Proceedings of the Society of British Neurological Surgeons: 75th meeting

The 75th Meeting of the Society of British Neurological Surgeons was held in Harris College, Preston, on 19 and 20 May 1967. The President, Mr. Wylie McKissock (London), was in the Chair. During the course of the meeting the fourth Sir Hugh Cairns Memorial Lecture, entitled 'Beyond the diagnosis', was delivered by Professor Almeida Lima (Lisbon).

THE TREATMENT OF INTRACRANIAL ANEURYSMS

KENNETH TUTTON (Preston) discussed the rationale of operative treatment for intracranial aneurysms. He said that the problem would be simplified if we could estimate the natural history of an aneurysm in each individual case. He felt that small aneurysms in an early stage often gave symptoms indicative of their presence and, if left untreated, remained a threat to life from further haemorrhage or pressure on vital structures. He felt that in the acute problem natural mortality was probably less than surgical but in long-term results surgical treatment had better results to offer than nature. Unless the patient was conscious and reasonably alert, surgery in the acute stage was harmful but if operation was delayed until the patient had recovered from the acute effects of bleeding, real cure was possible in a high proportion of cases. The presence of spasm in larger arteries and their branches might well be a determining factor.

He felt that a good case could be made out for operating on posterior communicating type aneurysms in the early stage but middle cerebral aneurysms could be safely left until recovery from the initial episode was advanced. With anterior communicating aneurysms they always waited until the patient was fully conscious and, if possible, orientated. In some cases, further haemorrhages might determine early operation but in such circumstances mortality and morbidity was greatly increased. In some cases the onset of arterial spasm, demonstrated by angiography, might be an indication for operation.

ALEX DAWS (Preston) then described the surgical technique employed in these cases. He said that their policy was to use controlled respiration, moderate hypothermia (30°C.), and intravenous urea or Mannitol. Under such conditions they had been able to use temporary clips on feeding and emptying vessels which allowed an unhurried and detailed technique with careful dissection of the aneurysm sac. They had rarely had to resect any brain for access or use forceful retraction.

With middle cerebral aneurysms the carotid was exposed first and clipped, then the Sylvian fissure opened and the sac displayed. A temporary proximal clip on the middle cerebral allowed adequate examination and clipping of the sac or its neck. With carotid aneurysms their aim was to place a clip on the aneurysm neck and temporary adjustable clamps on the common carotid in the neck were often used. The approach was from above, or, if the aneurysm lay completely behind the carotid, under the temporal lobe. With anterior communicating aneurysms their aim was to obtain a cure by intracranial clipping and total ablation of the lesion. They used an interhemispheral approach with division of the falx and sagittal sinus anteriorly. Temporary control of both internal carotid arteries and usually both proximal and distal anterior cerebral artery, sometimes bilaterally, was extensively used.

In 79 cases of middle cerebral aneurysm, 10 had died and 44 made an excellent recovery; in 66 anterior communicating aneurysms, 14 had died and 36 made good recoveries; in 118 of carotid aneurysms, 20 had died and 89 made good recoveries.

THE SURGICAL REMOVAL OF CIRSOID ANEURYSMS FROM FUNCTIONALLY IMPORTANT AREAS OF THE BRAIN

J. C. CHRISTENSEN (Buenos Aires) described his experiences in a series of 18 cases of cirsoid aneurysm in functionally important areas of the brain. He described his surgical technique in detail and stressed the importance of using moderate hypothermia to 30°C. by external body cooling, hyperventilation, and systemic hypotension to 80-90 mm. Hg. He aimed at total excision of the lesion by careful dissection. Sometimes ligation of feeding vessels at some distance to the angioma was helpful, though vessels should, where possible, be ligated as close to the lesion as possible. He noted that previous bleeding often made operation easier as the haemorrhage seemed partially to dissect out the angioma from the brain. A complete preoperative angiographic study was essential to identify all the feeding and draining vessels.

Using this technique he had removed angiomas from the Sylvian fissure, the sensorimotor area and even the first and second temporal convolutions of the dominant hemisphere.

Five of six patients without preoperative haemorrhage had shown excellent results without any increase of neurological deficit. The sixth died after several operations. The results were less good in 11 patients with acute preoperative bleeding. Three patients operated on in coma did not survive though one lived for three months. The remaining nine were good results though

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some with large haematoma had some neurological deficit. He stressed that these good results had been achieved using simple and easily available methods.

**BIOCHEMICAL ASPECTS OF RUPTURED ANEURYSMS**

M. Buckell (London) outlined research in progress at Atkinson Morley's Hospital on three biochemical aspects: examination of local changes in haematoma and cerebrospinal fluid, biochemical profile at all stages of illness, and investigation of general metabolism by means of balance studies.

