Letters to the Editor

Gadolinium-Enhanced Magnetic Resonance Imaging in Multiple Infarction

To the Editor:

The interesting report of Miyashita et al.1 deserves two comments. In that study, nine patients with recent lacunar strokes, who were noted to have multiple small infarcts on computed tomography (CT) and magnetic resonance imaging (MRI), underwent enhancement studies with iodinated contrast medium and gadolinium-diethylenetriaminepentaacetic acid (Gd-DTPA), respectively. A comparison showed that recent lacunes were better visualized in Gd-DTPA-enhanced MRI than with contrast CT, and the authors recommended a larger study to confirm the results.

First, there is evidence that patients with acute strokes have poorer outcomes if given iodinated contrast medium for CT, particularly in those with enhanced ischemic lesions.2 A likely explanation is that the abnormal permeability of the blood–brain barrier in ischemic lesions allows the contrast medium to reach the cerebral parenchyma (reflected by enhancement) and to exert a neurotoxic effect.3 Under such circumstances, one would hardly imagine that approval from an ethics committee for a larger study of a similar nature could be obtained.

Second, the cost-effectiveness of identifying a recent lacune is questionable. In most cases of stroke, the site of the lesion can be accurately diagnosed clinically, and the purpose of nonenhanced CT or MRI is to ascertain whether the lesion is an infarct or hemorrhage and to exclude other conditions such as subdural hematoma or tumor. To identify a recent lacune in the presence of multiple small infarcts, as suggested by the authors, will more than double the cost of an expensive imaging investigation, yet add little to its management. Hence, the use of Gd-DTPA enhancement in MRI, while of academic interest, will probably find very limited application.

Y.L. Yu, MD, FRCP
Division of Neurology
Department of Medicine
University of Hong Kong
Queen Mary Hospital
Hong Kong

References


The following is in reply:

To the Editor:

We appreciate Dr. Yu’s comments. Gadolinium diethylenetriaminepentaacetic acid (Gd-DTPA)—enhanced magnetic resonance imaging (MRI) is not a routine examination and may be indicated only for patients whose clinical conditions cannot be clarified by computed tomography (CT) or nonenhanced MRI alone. The application of Gd-DTPA-enhanced MRI in stroke patients is, therefore, limited as a matter of course. In our stroke care unit, more than 700 patients with acute stroke were admitted during the last 3 years, and only 45 of them, the majority of whom had multiple lacunar infarctions, received Gd-DTPA-enhanced MRI.

While the requirement of Gd-DTPA-enhanced MRI was not frequent among our patients, its use did provide helpful information and contributed to better management of these cases. Patients with multiple lacunes usually have residual neurologic deficits attributable to old lesions and may show sudden deterioration of symptoms due to hypotension or dehydration rather than to recurrent lacunar infarction. Such cases may be the best indication for Gd-DTPA-enhanced MRI. Although the expense of Gd-DTPA-enhanced MRI is twice that of CT or nonenhanced MRI alone, cost-effectiveness may be of little importance if the examination is clinically useful.

As confirmed in several studies,1,2 toxicity of Gd-DTPA is slight. Furthermore, the amount of Gd-DTPA required for enhancement is almost one-tenth that required for iodinated contrast media.3 Thus, Gd-DTPA-enhanced MRI may be considered to be much safer than contrast CT.

None of 45 patients receiving Gd-DTPA-enhanced MRI in our stroke care unit showed deterioration of symptoms or other adverse effects. However, since the penetration of any foreign substance through the blood–brain barrier may further increase ischemic tissue damage, unnecessary contrast studies should always be avoided. Dr. Yu seems to be misinterpreting our report1 because careful review of our paper shows that we are not recommending a large group of enhancement studies at all.

Hiroaki Niritomi, MD
Kotaro Miyashita, MD
Tohru Sawada, MD
Yoshihiro Kuriyama, MD
Makoto Ogawa, MD
Masaichi Nakamura, MD
Cerebrovascular Division
Department of Medicine
Satoshi Imakita, MD
Department of Radiology
National Cardiovascular Center
Osaka, Japan

References


Platelet Levels of Glutamate and Aspartate in Normal Subjects

To the Editor:

The excitatory amino acids glutamate and aspartate are believed to mediate neuronal cell damage in certain neurologic diseases including cerebral ischemia. Platelets are thought to be a useful...
Gadolinium-enhanced magnetic resonance imaging in multiple infarction.

Y L Yu

*Stroke*. 1989;20:299

doi: 10.1161/01.STR.20.2.299.b

*Stroke* is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231

Copyright © 1989 American Heart Association, Inc. All rights reserved.

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/20/2/299.2.citation