Rebleeding From Ruptured Intracranial Aneurysms

TO THE EDITOR: I was interested in the recent article by Dr. Rosenørn and his colleagues (Rosenørn J, Eskesen V, Schmidt K, et al: The risk of rebleeding from ruptured intracranial aneurysms. J Neurosurg 67:329–335, September, 1987), discussing a peak in the daily rate of rebleeding from a ruptured aneurysm. Based on the data from the six Danish neurosurgical departments, the authors concluded that the maximum risk of recurrent bleeding fell between Days 4 and 9. This conclusion, however, does not appear to represent the actual clinical course in the majority of patients with a ruptured aneurysm. My experience at an emergency hospital was identical to the results of Kassell and Torner and Inagawa, et al., who found that the peak incidence of the second hemorrhage occurred within the first 24 hours. This difference seems to be attributed to the selection of patients and the methods of diagnosis of rebleeding.

First, more than 70% of the patients described by Rosenørn, et al., were admitted within 2 days of their initial subarachnoid hemorrhage. This means that in their series significant numbers of patients were not admitted during the first 24 hours, during which time the second hemorrhage may have occurred with the highest incidence.

Second, diagnostic modalities for recurrent bleeding in the authors' patients included computerized tomography (CT) scanning (36%), cerebrospinal fluid (CSF) investigations (34%), autopsies (10%), intraoperative observations (4%), and a classic clinical picture (16%). As stressed by Vermeulen, et al., rebleeding should be diagnosed only if fresh blood is detected on a CT scan that was not apparent on the previous scan. Diagnosis of rebleeding by CSF studies, autopsies, and the clinical picture is described as being unreliable. Based on these considerations, the authors' series, which included only 36% of patients with rebleeding confirmed by CT scan, is too small to establish a peak time of aneurysmal rerupture. The authors' conclusions as to the peak time of second hemorrhage occurrence is compatible with those of Locksley's Cooperative Study which was performed in the pre-CT era; at that time, definite differentiation of rebleeding from vasospasm was occasionally difficult.

Finally, Rosenørn, et al., incorrectly cited the article by Suzuki and Hori. Those authors have never described the highest rate of repeat hemorrhage as being at the end of the 1st week and the beginning of the 2nd week.

RESPONSE: We would like to thank Dr. Aoki for his interest in our article, but we do not agree with all of his statements. Concerning the diagnosis of rebleeding, he declares that cerebrospinal fluid (CSF) studies, autopsies, and clinical pictures are unreliable, and he refers to the article by Vermeulen, et al. In that study of 150 patients, 42 acute episodes were diagnosed as rebleeds and the authors included six patients who died rapidly without a repeat computerized tomography (CT) scan. Dr. Aoki claims that his own undocumented experiences were identical with the results of Kassell and Torner and Inagawa, et al. In the study of Kassell and Torner which showed differences in the peak daily rate of rebleeding compared to our study, the diagnosis of repeat hemorrhage was documented by lumbar puncture or CT (the exact number in each group was not mentioned). In contrast, in approximately 75% of our investigations the CSF was obtained from intraventricular drainage rather than via lumbar puncture. The study of Inagawa, et al., was published in 1987, so we did not have the opportunity to discuss it in our article. They observed a very high number of rebleeds within the first 6 hours of the initial hemorrhage in 150 patients. Because of early operation or death, only 33 patients were available for evaluation of risk of rebleeding after Day 4. Therefore, we do not think Dr. Aoki can compare our results with those of Inagawa, et al.

We absolutely do not agree with Dr. Aoki's statement that only 36% of the patients with rebleeding can be included in our study. We think that repeat subarachnoid hemorrhage (SAH) can be reliably diagnosed by autopsies and CSF investigations. These methods were also used by others mentioned above. We are aware of the uncertainty that rebleeding can be accurately diagnosed from a classic clinical picture but, as can be seen from Table 5 in our article, four of the 16 rebleeds diagnosed using this method in the 14-day period after the initial SAH occurred within 24 hours after the initial hemorrhage. If these rebleeds are excluded, the peak of recurrent hemorrhage at the end of the 1st week and the beginning of the 2nd week will be further enhanced.

References


Concerning the article by Suzuki and Hori, we admit that the text indicates that the rebleedings occurred at random in awake patients, but from Fig. 3 in the same article there seems to be a certain concentration in the last part of the 1st week and the beginning of the 2nd week.

JARL ROSENØRN, M.D.
VAGN ESKESEN, M.D.
FRITS RØNDE, M.D.
KAARE SCHMIDT, M.D.
Copenhagen, Denmark

References

Incorrect Orientation of Figures: Erratum
To THE EDITOR: The authors wish to point out an error in the orientation of two of the figures in their recent article (Gutin PH, Leibel SA, Wara WM, et al: Recurrent malignant gliomas: survival following interstitial brachytherapy with high-activity iodine-125 sources. J Neurosurg 67:864-873, December, 1987). Figures 4 and 5 were printed with the scans upside down, such that the citations in the legends are meaningless.

PHILIP H. GUTIN, M.D.
University of California
San Francisco, California

We regret this error, and request that subscribers make a note to this effect on both figures on page 868. — Editor.