■ Use of CT angiography to predict hematoma expansion

Goldstein et al. report that in patients with acute intracerebral hemorrhage, the presence of contrast within the hematoma on CT angiography is an independent predictor of ongoing bleeding and hematoma expansion. These data support the use of CTA in selecting patients for therapies aimed at minimizing this risk.

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■ Expanding the therapeutic window for intracerebral hemorrhage

Commentary by Andria L. Ford, MD; and Jin-Moo Lee, MD, PhD

Though less common than ischemic stroke, intracerebral hemorrhage (ICH) carries a much higher mortality. Despite the importance of this disorder, ICH is understudied. There are currently no Food and Drug Administration (FDA)-approved medical therapies available. It is accepted that the volume of the hematoma is the single strongest predictor of outcome after ICH. Once thought to be static, several studies have since found that hematoma volume expands early after the onset of symptoms,¹ suggesting that active bleeding (or rebleeding) is common during the acute phase. Indeed, this early hematoma expansion has recently become the focus of therapeutic intervention using hemostatic agents to curtail hematoma growth. One recent clinical trial found that activated factor VII, a hemostatic agent used to treat bleeding in patients with hemophilia, reduced hematoma

growth and mortality, and improved functional outcome at 90 days when given within 4 hours of symptom onset.²

Even if hemostatic agents activated factor VII might be one such example to become FDA-approved for use in acute ICH, the narrow therapeutic window is likely to limit their use to a minority of patients with ICH. While most cases of hematoma expansion occur within 3 hours of symptom onset, nearly 20% of patients have ongoing/recurrent bleeding even after 6 hours of symptoms onset.³ Therefore, the identification of a novel biomarker that predicts hematoma growth in patients with ICH (independent of time) could potentially expand the pool of patients eligible for therapy. In this issue, Goldstein et al. have identified one such radiographic predictor of hematoma expansion. They demonstrate that the presence of contrast extravasation on admission CT angiogra-

phy may be more important than time of symptom onset in predicting hematoma expansion. Their findings have important implications for future therapeutic decisions in patients presenting with acute ICH, potentially providing a means to individualize the therapeutic window. Because this preliminary study is limited in size and design, however, other studies will be required to confirm these findings, and to test the applicability of these radiographic markers in therapeutic decision-making.

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