Response to Letter by Prakash

Response:

In his letter regarding our systematic review on mannitol in acute stroke, Dr Prakash expresses his astonishment that hypertonic mannitol is used at all in the treatment of patients with intracerebral hemorrhage (ICH). Despite his surprise, several articles suggest that mannitol has been used to treat this condition all over the world including India, China, Japan, Italy, Romania, Hungary, and the United States. This practice is based on several studies like that of Haass et al over 20 years ago, showing that the pronounced brain edema which develops during several days after an ICH could lead to an increase in intracranial pressure requiring treatment.

A bimodal time course of mass effect is typical after ICH: the first peak occurs in the first 48 hours after the onset of ICH representing the growth of the hemorrhage, and the second peak starts a few days later associated with an increase in edema. Hematoma enlargement occurred in 38% of patients in the first day of ICH: in 26% within the first hour, and in a further 12% between 1 to 20 hours. Not only the hematoma itself but the perihematomal edema also grows in the hyperacute phase of ICH—an approximately 75% increase in edema volume was described during the first 24 hours. Perifocal edema was shown for at least 2 to 3 weeks in several studies. In ICH early progression is related to hematoma enlargement whereas late progression is associated with the development of extensive edema. To date there is no data to decide whether in the first day of ICH onset mannitol is harmful due to promoting hematoma expansion or beneficial due to decreasing early edema. As the risk of hematoma expansion decreases after the second day, whereas edema progresses thereafter, the lowest risk and largest benefit of mannitol use might be achieved if treatment starts only 1 to 2 days after ICH onset. This, however, remains a hypothesis until well-designed large studies decide whether a very early or a delayed use of mannitol is justified in acute ICH. However, because mannitol is inexpensive, academic trials are extremely difficult to run unless the current regulations change, and the limited evidence does not suggest that mannitol is beneficial in ICH, we do not think that such a large trial will be organized in the near future. According to the current guidelines based on limited evidence, osmotherapy—including mannitol—after ICH is available at http://stroke.ahajournals.org DOI: 10.1161/STROKEAHA.108.516914

Disclosures

None.

12. Suga S, Sato S, Yunoki K, Mihara B. Sequential change of brain edema by semiquantitative measurement on MRI in patients with hypertensive


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