

Celebrating 35 Years of the AJNR

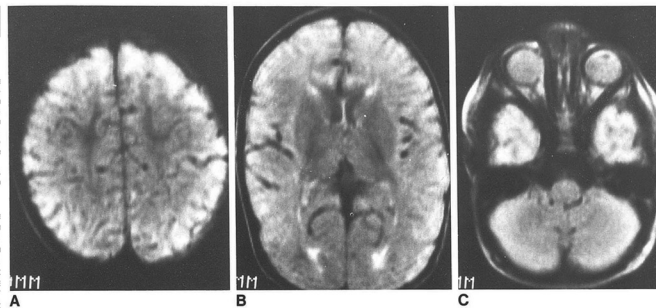
January 1988 edition

MR Evaluation of Early Myelination Patterns in Normal and Developmentally Delayed Infants

Rosalind B. Dietrich¹
William G. Bradley²
Edward J. Zaragoza IV¹
Ronald J. Otto²
Ricky K. Tarr³
Gabriel H. Wilson¹
Hooshang Kangaroo²

This study demonstrates the ability of MR imaging to show progression in 64 infants and young children (ages 4 days to 36 months). T2 pulse sequences, frequently used for routine screening of intracranial gray-white matter differentiation was seen in all patients, and with age were documented. Three distinct patterns were seen, established for each pattern in developmentally normal children: (1) normal (0-12 months); (2) intermediate (8-12 months); and (3) early adult (10 months). These data should be helpful for identifying and following sequelae of clinically suspected developmental delay and those with dynamic disease.

Myelination is a dynamic process starting during intrauterine after birth and can thus be used as an index of brain maturation true in the first 2 years, when changes are occurring most frequently when developmental delay is suspected clinically, opportunity to study myelination in vivo in normal and abnormal sequentially and relative to a known standard. Such children are using combinations of long and short TR and long and short sequences. It is therefore imperative for the radiologist to note normal appearance of the progression of myelination on these sequences if delay in myelination or abnormalities involving the white matter are to be detected and accurately diagnosed at the earliest possible time. It is also important that the



This article appears in the January 1988 issue of AJNR and the April 11, 1987 issue of AJNR.

Received January 21, 1987; accepted July 12, 1987.

¹Department of Radiological Sciences, School of Medicine, Los Angeles, CA. Address reprint requests to R. B. Dietrich.

²Huntington Medical Research Institute, CA 91105.

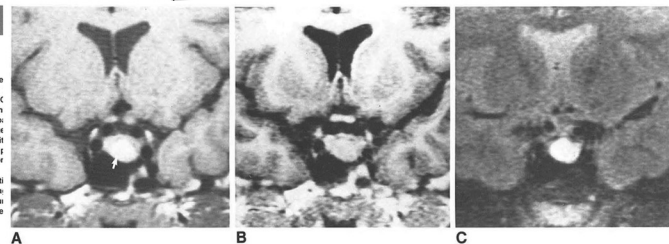
AJNR 6:6-16, January/February 1988. 0195-6108/88/0901-0009 © American Society of Neuroradiology

1.5-T MR Imaging of Pituitary Microadenomas: Technical Considerations and CT Correlation

Madan V. Kulkarni¹
K. Francis Lee¹
Craig G. McArdle¹
Joel W. Yaskley¹
Floyd L. Haar²

Thirty-seven patients with suspected pituitary tumors were imaged with 1.5 T. MR detected a microadenoma at eight patients who underwent transphenoidal surgery; while 6 patients in the correct location in only four of the eight patients clinically and endocrinologically considered to harbor a microadenoma. Infundibular displacement, focal gland convexity, focal pituitary signal abnormality in 83% and CT demonstrates malady in 42%. Infundibular displacement, focal gland convexity were seen equally well with CT and MR. MR imaging (T1-weighted spin-echo, coronal inversion-recovery, and coronal gated spin-echo images).

Although inversion-recovery images were superior in detecting some microadenomas, better seen on T2-weighted line images showed focal pituitary lesions better than any technique demonstrates MR's superior sensitivity to CT in detecting microadenomas.



CT has been widely used as an imaging method in the detection of pituitary tumors. High-resolution CT with IV contrast material, axial images with sagittal and coronal reformating, and direct coronal imaging have shown the utility of CT in the imaging of the pituitary gland and its lesions [1-11]. Although indirect signs for the diagnosis of a pituitary microadenoma such as sellar floor erosion, focal convexity, and displacement of the infundibulum are well shown by CT, the detection of a focal hypo- or hyperdense lesion within the pituitary gland is the only statistically significant indicator of microadenoma [12]. However, microadenomas may reveal few or no abnormalities on CT [12, 13].

In recent years MR has also been useful in evaluating the pituitary gland [14-17]. High-resolution MR imaging has shown good results in the diagnosis of pituitary micro- and macroadenomas. However, in a recent comparative study, CT was found to be superior to MR in detecting microadenomas [18]. We prospectively evaluated patients with suspected pituitary tumors with MR and compared the results with available CT findings. The use of cardiac gated spin-echo and inversion-recovery techniques in diagnosing pituitary microadenomas was also evaluated. The imaging data were subsequently compared with clinical, endocrinological, and surgical data.

Subjects and Methods

Thirty-seven patients with suspected pituitary tumors were examined. Six patients had pituitary lesions 10 mm or larger and were diagnosed as having pituitary macroadenomas. Of the 31 microadenoma patients (27 women, four men) 22 had increased prolactin and one had elevated adrenocorticotropic hormone. Amenorrhea, infertility, and/or galactorrhea were common symptoms in female patients. One male patient with impotence and three male patients with galactorrhea were found to have elevated prolactin levels (30-500 mg/ml). Two

Received May 27, 1987; accepted after revision August 12, 1987.

Presented at the annual meeting of the American Society of Neuroradiology, New York City, May 1987.

¹Department of Radiology, University of Texas Medical School at Houston and Hermann Hospital, 6431 Fannin, 2.134 MSB, Houston, TX 77030. Address reprint requests to M. V. Kulkarni.

²Department of Neurosurgery, University of Texas Medical School at Houston and Hermann Hospital, Houston, TX 77030.

AJNR 6:6-16, January/February 1988. 0195-6108/88/0901-0009 © American Society of Neuroradiology