general and neurological condition of the patient affect the outcome of treatment, as do the site and relationship of the aneurysm and the attitude and experience of the surgeon, so that it is impossible to lay down general rules of treatment. However, some knowledge of the average mortality of the initial bleed in aneurysmal subarachnoid haemorrhage, the frequency of recurrent haemorrhage, and the effects of the subarachnoid blood on the cerebral circulation has accumulated. The possible benefits of surgery have been weighed against its risks, and various techniques of surgical treatment have been developed and evaluated.

When considering the prognosis of aneurysmal subarachnoid haemorrhage it is necessary to bear in mind that some patients die before the diagnosis is achieved, and even before admission to hospital. After admission to hospital the more seriously ill patients with spontaneous subarachnoid haemorrhage will not be subjected to angiographic investigation, and the presence of an aneurysm will not be disclosed. Even after transfer to a neurosurgical department there is further selection, for surgical treatment will be withheld from some patients and forestalled by a fatal recurrent haemorrhage in others. This means that surgical treatment is usually offered to the less seriously ill patients in the whole group, and even among them treatment may not be attempted because of the site or multiplicity of the aneurysms.

The mortality of the initial haemorrhage has been estimated at 43%. The function of the operation is to prevent recurrent haemorrhage, and the mortality from such recurrent haemorrhage in the first 12 months after the initial one has been estimated at 35% of the survivors of the initial haemorrhage. The risk of death is greatest in the first six weeks and falls to 10% after this, being smaller still as the months pass. Clearly to minimize the risks of recurrent haemorrhage the earlier operative treatment is instituted the better. However, it is the general experience that the operative mortality in the first week or even longer may be extremely high. This applies not only to morbidur or deteriorating patients but also to those who are drowsy with a minor neurological deficit. Vascular spasm and brain oedema secondary to subarachnoid haemorrhage and difficult operating conditions explain this. Many surgeons therefore feel that operation must be delayed until the period of increased mortality has passed, and of course in doing so accept the risk of a further and possibly fatal recurrent bleed.

Surgical treatment will thus often be delayed for one to three weeks after initial haemorrhage. The longer the delay, the smaller the risk of death or disability from recurrent haemorrhage, and it must be ensured that the risks of surgical treatment at a late stage do not exceed those of continued conservative treatment. This point has been clearly demonstrated in a recent study. In a group of 92 conservatively treated patients in good general condition, with a single aneurysm which had bled on average seven weeks earlier, nine died of recurrent haemorrhage during the subsequent 3½ years. Of 86 patients of similar type treated surgically after a similar average period, one died in hospital and four in the next four years. It seems clear then that reparative processes occur in the aneurysmal wall in many cases, and the view that surgical treatment is required even when the aneurysm is detected many months after the haemorrhage can no longer be held.

The technique of surgical management has improved. The value of the simpler procedures of cervical carotid ligature for internal carotid aneurysms and anterior cerebral clipping for anterior communicating aneurysms has been demonstrated in the prevention of recurrent haemorrhage and by postoperative angiography. Many series of intracranial aneurysms successfully dealt with by direct attack are now on record. Occlusion of the neck of the sac or obliteration of the sac with clips is the method of choice, but investment of the aneurysm with muscle or other material has its advocates. The mortality of these procedures has reached acceptably low figures in many series. Improved results depend on many factors. The selection of the patient is one of these. Others are controlled respiration during anaesthesia, hypothermia, and hypotension at the critical period of dissection of the sac. In an occasional case the assistance of the thoracic surgeon with temporary occlusion of the venous return to the right atrium and of the aortic arch has been valuable. Without doubt the increasing use of the operating microscope in neurosurgery will facilitate the dissection necessary to occlude the neck of the aneurysmal sac. Thus progress in the surgical management of these dangerous lesions has been made and will continue.

Fibrin and Cancer

Anticoagulants and fibrinolysins have been shown to reduce the growth and spread of malignant tumours in experimental animals. The induction of lipaemia, which favours the formation of fibrin, and the inhibition of fibrinolysis with epsilon-aminocaproic acid have been shown to encourage tumour growth. These effects may be independent of the coagulation mechanism, for in no case is the action of the experimental agent confined to that system alone, but the first hypothesis must be that fibrin formation is involved in neoplastic growth. What relevance have these studies to cancer in man?

In different experiments tumours have not been affected equally, and at least one tumour showed increased growth in heparinized animals. E. E. Clifton and his associates have reported the benefits of a single injection of heparin. B. Fisher and R. R. Fisher needed to prolong the administration of heparin for up to seven days and to use much larger doses. All workers agree that the main changes are seen when the anticoagulant or fibrinolysin is given before inactivating the animal with the tumour. In some experiments the primary tumour decreases in size, but more commonly the number and size of metastases has been reduced.

R. A. Q. O'Meara has suggested that a fibrin lattice which he has detected around many tumours is a prerequisite for vascularization and growth of the tumour. Many tumour cells have been shown to contain coagulant factors and clot-stabilizing factors allied to the plasma factor XIII of the coagulation mechanism. However, such materials are constituents of normal tissue. Some tumour cells also produce fibrinolysins, which might be expected to have the opposite effect.

