fascia lata taken from the thigh and using drill-holes through the pubic bones. The Martius graft was found to be healthy and there was no difficulty in separating the vaginal wall from the subjacent fatty tissues. The wounds healed by first intention and the patient is now free of stress incontinence and feels satisfied that she is completely cured at last.

Case 6

A multigravida aged 33 was admitted to hospital on April 4, 1949, suffering from a vesico-vaginal fistula. She had had a difficult forceps delivery in 1946, after which a vesico-vaginal fistula had developed. Five attempts had been made to repair the fistula, which was situated at the junction of the urethra and bladder, but all had been unsuccessful. One attempt had been made by the transvesical route. The general condition of the patient was good. A fistula was located in the anterior vaginal wall near the neck of the bladder and the surrounding tissues were scarred almost to cartilaginous hardness.

The operation was performed on April 6, with the patient in the lithotomy position. Vaginal flaps were dissected away from the anterior vaginal wall and the fistula exposed. Tedious dissection was necessary to free the urethra and bladder of scar tissue and to remove as much scar tissue as possible. The fistula was closed by two series of Lembert sutures introduced in the usual way. The Martius graft was then fashioned from the right labium majus and interposed between the urethra and bladder above and the anterior vaginal wall below. During the operation there was considerable blood loss and a blood transfusion was given. The patient was nursed on her back with a self-retaining catheter for 10 days. Recovery was uneventful and at the time of writing the patient was completely continent and had not developed any stress incontinence.

This case is fairly typical of the results of repeated efforts to repair a vesico-vaginal fistula. My own impression is that the chances of successful cure without the employment of a Martius graft were problematical, and I am convinced that the successful result was due in great measure to the use of the graft.

Case 7

A multipara aged 47 was admitted to hospital on April 20, 1949, complaining of urinary incontinence. Two years previously she had been operated upon at another hospital for prolapse, after which she had developed stress incontinence. A second operation had been performed to cure this, the vaginal route being employed. Subsequently the incontinence had become continuous. A urethro-vaginal fistula was then found at the right side of the urethra about $\frac{1}{4}$ in. (0.6 cm.) above the external meatus.

Operation was performed on April 22. Lateral flaps of the vagina were dissected away to mobilize the urethra and the bladder. The fistula in the urethra was exposed and was closed by two series of Lembert sutures placed longitudinally, a self-retaining rubber catheter having previously been introduced into the urethra and bladder. A Martius graft was then fashioned from the tissues of the right labium majus and interposed in the usual way, particular care being taken to suture the graft accurately over the repaired fistula. The patient was nursed on her back with a self-retaining catheter kept in position for 10 days. She made an uninterrupted recovery, and at the time of writing was completely continent without any stress incontinence having developed.

Conclusion

This small series of cases illustrates the use of the Martius graft in operations on the lower part of the anterior vaginal wall, with particular stress upon operations for the cure of urinary fistulas. The operation cannot be regarded as a satisfactory method of treatment for simple cases of stress incontinence, although one success has been recorded and evidence from the other cases suggests that the Martius graft should not be utilized for the treatment of stress incontinence alone. On the other hand, for plastic opera-

tions involving the repair of urethro-vaginal and vesico-vaginal fistulas the graft should be regarded as being of the greatest value. The last four cases in this small series required formidable operations which I should not have undertaken with any degree of optimism without employing the graft. The results have been so good that I have thought fit to draw attention to what I regard as the extraordinary value of the method in vaginal surgery.

THROMBOSIS OF THE INTERNAL CAROTID ARTERY

BY

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"Hemiplegia from occlusion of the intracranial branches of the internal carotid artery is one of the most frequent clinical pictures met with in general practice and yet apparently one of the rarest from obstruction of the main arterial pathway in the neck. When one considers that these vessels are frequently ignored, both in clinical and pathological studies, it is not unlikely that many such conditions are overlooked. I would urge that in all cases presenting cerebral symptoms of vascular origin the main arteries of the neck be carefully examined for a possible diminution or absence of pulsation. Obstructive lesions of these vessels are apparently rare, but it seems certain that cases are overlooked from failure to make clinical and pathological examinations from this point of view."

