PROGNOSIS OF SUBARACHNOID HEMORRHAGE

A COMPARISON BETWEEN PATIENTS WITH VERIFIED ANEURYSMS
AND PATIENTS WITH NORMAL ANGIograms

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It is a well-known fact that the prognosis of subarachnoid hemorrhage is serious; about a third of the patients die from the first bleeding, another third from recurrent hemorrhage, whereas a considerable number of the survivors are incapacitated.1-6,9,12,14,21 Most authors do not differentiate between the prognosis for patients with proven aneurysms and the prognosis for patients with normal angiographic findings; we have studied these two groups separately. Parkinson18 has made a similar survey on a smaller scale; out of his 8 conservatively treated patients with verified aneurysm, 7 died of recurrent hemorrhage within 2 to 8 weeks, whereas 21 patients without any verifiable aneurysm were alive after follow-up periods varying from 1 to 5 years. Among 18 conservatively treated patients with aneurysm Hamby5 had a mortality of 61 per cent. Dunmore and Poleyn1 reported 81 cases of subarachnoid hemorrhage without angiographically verified aneurysm. Of these patients, they managed to trace 71, 19 of whom had died from recurrent hemorrhage, all but 1 during the first year after the initial hemorrhage, the mortality rate being 27 per cent. However, bilateral angiography had not been performed on all patients in this series; at autopsy an aneurysm was found in 1 of them.

MATERIAL

We have divided our material into 2 groups.

(1) "Aneurysm series": 40 patients with intracranial aneurysm confirmed by angiography or at autopsy, and typical clinical symptoms and signs of subarachnoid hemorrhage even in those cases in which lumbar puncture was not performed during the episode of bleeding.

(2) "No-aneurysm series": 61 patients with subarachnoid hemorrhage verified by lumbar puncture, but with normal bilateral carotid angiograms.

The first group comprises all those patients who were admitted to the neurosurgical department of the Finnish Red Cross Hospital from 1938 to 1955, and on whom no operations were performed, either because they were hospitalized during the early period when we did not treat aneurysms surgically, or because they refused to be operated on or operation was deemed inadvisable. The second series includes all patients from the same period that fulfill the criteria stated above. This means that nearly all patients up to 1947 had to be omitted, because of the fact that, until then, bilateral angiography was seldom performed. Only a small number of the patients were submitted to vertebral angiography.
It should also be mentioned that in either series very few of the patients were admitted to the hospital during the acute stage of bleeding, the majority of them having been treated in other hospitals during that time.

During the same period about 100 aneurysms were treated surgically, the majority by intracranial approach.

**AGE AND SEX**

In the aneurysm series the ages of the patients ranged from 19 to 68 years, the average age being 41. The sex distribution was 20 males and 20 females.

In the no-aneurysm series the ages ranged from 16 to 64 years, the average age being 40. The sex distribution was 27 males and 34 females.

**NEUROLOGICAL SIGNS**

With regard to possible prognostic significance we noted the occurrence of unconsciousness and/or major neurological signs in association with the attacks of hemorrhage. Hemiplegia or hemiparesis were regarded as major neurological signs, as were convulsions, and severe or long-standing mental symptoms, but not ophthalmoplegia, which can occur without simultaneous bleeding.

In the aneurysm series 10 patients were unconscious and displayed major neurological signs during the attack of bleeding; 4 displayed major neurological signs only, and 10 were unconscious only.

In the no-aneurysm series the ratio was: 6 out of 61 had been unconscious with neurological signs, 14 displayed major neurological signs only, and 19 were unconscious without pareses or mental symptoms.

**NUMBER OF ATTACKS BEFORE DIAGNOSIS**

In the aneurysm series 28 patients had had only 1 attack prior to definite diagnosis; 11 patients had had 2 attacks. One patient had chronic symptoms (probably several small bleedings).

In the no-aneurysm series 46 patients had had 1 subarachnoid hemorrhage only, 13 had had 2, and 2 patients had had 3 attacks.

Here we have also counted unverified episodes of bleeding, for the verification of a subarachnoid hemorrhage in a patient makes it most likely that recurrent attacks with similar clinical symptoms and signs stem from the same source.

**HYPERTENSION**

The material was divided into 2 groups: normotensive patients and hypertensive patients. All patients with a blood pressure above 150/100 were grouped as hypertensive.

In the aneurysm series 13 patients were hypertensive and 25 normotensive (in 2 cases no blood pressure was recorded in the file).

In the no-aneurysm series 12 patients were hypertensive and 49 normotensive.