mitral incompetency occurred, as might be expected. I have not yet seen a case of pure hyperpiesis in the native without arterial thickening, but I have seen two patients, not included in this series, where the systolic blood pressure was over 300 mm. of mercury. They first came to the ophthalmic surgeon (the late Dr. M. Baranov) for failure of vision, which was due to retinitis.

The actual causes of arterial thickening in the native are as obscure as in the white. Most of them do heavy work, some of them are alcoholics, few of them are subjected to great mental stress.

Acute and Subacute Bacterial Endocarditis.

The bacteriology of these cases has not been elicited in this series. In one case the streptococcus and *Bacillus coli* were cultured and in another a pure streptococcus. In two of the fourteen cases the Wassermann reaction was positive, and in one there was an underlying chronic endocarditis of the mitral valve alone. The clinical findings were similar to those in Europeans, and these were confirmed by necropsies. Heart failure, cerebral embolism, or infarctions were responsible for the deaths.

There is great difficulty in the diagnosis of these cases. Acute tuberculosis and typhoid fever are both rife, and with the scanty history the diagnosis is often impossible in early stages. Given the complication of malaria with one of these acute illnesses, the differential diagnosis is still more difficult. In all the cases the heart was enlarged, and in all the disease was fatal within a comparatively short space of time. None of them showed any remissions—that is, they were all of the acute form of the disease.

Unclassified Cases.

Of three unclassified cases one suffered from aortic regurgitation, one from a myocarditis of unknown etiology, and the third from an infection of the myocardium by the cysticercus. A generalized infection with cysticercus is not uncommon among the natives.

Some Uncommon Types of Cardiac Disease.

Auricular flutter due to syphilitic myocarditis is rare, but has been described. One such case occurred in a native female under my care; this has not been included in the series. In this case normal rhythm was induced by digitalis-quinidine therapy, antisyphilitic measures also being carried out.

Syphilitic Pericarditis.—This is seen among natives, but is rare. It appears as an effusion accompanied by failure of compensation; the clinical signs are those of a pericardial effusion. Paracentesis of the fluid shows it to be blood-stained, as I have been told, and this, with vigorous syphilitic measures, is sometimes successful in treatment.

Tuberculous Pericarditis.—The pericardial lesion presents itself with the physical signs of a large effusion with extreme failure of compensation, accompanied occasionally by oedema of the arms as well. Paracentesis gives no fluid. Necropsy reveals that visceral and parietal pericardial sites are occupied by solid plaques of tuberculous material, sometimes half an inch thick. The myocardium is sometimes much weakened by infiltration with tuberculous material. The whole organ appears to be enlarged.

Conclusion.

It does not appear that there is a wide divergence between the etiology, pathology, and clinical signs of heart disease in Europeans and African non-Europeans. In this paper stress has been laid on etiological factors. It has been pointed out that the mortality rate is high in the series; this must mean that the course of cardiac disease is shorter in the non-European, or that the patient is admitted in a later stage of the disease than the European; or both factors may come into play.

Some important etiological factor in the causation of rheumatic fever might be elucidated by comparing the Kaffirs living altogether in the native state with the Kaffirs in the towns. The medical history of the Kaffir before the influence of European civilization affected him is unfortunately not to be ascertained. The climate of South Africa, speaking generally, is one of sunshine, and

is hot and dry. It seems that climatic conditions as an etiological factor in the causation of rheumatism must be discountenanced here.

Nasopharyngeal infections or bad teeth cannot be dismissed as factors as they commonly occur in hospital patients. Their evidence in this series has not been determined. The dietary factor is a very variable one in the series; it is difficult to obtain exact knowledge, but the Kaffir, as a rule, takes a diet of greater carbohydrate content and less fat and vitamin constituent than the European.

As regards non-rheumatic cases, little can be added to the facts already quoted. It must be reaffirmed that the mortality among the patients with degenerative types of lesion is extremely high, and that the syphilitics have a high aneurysm incidence.

Much work is yet to be done, especially in diseases of rheumatic etiology. It is to be hoped that one day a commission will be instituted to inquire into this—directly to help the native, indirectly to elucidate factors in the causation of acute rheumatism—and so throw light on a very baffling medical question.

REFERENCE.

¹ *British Medical Journal*, January 22nd, 1927, p. 133.

A CASE OF GRADENIGO'S SYNDROME.

BY

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THE association of temporo-parietal pain and paralysis of the sixth cranial nerve in connexion with an acute otitis media on the same side was pointed out by Gradenigo in 1904. The attack of otitis media may be of short duration, and the abducent paralysis may follow in a few days or in one or more months.

Considerable attention has lately been paid to this syndrome, but yet it seems sufficiently rare to make the following case worthy of report. Symonds¹ quotes Sears as having recently collected records of 317 cases since Gradenigo's paper in 1904, but he states that in some of these cases the sixth nerve palsy appeared to be secondary to extradural or cerebral abscess, and therefore should not properly be included in the category of Gradenigo's syndrome. In the case recorded below an interesting feature is the fifth nerve distribution of the pain in addition to the usual temporo-parietal situation.

