

Endovascular treatment for elderly patients with ruptured aneurysm

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Summary

We report our results of endovascular treatment for elderly patients with ruptured aneurysm and discuss the indication for treatment. One hundred and thirty four consecutive patients with ruptured aneurysm treated in our institute during the last 4 years were retrospectively evaluated. Fifty eight patients were included in group A (over 70 years old), and 76 patients in group B (under 69 years old). In both groups, the outcome was strongly related to the preoperative Hunt & Kosnik grade. However, significant risk factors (i.e. pneumonia, rupture of extracranial aneurysm) which make prognosis poor were more common in group A. Group A showed poor outcome in grade III patients, although there were no outcome differences between the two groups in patients of other grades. Endovascular treatment for elderly patients with ruptured aneurysms seemed to be useful. Their outcome was strongly related to their preoperative condition. General risk factors should be evaluated before treatment, especially in elderly patients. Patients with low Hunt & Kosnik grade seem to be most suitable for endovascular treatment. On the other hand, outcome of patients with poor preoperative grade was worse despite the less invasive nature of endovascular treatment. An improvement of outcome in grade III patients is desirable.

Keywords: Cerebral aneurysm; rupture; subarachnoid hemorrhage; elderly patient; coil embolization; endovascular treatment.

Introduction

Surgical treatment of ruptured cerebral aneurysms in elderly patients is difficult, and their prognosis is worse as compared to younger patients [4]. Endovascular treatment using Guglielmi Detachable Coil (GDC) is an important alternative in the treatment of cerebral aneurysms [1, 3]. We report our results of endovascular treatment in elderly patients with ruptured aneurysm and discuss the indication for treatment.

Materials and methods

From January 2000 to March 2004, 182 consecutive patients with cerebral aneurysm, treated with endovascular embolization using GDC in our institute, were retrospectively evaluated. Of these 134

patients with ruptured aneurysm were treated at acute stage of subarachnoid hemorrhage. They were divided into two groups according to their age at onset. Group A included patients older than 70 years and group B included those who were younger than 69 years. Several factors such as preoperative condition (Hunt & Kosnik grade), complications, and outcome (Glasgow Outcome Scale: GOS) were retrospectively evaluated.

Results

Group A (>70 years) included 58 patients (Male:Female = 14:44), and group B (<69 years) included 76 patients (Male:Female = 34:42). Their mean age was 78.6 (range 70–99) years in group A, and 53.9 (range 23–68) years in group B. Location of aneurysms is shown in Fig. 1. The relationship between preoperative Hunt & Kosnik grade and GOS is demonstrated in Fig. 2. Patients' outcome was strongly related to their preoperative condition in the two groups. Group A showed poor outcome in grade III patients as compared to group B, but there were no outcome differences between both groups in other grade patients.

Poor outcome in group A patients was attributable to initial brain damage in 7 patients, pneumonia or respiratory failure in 3 patients, bleeding from extracranial aneurysm in 2 patients (abdominal aorta aneurysm and splenic aneurysm), rebleeding from embolized aneurysm in 2 patients, multiple organ failure in 1 patient, liver failure in 1 patient, and vasospasm in 1 patient. Poor outcome in group B patients was attributable to initial brain damage in 19 patients, rebleeding from embolized aneurysm in 2 patients, bleeding from another cerebral aneurysm in 1 patient, and vasospasm in 1 patient.

Both groups showed the same number of complications, which included rebleeding from embolized

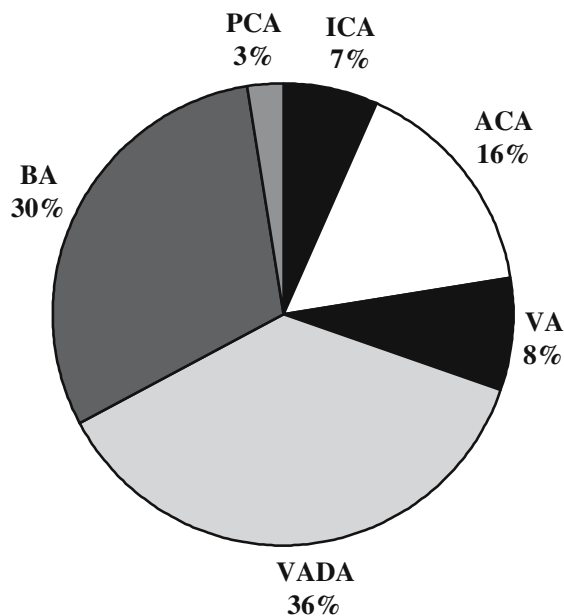
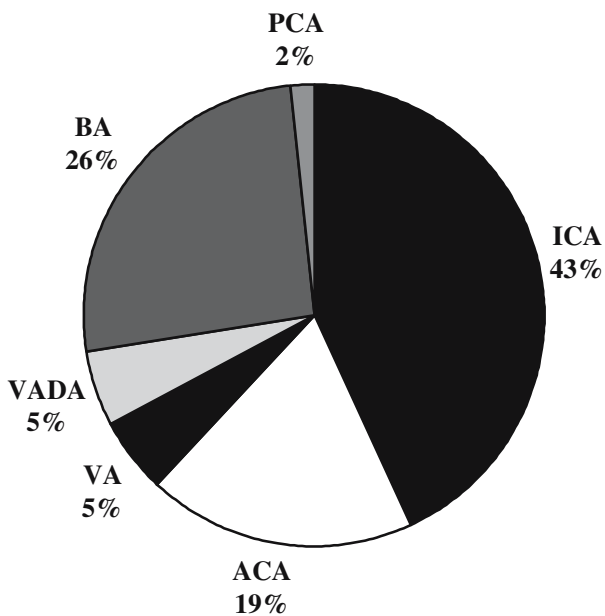