Thus wrote Ramsay Hunt in 1914. In reviewing the literature of carotid occlusion he referred to thrombosis due to injuries of the neck—e.g., stab wounds and gunshot wounds—from disease of the vessel wall such as atheroma, or from extension of thrombosis from the innominate artery or the aorta, the result of atheroma or aneurysm. His thesis deals almost entirely with thrombosis of the common carotid, but he had no doubt regarding the possibility of involvement of the internal carotid artery alone, and he refers to a case reported by Brissaud (1898) in which hemiplegia in a man of 47 followed thrombosis due to annular endarteritis involving the upper part of the internal carotid artery. A precise clinical diagnosis of thrombosis of the internal carotid artery alone awaited the introduction by Moniz *et al.* (1937) of carotid arteriography. His demonstration of four cases in a series of 537 angiographies was followed by reports from others—Löhr (1936), Chao *et al.* (1938), Siegert (1938), Sorgo (1939), Hultquist (1942), Govons and Grant (1946), and others. Andrell (1943), in reporting nine cases, gave an excellent and detailed review of the literature, and Wolfe (1948), reporting another case, summarized recent knowledge. These reviews indicate that thrombosis of the internal carotid artery is not infrequent as a cause of neurological disturbance. The occlusion has been attributed to arteriosclerosis or to thrombo-angiitis obliterans, but in many instances the cause remains obscure. Further studies are necessary, and for this reason three cases that have been under observation during the last two years are reported.

Case 1

A man of 42 was admitted to another hospital on September 14, 1947, with headache and difficulty of speech. He had been quite well until three days before, when he suddenly felt giddy; he fainted, and on coming round had severe frontal headache. Next day he had difficulty in forming words and found that he

could not write them down. He had been drowsy since the onset, but on admission he was easily roused, and was co-operative and orientated. He was right-handed and, though understanding what was said, had difficulty in expressing himself, both in speech and in writing. Examination of the nervous system revealed slight weakness of the right side of the face only. His cerebrospinal fluid was normal. His blood pressure was 128/80. The electrocardiogram was normal, and the Wassermann reaction negative. There was normal pulsation in all the palpable arteries.

During the next six days his disability became more marked, with increasing stupor, until he had a complete right-sided hemiplegia and was doubly incontinent. His speech became unintelligible and his understanding was greatly impaired. Three weeks later he was admitted to the neurosurgical department for further investigation. He had improved a little and was no longer incontinent. He understood what was said to him but could not speak. There was a spastic right hemiplegia complete in the arm, but in the lower limb a little movement of the knee and hip remained. There was absence of vibration sense on the right side together with a right-sided hemianalgesia and hemianaesthesia. The right corneal reflex was absent.

FIG. 1.—Arteriogram of Case 1, showing occlusion of the left internal carotid artery.

Vision was normal, but a puzzling finding was a complete left-sided homonymous hemianopia. Charting of this was difficult because of the dysphasia. Air studies showed dilatation of the left lateral ventricle without displacement. Arteriography revealed an occlusion of the left internal carotid artery 2 cm. above its origin (Fig. 1). During the two years there has been only slight improvement in the hemiplegia and in speech. No evidence of thrombosis in other vessels has developed.

The cause of the thrombosis of the internal carotid artery remains obscure, but the hemianopia on the opposite side suggests that another vessel was also involved, and it is possible, therefore, that thrombo-angiitis obliterans was the responsible pathological process.

Case 2

A man of 52 was admitted on December 31, 1947, complaining of increasing weakness and numbness of the right foot and leg for two and a half years. Six weeks before admission the right hand and arm had been similarly afflicted. He was unable to give an adequate account of his illness owing to a marked intellectual impairment, but from his relatives it was gathered that he had changed from an indulgent, jolly, sober business man into a drunken gambler. He had become bankrupt and

was now morose and rarely spoke. His memory was markedly impaired. There was a right-sided hemiparesis, most pronounced in the foot and leg. There was no sensory impairment and no dysphasia. His visual acuity and fields were normal. The tendon reflexes on the right side were exaggerated and the right plantar response was extensor. All other relevant investigations, including the W.R., were negative. His blood pressure was 120/90.

Radiography showed a little calcification in the right posterior tibial artery, but all palpable arterial pulsations were normal. Air encephalography revealed dilatation of the left lateral ventricle without displacement. An arteriogram (Fig. 2) showed

FIG. 2.—Arteriogram of Case 2, showing thrombosis of the left internal carotid artery.

thrombosis of the left internal carotid artery 2 cm. above its origin from the common carotid.

During the past 18 months his condition has remained relatively unchanged. The thrombosis in this case was attributed to arteriosclerosis. The slow development may be attributed to recanalization of the thrombus, with further thrombosis as a cause of the more recent hemiplegia.

Case 3

A man of 38 was admitted on May 26, 1949. Three days before, while driving a van, he had been suddenly stricken by headache and pain in the neck, rapidly followed by paralysis of the left arm and left leg. Examination revealed a complete left-sided hemiplegia, including the face. Visual acuity and fields were normal and there was no sensory disturbance. There was marked neck rigidity. B.P. was 180/110. The cerebrospinal fluid was heavily stained with blood. The W.R. was negative. His past history revealed nothing relevant. A diagnosis of subarachnoid haemorrhage from a congenital intracranial aneurysm was made. Exploration through a right temporal burr-hole revealed a cavity from which 15 ml. of dark clot was evacuated. Carotid arteriography on June 18 showed complete obstruction in the right internal carotid one inch from

its origin (Fig. 3). The outline of the portion of the artery filled tails irregularly away to a fine point. The external carotid filled well. He was upset by this examination and further arteriography was postponed.