A married woman, aged 44, was admitted to this hospital under Dr. V. H. Blake on December 17th, 1927, for severe neuralgia of the left side of the head in association with acute otitis media on that side. She had been under Dr. Blake's care since December 4th, when she complained of pain in both ears. The next day her temperature rose to 100° F., and both tympanic membranes were inflamed. Her temperature continued between 99° and 100° F. till December 9th, when it became normal. On December 10th inflammation in the right ear was settling down, but the left tympanic membrane had perforated. Discharge continued for only four days, and when admitted on December 17th her temperature was normal, but the left drum was again bulging. Whilst in hospital her temperature remained normal till December 26th, but the neuralgia was persistent. It was temporo-parietal and facial in distribution at first, but later only temporo-parietal. The pain was so severe that narcotics had to be administered every evening, and even then she passed only indifferent nights.

Diplopia was first noticed on December 23rd, and on the following day Dr. Blake asked me to see the case and carry out any appropriate treatment. The temperature and pulse were then normal. The patient's appearance was that of weariness from continuous pain. There was no oedema or tenderness over the left mastoid, but there was slight meatal tenderness. Rinne's test was negative on both sides, and Weber's test was referred to the left ear. Bone conduction was slightly diminished. The stopwatch could be heard at a distance of 1 inch with the right ear, but not at all with the left. The whispered voice could be heard at rather more than 4 feet on the right side, but on the left it was only audible at 6 inches. The left tympanic membrane was dull and opaque, and there was a marked bulge of Shrapnell's membrane of a dull red colour. On the right side the membrane was retracted. There was complete paralysis of the sixth left cranial nerve. Other movements of that eye and all movements of the other eye were good. The pupils reacted normally to accommodation and light, and there was no nystagmus. There was some hyperaesthesia of the left side of the face as tested with

cotton-wool and a pin, but it was not marked. There was no facial weakness, and no paresis of the ninth, tenth, eleventh, or twelfth left cranial nerve. There was no retropharyngeal swelling. Cerebration was apparently normal. There was no stiffness of cervical muscles, and abdominal reflexes, knee-jerks, plantar reflexes, etc., were all normal. The fundi were examined by Mr. William Wyllys and reported normal.

The further progress of the case was as follows:

December 25th: There was pain during the night, but the patient is easier this morning.

December 26th: Pain was very severe during the latter part of yesterday and all the night in spite of the narcotics. She is now in great pain. Begs for something to be done. Bulging of Shrapnell's membrane has increased and is now bright red. Inflammation is spreading down the posterior segment. Deafness on the left side has increased, and the whispered voice can now only be heard at 3 inches. Meatal tenderness is very marked. There is definite periosteal thickening over the mastoid and slight tenderness. Other signs as before. The temperature is 99.2° F. and above normal for the first time since admission.

Operation.—Paracentesis was first performed. Schwartz's operation revealed a small granulation in the antrum, but no pus was seen. The tegmen antri was then removed. The dura was not under tension, and the surface was finely granular. The cavity was packed with bipped gauze.

December 27th: Patient has had a very good night without any narcotic. She states that aural pain and neuralgia have completely disappeared, but there is slight pain round the left eye. Diplopia as before.

December 28th: The pain round the left eye is rather worse; no return of other pain.

December 29th: First dressing, under nitrous oxide anaesthesia. The gauze wick which had been placed in the meatus was soiled with a little pus. Packing from the wound was fairly clean. She has had two good nights.

December 30th: Patient says she has been easier since the dressing was done yesterday, but still has some pain round the left eye.

December 31st: No pain in the ear or temporo-parietal region, but she has had more pain in the left eye, supraorbital region, and left cheek. Diplopia is still present, but there seems to be slight movement in the left external rectus.

January 3rd: She has had a few shooting pains in the left ear and temporo-parietal region.

January 8th: The pain round the eye has been improving gradually. She now has very little except on waking in the morning. There have been no more temporo-parietal pains. She sleeps well at night and often by day. The cavity is granulating slowly.

January 16th: There has been no pain round eye for several days, but she still wears an eye-shade in the evening as artificial light worries the eye.

January 26th: The mastoid cavity is now filling satisfactorily with healthy granulations. The patient is leaving the ward to-day and will attend daily for dressings. Eye movements are as before.

March 1st: Complete healing of the wound has been very slow, but she ceased attending daily three weeks ago, since when she has been attending Dr. Blake, who states that he first noticed return of movement in the external rectus on February 22nd. There is no diplopia now, and all movements of the left eye are as good as those of the right.

In the treatment of this case two points are especially open to criticism.

