the authors are especially considering abscesses in connexion with tuberculous disease of spine, hip, and knee-joint.