Since his admission there has been a slow improvement in the hemiplegia. In this case it seems reasonable to assume

FIG. 3.—Arteriogram of Case 3, showing complete obstruction in the internal carotid artery.

that the thrombosis originated at the site of the rupture of an intracranial aneurysm—the thrombus subsequently spreading downwards into the main arterial trunk.

Discussion

The full reviews of Andrell, Wolfe, and others make a detailed survey unnecessary, and therefore only some of the more interesting features will be discussed.

The degree of neurological dysfunction from thrombosis of the internal carotid artery will depend on the rapidity with which the occlusion takes place and on the collateral circulation through the vertebrals and the opposite carotid artery. No doubt the blood pressure and the state of the vessels play a part. The onset of hemiplegia is usually sudden, but may be preceded by headache and dizziness. The arm is usually more affected than the leg and the face. Hemianopia and hemianaesthesia may be present, and aphasia occurs when the appropriate side is affected.

From a study of the reported cases it would appear that the carotid syndrome of unilateral blindness with contralateral hemiplegia is rare in this condition.

The second case illustrates that the onset and development may be slow and simulate a space-occupying lesion—transient attacks of weakness of the limbs, progressing slowly to a more complete hemiplegia. In this group epileptiform attacks and mental deterioration are common.

Although some degree of recovery takes place it is usually far from complete, and in two of my cases a marked degree of functional impairment was present 18 months after the onset.

Diagnosis

This can be made with certainty only by carotid angiography. Cases with sudden onset may resemble the more common cerebral vascular accidents, while those with a chronic progressive course may resemble a space-occupying lesion. The arteriograms are quite typical. The branches of the external carotid artery are filled and the internal

carotid will show only in the first one or two centimetres of its course. Rarely the thrombosis may extend down to the origin from the common carotid. There is no doubt that some cases have been overlooked from lack of visualization of the vessels in the neck, and the arteriogram has been regarded as a failure when the branches of the external carotid alone show. When the contralateral vessels are injected the vessels supplying both hemispheres can be seen. Air studies will show atrophy on the corresponding side. The possibility that this condition may be a cause of neurological disturbance should always be borne in mind, and, as Govons has recently stated, "the onset of hemiplegia in the young should arouse suspicion, and careful examination of the arteries of the neck in all patients with hemiplegia, convulsive states, or syncope may lead to a more frequent diagnosis of thrombosis of the carotid arteries."

Aetiology and Pathology

The nature of the causative factors remains obscure. Inflammatory lesions or tumours in the vicinity, aneurysmal formation in the aorta or parent trunks, syphilis, embolism, and trauma—all so well known to older clinicians as aetiological factors—have been absent in the type of internal carotid thrombosis now under consideration. Trauma was thought by Sörgo to be of relatively frequent occurrence in the past history of his cases. In Andrell's series one case had had a severe injury 10 years before. Wolfe makes the interesting speculation that the thrombosis may be analogous to that in the femoral and popliteal arteries seen in young men in the Services during the war. In these, minute injuries due to muscular exertion or abnormally developed fascial bands were thought to be possible causes. Govons and Grant have reported one case in a man aged 24 with convulsive attacks dating from infancy. The history of a birth injury raised the possibility that the condition dated from trauma to the internal carotid artery sustained at birth. From my own experience and from a study of the literature it seems unlikely that trauma is of any importance, for in the majority of cases the patients have been quite healthy up to the onset of the thrombosis.

Hultquist, in a study of 3,500 necropsies, in which special attention was directed to the carotid arteries, found macroscopic evidence of thrombosis in the common and/or internal carotid in 69. He states that in all these the underlying lesion was arteriosclerosis. Doerfler (1935) has shown that arteriosclerosis of the internal carotid artery is not uncommon in young people and may be limited to that vessel. In two of Sörgo's cases the lesion was arteriosclerotic in origin. Three of Andrell's nine cases were examined histologically. Arteriosclerosis was found in one, thrombo-angiitis obliterans in another, and in the third thrombo-angiitis obliterans was found in the arteries of the brain although the carotid thrombosis was attributed to arteriosclerosis. Thrombo-angiitis of the cerebral vessels in association with internal carotid thrombosis has also been described by Sörgo, by Antoni (1941), and by Davis and Perret (1947).

Wolfe, in his analysis of 32 cases in the literature, found that in five a segment of the occluded internal carotid artery had been examined histologically. Arteriosclerosis had caused the thrombosis in three and thrombo-angiitis obliterans in two. In one fatal case the cerebral vessels showed changes due to thrombo-angiitis obliterans; in seven the cause was attributed to arteriosclerosis because of other clinical evidence. In the remainder no definite cause could be found.

