Editorial

Dual antiplatelet therapy

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The increased use of stent-assisted coiling, and more recently, flow diverters and the need for dual antiplatelet therapy have introduced an additional layer of complexity to the management of intracranial aneurysms. Because of the pitfalls of dual antiplatelet therapy in patients with freshly ruptured aneurysms, acute subarachnoid hemorrhage (SAH) was long considered a relative contraindication to the use of these devices. In the setting of acute SAH, dual antiplatelet therapy exposes the patient to higher risks of hemorrhagic complications, especially if invasive procedures, such as placement of an external ventricular drain (EVD) or a ventriculoperitoneal (VP) shunt, are required. As the use of stents has expanded, several centers have reported their experience with stent-assisted coiling in patients with acute SAH.1

In the current issue, Mahaney and coworkers1 describe their recent experience with 37 patients who underwent VP shunting after aneurysmal SAH. Twelve of the 37 patients had undergone stent-assisted coiling of the aneurysm and were on dual antiplatelet therapy at the time of VP shunt insertion. Four patients suffered an intracranial hemorrhage related to the VP shunt procedure, and, not surprisingly, all of these 4 patients were on dual antiplatelet therapy. Despite the relatively small number of patients in this report, the difference was statistically significant. Each hemorrhage was minor, along the catheter tract, and only 1 resulted in clinical consequences as the patient required shunt revision because of catheter obstruction. The same authors have previously reported a rate of hemorrhage as high as 32% after EVD placement in patients treated with stent-assisted coiling and on dual antiplatelet therapy.2

This and other studies3 confirm that dual antiplatelet therapy exposes patients with aneurysmal SAH to a higher risk of hemorrhagic complications. In such cases, it is important to consider and devise strategies to minimize these untoward events. Over the years at our institution we have limited to only a few selected cases stent-assisted coiling in the acute phase after aneurysm rupture. Instead, for complex wide-necked and large ruptured aneurysms, we prefer a staged approach and perform only coiling first (usually leaving a residual neck), followed, after 4–6 weeks, by a more aggressive and definitive endovascular treatment with stenting or, increasingly, with flow diverters. In this manner, patients are protected from the risk of early rebleeding (even with partial coiling, the dome is usually adequately covered) while definitive treatment is carried out in an elective fashion when dual antiplatelet therapy does not pose particular risks.

If a complex treatment with stent assistance cannot be staged, then there are strategies that can minimize the risk of hemorrhagic complications after EVD or shunt placement. For example, in patients receiving antiplatelet therapy, we try to avoid placing an EVD and, instead, use a lumbar drain, which usually works quite as well. If an EVD is at all necessary, such as in patients with a large intraventricular hemorrhage or very high intracranial pressure, then we try to place the EVD before the endovascular procedure so that patients can be safely loaded with antiplatelet agents after the EVD has been inserted. If permanent CSF diversion is needed, there are strategies to minimize hemorrhagic complications in patients on dual antiplatelet therapy. One is to utilize a ventriculopitoneal shunt instead of a VP shunt, and I am surprised that the authors of the present study did not even consider this possibility. The other strategy is to use the same tract of a preexisting EVD and “soft” pass a new ventricular catheter without the stylet immediately after removal of the EVD. This strategy is very safe and associated with a very low complication rate.4

Disclosure

The author reports being a consultant for Codman and receiving support from ev3/Covidien for supervision of research or clinical efforts unrelated to the present article.

References

Response

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We thank Dr. Lanzino for the thoughtful commentary on our findings. Noted is Lanzino’s expressed concern that stent-assisted aneurysm coiling is a treatment strategy to be avoided in the setting of acute subarachnoid hemorrhage. We have found the use of stent-coil embolization to be a reasonable option for treating some patients with acutely ruptured intracranial aneurysms, specifically those who are poor candidates for microsurgical clipping and who harbor wide-necked ruptured aneurysms. Our complication rates are similar to those cited by Bodily et al. in their review of stent-assisted coiling in acutely ruptured intracranial aneurysms. The perioperative risks and risk of neurological decline attendant on craniotomy for aneurysm clipping in the setting of SAH are not insignificant. In patients with wide-necked aneurysms who are poor surgical candidates due to age, medical comorbidities, and/or aneurysm location, stent-assisted coiling may well represent a better treatment option than surgical clipping. Partial aneurysm embolization (with planned delayed definite treatment) may be a reasonable treatment strategy for patients with acutely ruptured complex aneurysms. However, this strategy inherently exposes patients to the perioperative risks of an additional interventional procedure. Furthermore, while there is some evidence to support that partial coil embolization is safe, this treatment strategy has not been rigorously evaluated.

Lanzino also proposes the use of a lumbar drain and lumboperitoneal shunt as alternatives to an EVD or VP shunt in patients on dual antiplatelet therapy. At our institution we have observed neurologically devastating hemorrhage associated with lumbar puncture performed in patients on dual antiplatelet therapy, and similar cases have been reported in the literature. Thus, it is our policy not to perform lumbar puncture or use lumbar drainage in patients on dual antiplatelet therapy. While we have had clinically significant hemorrhages associated with ventricular drainage in patients on dual antiplatelet therapy, these have been reversible neurological injuries. We appreciate the concerns regarding the risks attendant on the use of dual antiplatelet therapy in the setting of SAH and agree that management strategies for these complex cases must evolve as new treatment strategies emerge and become part of the armamentarium of vascular neurosurgeons treating ruptured intracranial aneurysms.

References


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