Cost-Effective Outcome for Treating Poor-Grade SAH

To the Editor

Recently, Wilby et al published the results of a study on the costs and outcome of treating poor-grade subarachnoid hemorrhage (SAH) patients. Poor-grade SAH was defined as World Federation of Neurological Surgeons (WFNS) grades 4 and 5. The authors showed that aggressive management of these patients is clinically justified because a significant subset of patients can achieve favorable outcomes (defined as Glasgow Outcome Scale (GOS) scores 4 [moderate disability] and 5 [good]). Thus, although expensive with major demands on critical care resources, the treatment of these patients was found to be cost-effective overall.

We fully agree with the conclusion of the authors, but we would like to make some comments on the management protocol used in this study. After diagnosis of poor-grade SAH, patients in this study were sedated, ventilated, and transferred from the referring hospital to the referral neurosurgical unit. Fluid and electrolyte resuscitation was carried out, hydrocephalus was treated if necessary, but diagnostic angiography and treatment of the culprit aneurysm was postponed. After 24 hours sedation was reversed and a new neurological assessment was performed. Only patients with a Glasgow Motor Score (GMS) of at least 4 were selected for angiography. This means that almost half of the patients (47%) were managed conservatively, all of whom eventually died, and that probably most patients who survived to proceed to diagnosis and the risk of rebleeding may have been the cause of persistent poor-grade neurological condition. As the authors state in their conclusion, their study emphasizes the need to rapidly proceed to definitive therapy to prevent rebleeding and to allow appropriate prevention of vasospasm by optimizing cerebral perfusion, as well as early treatment of hydrocephalus. This is confirmed in a surgical series of poor-grade patients. However, surgery in poor-grade patients is often difficult and has the risk of inflicting further damage to the already edematous and ischemic brain by retraction and manipulation of cerebral vessels. Therefore, the combination of early endovascular treatment causing minimal additional damage and aggressive intensive care for optimal cerebral perfusion may lead to the best results for these patients.

If early occlusion of the aneurysm and aggressive treatment is imperative in these patients, and if prediction of outcome at the moment of admission is impossible even in very-poor-grade patients, we believe all patients with aneurysmal SAH should be treated, regardless of clinical grade. Treatment should not be denied to patients who might possibly have a favorable outcome, even though the costs are high due to the need of critical care and often prolonged hospital stays.

Johannes van Loon, MD, PhD
Department of Neurosurgery
University Hospital Leuven
Leuven, Belgium

Guido Wilms, MD, PhD
Department of Radiology
University Hospital Leuven
Leuven, Belgium


Response

We are grateful to van Loon et al for the constructive points raised in response to this study.

The issue of coiling versus clipping aneurysms in poor-grade patients has been raised, and we agree that there is insufficient data to support one modality or the other. In their study of 11 poor-grade patients, van Loon et al report 6 patients achieving a favorable outcome post-coiling. Weir et al report a series of 27 poor-grade patients, of whom 5 (30%) achieve a good outcome post-coiling. This figure is comparable to our own surgical data. Bracard et al present a larger series of 80 poor-grade patients, of whom 42 (53%) achieve a favorable outcome post-coiling. Our own data included 5 patients treated by clipping (2 additional patients underwent an attempt at coiling but required surgery as a result of inability to perform the procedure). Of these 5, only one survived and this patient was severely disabled. These data sets are far too small to fashion generalized recommendations, but the wide variations in post-coiling outcome may reflect local operator expertise. No data are available for comparing the two treatment modalities since the only randomized trial to date achieved very low recruitment of poor-grade patients.

Acute treatment (ie, within 24 hours of rupture) pursues a sensible assumption that fewer patients will suffer rebleeding. We agree with the clinical instinct that poor-grade patients are more susceptible to repeat hemorrhage than patients with a smaller bleed. An observed rebleed rate of 15% would support this concern. Our current protocol-driven treatment paradigm was conceived from earlier work by this unit that incorporated a 24-hour period of resuscitation prior to clinical assessment. The rationale for this was partly to standardize the delays leading to cerebral angiography, and partly to allow a means of identifying patients who would have been falsely labeled as poor-grade. Our current data excluded 18 patients that were initially deemed poor-grade, but after 24 hours of resuscitation woke up to obey commands. Both the
series of patients presented by Bracard and Weir et al utilized a time-scale of 72 hours and still reported impressive outcomes. In spite of a rapid delivery of treatment, van Loon also reported a high re-bleed rate of 18%. Overall we agree that active treatment to secure the ruptured aneurysm should follow as soon as the decision to treat is made.

Finally, we were encouraged to see good outcomes of poor-grade patients reported by van Loon et al with a motor score < 4. Our current data was similar to that of a previous prospective study reporting a significant improvement in outcome for patients able to mount a flexion response to pain compared with those who were not. None of the patients unable to mount a flexion response to pain after 24 hours of resuscitation and/or treatment of hydrocephalus survived. We continue to recommend that all poor-grade patients with intact brain stem reflexes should receive a period of intensive treatment and clinical reassessments prior to offering a definitive therapeutic maneuver.

Peter J. Kirkpatrick, FRCS(SN)
Martin Wilby, PhD
University Department of Neurosurgery
Addenbrookes Hospital
Cambridge, UK

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Johannes van Loon and Guido Wilms

Stroke. 2004;35:e83-e84; originally published online March 25, 2004;
doi: 10.1161/01.STR.0000123032.18789.2d
Stroke is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
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Print ISSN: 0039-2499. Online ISSN: 1524-4628

The online version of this article, along with updated information and services, is located on the
World Wide Web at:
http://stroke.ahajournals.org/content/35/4/e83

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