Reappearance of oxyhaemoglobin in cerebrospinal fluid absorption spectrum was helpful as evidence of re-bleed. Enzyme measurements were disappointing. Cerebrospinal fluid GOT exceeded plasma when there was obvious infarction. 5 HT-like activity was found in three of four haematomas from patients with spasm and not in five comparable specimens from cases without spasm; all nine contained a polypeptide active on smooth muscle and present in greater amount in spasm cases. Dr. Anne Uttley had found a prolonged thromboplastin generation time in 10 of 50 patients.

On admission cases of unexplained subarachnoid haemorrhage had little biochemical disturbance. Patients with aneurysms, angiomas, and primary intracerebral haemorrhage showed increased osmolality, urea, protein, haematocrit, haemoglobin, and whole blood specific gravity with less frequent, mild rises in transaminase and transient elevation of blood sugar. All these changes were more marked in comatose cases. Reduced bicarbonate concentration was often found in patients with demonstrable lesions, regardless of conscious level. Reduced arterial pCO₂ and raised pH were confirmed in another group of patients. Investigation of hypothalamic damage after ruptured aneurysm, with Dr. J. S. Jenkins, revealed a reversed diurnal cortisol rhythm in 21 of 60 cases.

Results of nitrogen, sodium, potassium, and fluid balance, with calorie intake, steroid excretion, and blood chemistry were presented for four patients.

**EXPERIENCE WITH TWO CASES OF MUSCLE EMBOLIZATION OF CAROTIDO-CAVERNOUS FISTULA**

C. B. Sedzimir and J. Occleshaw (Liverpool) described two cases of carotid-cavernous fistula which had been treated with muscle embolization. The first case, a man of 19, had probably developed a carotid-cavernous fistula after an extensive gunshot wound of the left side of the head and face two years before admission though the diagnosis had not been made at the time. At present admission he had sustained a subarachnoid haemorrhage and angiography demonstrated the fistula. A muscle strip was inserted into the internal carotid artery in the neck via the common carotid and allowed to embolize into the cavernous sinus with cessation of the intracranial bruit. A faint bruit returned 10 days later and radiographs showed that the muscle had moved on from the cavernous sinus to a cerebral vein.

The second patient, a woman of 44, was admitted with signs and symptoms of a fistula five days after a road accident. Angiography demonstrated the fistula. On this occasion a muscle embolus was inserted in the neck after the intracranial internal carotid had been occluded with a clip above the cavernous sinus. Control of the fistula with complete regression of abnormal physical signs was achieved by this procedure.

**DURAL SINUS THROMBOSIS**

R. M. Kalbag (Newcastle) discussed the problem of dural sinus thrombosis. He noted that only 217 cases had been recorded in the Registrar General's returns for the period 1952-61 and he felt that many cases were probably unrecognized during life and at necropsy. Even when a clinical diagnosis had been made this was seldom confirmed by angiography. He said that the angiographic findings included extreme slowing of the cerebral circulation and deep venous filling in the arterial phase but that final diagnosis depended on the persistent failure to fill of all or part of one of the dural venous sinuses. The presence of small anastomotic venous channels, usually in the region of the superior and inferior anastomotic veins, indicated a favourable prognosis, whilst failure to fill the Galenic venous system usually implied a fatal outcome.

He noted that opinions on prognosis had varied considerably but it seemed certain that the slower the evolution the greater the chance of recovery. The use of anticoagulants to limit the area of thrombosis could be dangerous and should probably be applied before there was spread to cortical veins, if at all.

**SUBTRACTION TECHNIQUE FOR CEREBRAL ANGIOGRAPHY**

G. Sullivan (Preston) described subtraction radiography as a technique of after treatment of radiographs taken during contrast medium injection. He said that it was used to reveal the shadows of the contrast medium which were apparently invisible, being hidden by the shadows of the radiopaque parts of the patient.

The method of obtaining a subtraction radiograph was demonstrated. This was followed by an illustration of the way in which subtraction radiography helped in obtaining diagnostic information from films taken of four patients who were investigated by arteriograms of the head and neck during injection by catheter of contrast medium into the aortic arch and main arteries arising from the arch.

He concluded that subtraction radiography was not only useful in improving poor radiographs but could show structures which, due to their position, were normally hidden by radiopaque parts of the body.

**VARIATIONS OF INTRACRANIAL PRESSURE RECORDED DURING EXTENDED OBSERVATIONS**

J. C. M. Currie (London) reported a study of intracranial pressure using a radio-pressure transducer. The method was described and illustrated in clinical use. Pressures were recorded in patients over several weeks. Observed changes in pressure were then shown due to the pulse, respiration, jugular compression, and posture in patients with normal and raised intracranial pressure.
The surgical removal of cirrhotic aneurysms from functionally important areas of the brain.

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