Tumour cells which enter the blood can sometimes be shown to become surrounded by fibrin and platelets. It has been suggested that microthrombi form and enmesh
tumour cells, so ensuring their adherence, subsequent penetration of the vascular endothelium, and survival as foci of metastatic growth. But experimental work has led Fisher and Fisher\(^1\) to reject this explanation of the mechanism whereby anticoagulants could reduce metastases. No difference in the accumulation and subsequent disappearance of radioactivity in the blood or in many organs could be produced in animals inoculated with \(^{51}\text{Cr}\)-labelled tumour cells and treated with heparin, warfarin, fibrinolysins, or epsilon-aminocaproic acid.

Many of the anticoagulant studies have been reviewed by A. S. Ketcham and colleagues,\(^2\) who added a series of their own experiments with warfarin-treated mice. Enough warfarin was added to the drinking water of the treated animals to prolong their prothrombin time to between two and three times that for the control series. This reduced the incidence and the number of pulmonary metastases following the subcutaneous injection of tumour cells into the hind legs of the animals. The growth of the primary tumour at the site of inoculation was also much less in the warfarin-treated mice. Further experiments are in progress to confirm the preliminary observation that the incidence of metastases is also reduced by warfarin given after the primary tumour has been amputated.

Direct evidence for the effect of anticoagulants and fibrinolysins on cancer in man is meagre. Anticoagulant therapy is risky and the design of a trial difficult when so many factors are concerned, known and unknown. However, M. Michaels\(^3\) has shown that in a small series of patients being treated with oral anticoagulants for thromboembolic lesions the incidence of malignant neoplasms in various forms was equal to that expected in the general population, but the patients on anticoagulants showed a lower mortality directly attributable to cancer and a lower incidence of metastases. Confirmation of this trend by a larger series of prospective investigations would strengthen the case for trials in man.

1 Clifton, E. E., and Agostino, D., Vascular Disease, 1965, 2, 43.

**Hospital Conference**

General practitioners held their first representative conference just before the first world war,\(^1\) and their annual conference has for long been a regular medicopolitical occasion. By contrast their hospital colleagues have held few national meetings, the last in 1968\(^2\) and these have not been in the A.R.M. mould. This year the Representative Body called for annual meetings of hospital representatives, the proposer of the motion seeing such meetings "as an essential part of the communication between doctors working in hospital and the central committee." Judged on this basis the recent well-attended conference of hospital staff, reported at p. 73 of the Supplement, was a success.

The conference was unique in being not only the first of a new-style series of meetings—for the members agreed that it would in future be held annually before the A.R.M.—but also the first occasion when from the regional hospitals juniors and seniors had equal representation on a B.M.A. body. As if to celebrate the event, juniors and seniors differed on surprisingly few matters. N.H.S. reorganization, industrial relations, superannuation, and nurses' training were among the subjects discussed. Inevitably pay was debated, but most speeches on this subject were restrained. What worried representatives far more, however, was staffing. Time and again discussion returned to staff shortages, or career prospects, or the inequitable distribution of doctors. Though the proposed differential expansion of junior and senior grades and the new Central Manpower Committee were seen as offering a long-term solution to the difficulties of staffing hospitals, speakers were obviously concerned about the present serious situation in many areas, and Dr. N. A. Simmons described a dramatic example in one obstetric department (see Supplement, p. 75).

In his opening address the Chairman of the Central Committee for Hospital Medical Services, Dr. C. E. Astley, strongly criticized the present part-time consultant contract—now over 15 years old—as being a major cause of dissatisfaction, and a hindrance to improving consultants' pay. Its elastic interpretation by hospital authorities meant overwork for the individual consultant, with consequent effects on recruitment. Not surprisingly the conference strongly supported the news that the C.C.H.M.S. and the Hospital Junior Staffs Group Council have started a detailed study of the contracts for all grades of hospital staff.

The working party of the H.J.S. Group Council which recently reported on the extra duty allowance scheme has put forward a novel proposal for any future contract (Supplement, 4 December, p. 55): the suggestion is to divide the hospital doctor's responsibilities into two, the first being his duty to the individual patient, the second to his employer. The first—the professional relationship—must remain under the profession's control and "cannot be considered as a proper source of extra remuneration." The responsibility to the employing authority, on the other hand, and the doctor's liabilities under it should be determined—and presumably paid for—"according to what is currently reasonable and defined in mutually binding contracts." This is one idea for improving the contract and no doubt there will be many others. Reform is urgent enough, for the conference was in no doubt that little progress will be made in solving hospital staffing unless and until an improved contract is negotiated.

The conference overwhelmingly threw out a proposal—from Wales—for a subconsultant grade. It approved the appointment of "consultants in emergency medicine," accepting that at this stage they could well be appointed on the basis of their past experience, even if they lacked higher qualifications. Recognition of consultants in this understaffed sector of medicine would be some encouragement to emergency and accident departments in their present staffing crisis.