Fig. 1. Location of aneurysms (upper; group A, lower; group B)

aneurysm in two patients, cerebral infarction in two patients, and intra-procedural aneurysmal rupture in one patient in each group.

Discussion

Since the proportion of elderly in the population of developed countries is increasing, we are faced with a growing number of aged patients with ruptured cerebral aneurysms [4]. Surgical treatment of elderly

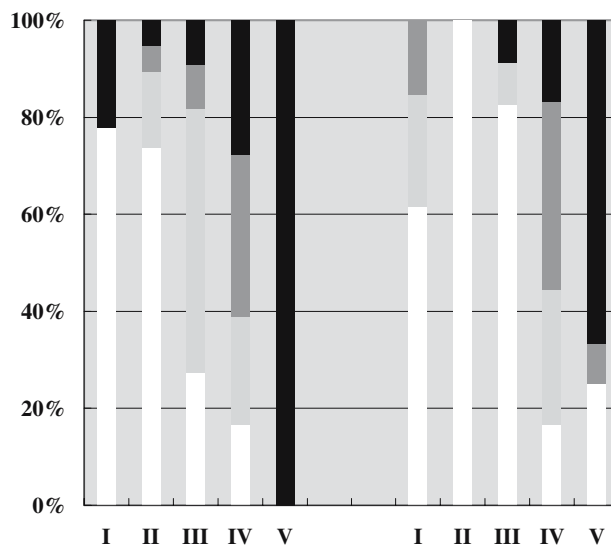


Fig. 2. Preoperative Hunt & Kosnik grade and outcome (Glasgow outcome scale) (left; group A, right; group B). ■ D; ■ SD; ■ MD; □ GR

patients is usually difficult, and their prognosis is generally not so good as in younger patients. Since the introduction of GDC, endovascular embolization of cerebral aneurysms has become an important alternative in the treatment of cerebral aneurysms [1, 3]. This technique can be very useful for elderly patients because of its less invasive nature. A recent randomized controlled study suggests that in patients with ruptured intracranial aneurysm, for which endovascular coiling and neurosurgical clipping are therapeutic options, a significantly better outcome in terms of survival free of disability at one year is achieved with endovascular coiling [2].

We have actively used this new technique in the past years for the treatment of ruptured cerebral aneurysms especially in the older age group. Our current indications for GDC embolization include vertebral artery dissecting aneurysm (VADA), high risk for general anesthesia, aged patients (over 70–75 years old), poor neurological grading (H & K grade IV–V), surgical difficulty (location), and vasospasm period. One limiting factor in this study is the different location of aneurysms between the two groups. In the younger patient group one third of patients had VADA, whereas a high frequency of internal carotid artery aneurysm occurred in the elderly patient group.

In this retrospective study, the overall outcome and complication rate in the older age group were similar to that of the younger patient group, which was in

line with our expectations. However, significant general risk factors, such as pneumonia and rupture of extracranial aneurysms, made their prognosis poor and were more common in the elderly patient group. General risk factors should be checked before treatment of elderly patients. In addition, Hunt & Kosnik grade III patients in group A tended to have more neurological problems including muscle power weakness and cognitive dysfunction, which made their outcome moderately disabled (MD). This is another specific problem in older subjects as the majority of grade III patients in the younger patient group showed good outcome. Aged patients need to resume their preinsult activities as soon as possible after treatment to improve their chances for a good outcome. Early rehabilitation and meticulous general care should be provided to elderly patients. From this point of view, endovascular treatment might have an advantage over surgical treatment because of its less invasiveness. A comparison between endovascular and surgical treatment would be needed to prove this hypothesis, and we are pursuing such a study in the near future.

Conclusion

Endovascular treatment for elderly patients with ruptured aneurysm seems to be useful. Outcome is

strongly related to their preoperative condition. General risk factors should be evaluated before treatment, especially in elderly patients. Good H & K grade patients are suitable for endovascular treatment, on the other hand, outcome of poor grade patients was worse despite the less invasive nature of endovascular treatment. An improvement of outcome in grade III patients is desirable.

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