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March 1983 edition

NMR Demonstration of Cerebral Abnormalities: Comparison with CT

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Sixty-eight patients with a wide spectrum of brain pathology were imaged with both computed tomography (CT) using a G.E. 8800 scanner and nuclear magnetic resonance (NMR) imaging with a 3.5 kG prototype device. NMR was more advantageous in the detection and/or characterization of pathology in 20 of the 68 patients, especially when demyelination was part of the disease process or when the lesion was obscured on CT by beam-hardening artifact. Punctate foci of calcification identified on CT were not detected on NMR, but larger calcifications were seen. NMR was sensitive to detection of both normal and abnormal vascular structures. The ability of NMR to differentiate among different pathologic entities remains to be fully evaluated. NMR currently complements CT in the evaluation of many disease entities and may actually supplant CT in some. The full future potential of NMR and its role with respect to CT has only begun to be elucidated.

The rapid development of nuclear magnetic resonance (NMR) imaging is documented by many recent reports, several of which include representative clinical material [1–8]. Clinical studies have begun to clarify the future role of NMR. However, current NMR equipment is far from standardized. Both hardware and imaging technique differ substantially among the imagers now being used. Certain techniques are already proving more useful than others in delineating pathology [7–9]. Because of the rapidly changing technology, clinical efficacy questions regarding NMR are still somewhat premature. Comparison studies with CT must be evaluated with the understanding that one is comparing the technologies at very different stages of maturity.

The impressive quality of the few images already published has fueled increasing interest in the diagnostic impact of NMR. The intent of this communication is to summarize initial experience at the University of California, San Francisco, in NMR imaging of patients with a broad spectrum of cerebral disease and to compare the results with CT. Ultimately the utility of NMR and its role with respect to CT must await determination of the optimal imaging techniques within each disease category, but sufficient results have already been obtained to illustrate the clinical usefulness of NMR in selected cases even in its current state of development and to indicate fertile areas of further investigation in order to better

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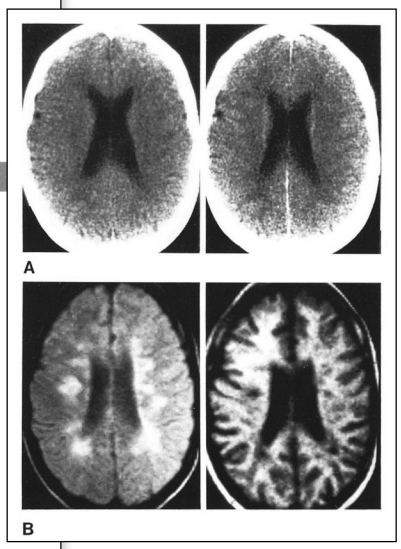

Digital Subtraction Angiography with Intravenous Injection: Assessment of 1,000 Carotid Bifurcations

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Digital subtraction angio
formed on 500 consecutive
artery bifurcations. Diagno
925 internal, and 904 extern
carotid arteriography arour
grams with diagnostic quali
95 internal, and 79 of 91
carotid occlusion (14 of 14)
with clinically significant ste
carotid was defined as a pe
specificity, and accuracy o
94%.

Several clinical trials of
contrast injection have be
[1–5]. Clinical acceptanc
anticipate results of DSA
study was designed to d
diagnostic quality examir
disease can be obtained
degree of carotid stenosi
and (3) the utility of DSA ir
disease.

Subjects and Methods

The study population co
Cincinnati Medical Center fo
standard carotid arteriograp
carotid bifurcations examin
correlative purposes alone.
of all cases were outpatient
clinically evident ischemic s
gical follow-up, and contrain

A commercially available
examinations, and a prototype system has undergone clinical testing at the University of Wisconsin, Madison, and operational characteristics have been described [6]. Serial imaging at one frame/sec with four summations/frame was used for neck examinations using radiographic technique of 55–75 kVp and 200–300 mA. The system employs a dual mode 5 or 9 inch (12.7 or 22.9 cm) cesium-iodide image intensifier with a Plumbicon camera. Digital conversion and processing occur instantly with real-time display and postprocessing ability on a 256 × 512 matrix with resolution of 8 bits. Performance specifications include 1% contrast resolution and a 650:1 system signal:noise ratio.

A 16 gauge, 30.5 cm, straight, end-hole catheter (Intracath, Deseret), placed in the

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