AJNR

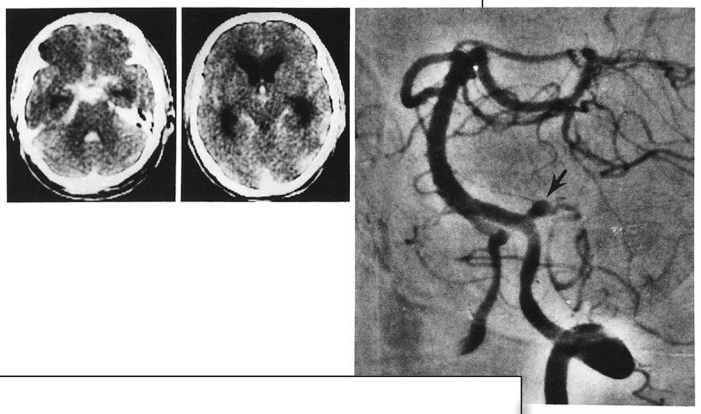
Celebrating 35 Years of the AJNR: January 1981 edition

AJNR Am J Neuroradiol 2016, 37 (1) 198
doi: https://doi.org/10.3174/ajnr.P0010
http://www.ajnr.org/content/37/1/198

Celebrating 35 Years of the AJNR

January 1981 edition

CT of Subarachnoid Hemorrhage due to Ruptured Aneurysm



Computed tomographic scans in 81 consecutive patients with subarachnoid hemorrhage due to ruptured aneurysm were analyzed for patterns of hemorrhage and lucency and correlated with the development of spasm and hydrocephalus. The circulation time was measured angiographically in representative cases of spasm. Hemorrhage corresponded in a general way to the fossa of aneurysm origin and, when there was parenchymal or ventricular hemorrhage, in more specific ways to anterior communicating, middle cerebral, and posterior inferior cerebellar artery aneurysms. Basal ganglionic hemorrhages due to aneurysm ruptures occurred in two cases and could not be distinguished by appearance from hypertensive hemorrhage. Regions of low attenuation (lucencies) were often persistent and had lateralizing value; they showed a high correlation with arterial spasm. Conversely, spasm, particularly of a distal type, showed a significant correlation with increased circulation time and the occurrence of brain lucency. In cases of multiple aneurysms arising from different vessels in which there was hemorrhage or lucency, CT scans correctly predicted the site of aneurysm in 77% of cases. Periventricular lucency was a weak predictor of progressive hydrocephalus, while an intraventricular hemorrhage was a strong predictor of moderate to severe hydrocephalus.

To determine the localizing features of hemorrhage due to ruptured aneurysms and to evaluate the significance of associated ischemic changes and hydrocephalus, CT scans and angiograms were reviewed in 81 consecutive patients with subarachnoid hemorrhage due to aneurysm.

Materials and Methods

Subarachnoid hemorrhage was established by lumbar puncture; the presence of aneurysms was demonstrated by angiography and confirmed either by surgery or autopsy. Most CT scans were performed on a first generation head scanner with water bag; some recent scans were done on a high resolution scanner. All patients were scanned in the first 5 weeks after subarachnoid hemorrhage. The circulation time was measured in those cases of spasm in which complete serial angiography was available.

For purposes of this study, the aneurysms were divided into seven groups by location (table 1). These groups were further subdivided according to whether the aneurysms were single or multiple and whether hemorrhage was present on the CT scan (table 2). Determination of which of multiple aneurysms had bled was made by a combination of radiologic and clinical means, including surgery.

Results

Hemorrhage

The earliest scan after subarachnoid hemorrhage in each case was analyzed for intracerebral, intraventricular, and subarachnoid hemorrhage, as well as for subdural hematoma. Fifty cases showed hemorrhage on the initial scan; the median time of scan was 6 days. The hemorrhages were tabulated according to

tute of New York, Columbia-Presbyterian Medical Center, 710 W. 168th St., New York, NY 10032. Address reprint requests to A. J. Silver.

[2] Department of Neurosurgery, Neurological Institute of New York, Columbia-Presbyterian Medical Center, New York, NY 10032.

AJNR 2:13–22, January/February 1981
0195–6108/81/0021–0013 $00.00

Complete Myelography with Metrizamide

Allan J. Fox[1]
Fernando Vinuela
Gerard Debrun

Thorough myelography of the entire spinal cord including the foramen magnum region can be accomplished consistently and promptly after metrizamide injection via lumbar or lateral cervical puncture. When lumbar puncture is used the patient's torso is oblique, but the neck is prone and straight and the table is tilted 20° head-down to allow direct cervical filling with contrast material. Each region is filmed in several projections, the patient being turned gently from the prone cervical to the supine thoracic position. Of 100 cases without block studied in this way, all had adequate cervical and foramen magnum films. In only five was the contrast material too dilute to show the edges of the spinal cord well and the subarachnoid sac adequately in the thoracic region. In 29 patients, there were mild side effects not requiring medication, while 20 had side effects of a more moderate to severe nature. No seizures were encountered. Metrizamide proved a convenient, efficient, and acceptable contrast medium for myelography when a study of the entire spinal cord is indicated.

Since the introduction of metrizamide in the last decade [1–4], there have been numerous clinical reports of its use for myelography of cervical and thoracic regions [1–17]. Depending on the approach of specific authors, metrizamide has been injected in varying amounts and concentrations via lumbar puncture, lateral C1–C2 puncture, or suboccipital puncture. Films have been obtained as spot films, overhead films, or tomograms, depending both on the technique and on the equipment available in the respective radiology departments. While generally the myelographic quality in the area of interest has been good, examining more than one region of the spine as part of the same procedure has decreased the chance for success [6, 18, 19] due to the limitations of metrizamide dose and dilution produced by excessive movement [2]. We describe the use of metrizamide as the primary myelographic contrast medium for "complete myelography" in patients being studied for myelopathy or radicular symptoms referable to the cervical region.

Materials and Methods

In the first 12 months after its introduction in our area, 228 myelographic studies were performed with metrizamide in our radiology department. There were 109 myelograms for lumbar radicular or cauda equina problems and 119 for cervical radicular or myelopathy problems.

The 100 (of 119) metrizamide myelograms that showed no block and were performed for radicular cervical or spinal cord problems formed the basis of this study. We had some previous experience with metrizamide when its availability was limited. Although the technique we used was reasonably standardized, the study participants included five radiology house staff members who were introduced to metrizamide myelography for the first time. Thus, the prime operator in each case had a variable background. Myelograms that showed a complete or almost complete block were excluded because the best metrizamide films are easily obtained at an intraspinal block, making these myelograms technically different from cases without block.

Received June 2, 1980; accepted after revision August 26, 1980.

Presented at the annual meeting of the American Society of Neuroradiology, Los Angeles, CA, March 1980.

[1] All authors: Departments of Diagnostic Radiology and Clinical Neurosciences, University Hospital, University of Western Ontario, London, Ontario, Canada N6A 5A5. Address reprint requests to A. J. Fox.

AJNR 2:79–84, January/February 1981
0195–6108/81/0021–0079 $00.00