1. Paracentesis alone might have been the only operative treatment necessary, and if the pain had not been relieved by this the Schwartz operation could have been performed later. This course was not adopted on account of the excessive pain the patient was then suffering, and had suffered all the previous night. The indications for mastoid operation *per se* were slight, but it seemed unwise to risk another night of such severe pain where there was the slightest doubt as to the condition of the mastoid antrum.

2. No lumbar puncture was performed. Reports seem to agree that not only is there no macroscopic change in the cerebro-spinal fluid in these cases, but there is seldom any change to be found on pathological examination. In addition, as the hospital has no pathological department an examination of the fluid would have been difficult to obtain.

Facial neuralgia was present in the early stages of the illness, and although the operation completely relieved the severe temporo-parietal pain, the patient complained for some time afterwards of pain of lesser intensity round the left eye and in the left cheek. The anatomical explanation of the syndrome would seem to offer an easy solution to this. After piercing the inner layer of the dura mater the sixth nerve lies for a few millimetres with the inferior petrosal sinus in between the two layers of the dura mater at the tip of the petrous bone in what is known as Dorello's canal. This canal is bounded below by the petro-sphenoidal suture, above by the posterior clinoid process and petro-sphenoidal ligament, internally by the dorsum sellae, and externally by the apex of the petrous bone.^{1 2} The

Gasserian ganglion lies in the trigeminal impression on the antero-superior surface of the petrous bone near its apex.

The syndrome is said to be due to a serous extradural inflammation implicating the sixth nerve in Dorello's canal. Hence from the proximity of the Gasserian ganglion it would be expected that the fifth nerve involvement would not be uncommon. This involvement has been stressed by Rimini,³ and was marked (with slight photophobia) in the case reported by Hamilton and Kerr.⁴

There was no involvement of any cranial nerve other than the fifth and sixth, and there was no homolateral retropharyngeal swelling, as occasionally occurs and was noted by Leitch.⁵

The notes of this case were submitted to Mr. G. J. Jenkins for his opinion, and I am exceedingly indebted to him for his comments. He considered the case to be a typical Gradenigo's syndrome, and he particularly emphasized the fifth nerve distribution of the pain, which he states is more common than is generally recognized. I have to acknowledge my thanks to Dr. V. H. Blake for permitting me to treat the case, for additional details in the history before admission to hospital, and for valuable criticism in the presentation of these notes.

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- ³ E. Rimini: *Arch. Internat. de Laryngol.*, July-August, 1926.
- ⁴ E. Burt Hamilton and J. A. Kerr: *Journ. of Laryngol. and Otol.*, vol. xliii, p. 43.
- ⁵ J. W. Leitch: *Ibid.*, vol. xlii, p. 457.

TREATMENT OF ACTINOMYCOSIS.

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In an article published in the *British Medical Journal* on March 6th, 1926 (p. 418), I gave an account of four consecutive cases of actinomycosis which had been rapidly cured by small doses of tincture of iodine administered in milk. I believed at the time that iodine given in this way was in a colloidal state. When milk is added to tincture of iodine a point is reached at which the mixture becomes colourless and tasteless. This result is more rapidly attained when cream is substituted for milk, and it appears that the iodine unites with the cream to produce an iodized fat.

In this connexion the observations of Dr. Warwick Preston¹ are of great interest. He records two cases of actinomycosis of the lung which improved rapidly after the injection into the trachea, for diagnostic purposes, of lipiodol—an iodized oil. A subsequent course of iodine and milk completed the cure. This suggests that various iodized fats may have a similar specific action upon actinomycosis.

Black mycetoma is a disease produced by an organism similar to the ray-fungus, and I have received from India reports of two cases which were cured by iodine and milk, and of one old-standing case of "Madura foot" which began to improve rapidly as soon as this treatment was instituted.

Since the appearance of my first article four additional cases of actinomycosis have been under my own care, all of which have been cured.

CASE I.

A man, aged 42, in July, 1925, was operated upon at another hospital for appendicitis. The wound was drained, and one month later he was discharged from hospital with a sinus at the site of operation. In September of the same year he was readmitted, and further abscesses were drained in the abdomen and right loin.

He first attended the Bristol Royal Infirmary on February 16th, 1926; he was then extremely emaciated and in constant pain. Hard masses filled the right side of the abdomen and extended across the epigastrium to the splenic region. Several sinuses were present in the right loin and the right side of the abdomen; from them there was a copious discharge of pus containing typical sulphur granules, and an immediate examination confirmed the presence of actinomycetes. He was given tr. iodi sine iodidi, minim v, thrice daily in milk until March 6th, when he was admitted as an in-patient. By this time all his pain had vanished; he could eat anything, and he had put on nearly a stone in weight. The masses in the abdomen had almost vanished, but there was still some thickening around one abdominal scar. Three sinuses were still present, but there was little discharge from them, nor could actinomycetes be identified any longer in the pus. He was discharged on March 17th.