Gilmour (1941) described a form of giant-celled arteritis chiefly affecting the aorta, the branches of its arch, and

their branches. Thrombosis of the internal carotid was found at necropsy in two of his four cases, but the clinical picture presented by his cases resembles that of periarteritis nodosa and is so different from those now under consideration that it is unlikely that the type of arteritis he described could be held responsible.

I have been unable to find in the literature a case similar to Case 3. Here there is no doubt that the thrombosis followed the rupture of a congenital aneurysm. It is possible that an aneurysm may be responsible in those cases with an apoplectic onset. The need for examination of the cerebrospinal fluid in every case is therefore clear.

From this summary it is obvious that the underlying cause is still obscure and further studies are necessary.

Treatment

Treatment for thrombosis of the internal carotid artery has hitherto been directed to the alleviation of spasm in the manner advocated by Leriche—by periarterial stripping, by cervical sympathectomy, or by excision of the thrombosed segment.

A study of the literature has shown no striking improvement after any of these methods. The course of the more chronic type of case indicates that recanalization of the thrombus may take place, and therefore excision of a segment of the artery appears to be unwarranted. The value of anticoagulants has not been estimated in this condition, but when early diagnosis can be made it would seem to be the most rational form of therapy.

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OGILVIE'S SYNDROME OF FALSE COLONIC OBSTRUCTION

IS IT A NEW CLINICAL ENTITY?

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Cases of large-bowel obstruction of which none of the usual causes could be demonstrated at operation have recently been reported (Ogilvie, 1948; Dunlop, 1949; Handley, 1949). Instead there was malignant-tissue infiltration of the retroperitoneal tissues in the subdiaphragmatic area. These authors have considered this to be a new clinical entity.

We have recently had three cases of large-bowel obstruction which clinically resembled those reported above but which differed from them in their operative findings.

Case 1

A man aged 59 was admitted to the medical side of this hospital on September 6, 1948, with the following history. He was perfectly well until one year before admission, when he had a coronary thrombosis. He was treated for this in another hospital for six weeks. Following this he began to complain of increasing constipation, fullness of his abdomen, occasional cramp-like pains in the epigastrium, loss of appetite, and some vomiting. These symptoms increased in severity, and for the four days before admission his bowels had not moved, his abdomen had become more distended, and he was vomiting after every meal. During the next few days, in spite of a fair amount of flatus and faecal results from soap-and-water enemas, his abdomen remained distended and he continued to complain of cramp-like epigastric pains.

The electrocardiogram showed widespread myocardial degeneration but no evidence of infarct. A radiograph of the chest revealed basal opacities due to post-pulmonary infarcts. A straight radiograph of his abdomen showed gaseous distension of the large bowel, whilst a barium enema revealed no abnormality.

The patient was seen by us in consultation on September 19. His abdomen was greatly distended, and he was complaining of colicky abdominal pain. Increased peristaltic sounds were audible on auscultation. Rectal examination was negative. Because the clinical picture seemed to be one of large-bowel obstruction, probably carcinoma, a laparotomy was advised.

This was carried out on September 19 by one of us (J. A. M.) through a right paramedian incision. The terminal ileum, ascending colon, and transverse colon were greatly distended. The descending colon appeared to be of normal size. No tumour could be felt. As this type of case had not been met with before it was felt that somehow a ring stricture had been missed. Accordingly, a transverse colostomy was performed. The colostomy was opened the next day, and though gas escaped there was no faecal result for five days. Thereafter it worked normally. The patient's convalescence was marred by the development of deep venous thrombosis of his right leg, but this was successfully treated with heparin.

As it was still thought that this patient had a carcinoma in the region of the splenic flexure a second laparotomy was performed on November 25 by Mr. Brandon, surgeon-in-charge. The abdomen was thoroughly explored, but no abnormality could be found. His colostomy was closed on January 12, 1949. Following this the patient experienced occasional colicky abdominal pains, but his bowels moved regularly.

Dr. Darma Setiawan, former Minister of Health in the Republican Government of Indonesia and now Personal Adviser to the Republican Premier of Indonesia, is staying in England until the middle of December by invitation of the British Council in order to study public health and hygiene and the National Health Service. He is a member of the medical profession and has specialized in gynaecology. He has recently visited the Ministry of Health for discussions on the National Health Service, urban water supplies, purification of river water, the care of children, and the work and organization of international health conventions. On November 21 he visited the Horton Mental Hospital, Epsom, Surrey, to meet General Sir Gordon Covell, Malarial Adviser to the Ministry of Health, and to see the laboratories of the malarial control research unit at the hospital. He has now gone to Bristol to study the health and hygiene services.