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The Application of NMR Imaging to the Evaluation of Pituitary and Juxtasellar Tumors


Nuclear magnetic resonance (NMR) imaging was used to study a variety of pituitary and juxtasellar lesions in 12 patients, representing a wide range of pathology. The value of the multiparameter facility of NMR imaging in providing accurate volumetric information on these lesions, as well as demonstrating high-contrast, noninvasive dynamic and morphologic features, was demonstrated. The technique was well tolerated by patients, and there were no complications associated with the procedure. Initial findings of this study are presented.

Conclusion

NMR imaging is a valuable tool in the evaluation of pituitary and juxtasellar lesions, providing accurate volumetric information and demonstrating high-contrast, noninvasive dynamic and morphologic features. Additional studies are needed to further evaluate the clinical utility of this technique.

Subjects and Methods

Proton nuclear magnetic resonance (NMR) scans were obtained in 12 patients using a Picker NMR scanner. A multichannel human head coil and a 2.5 T magnet were used. Imaging parameters included spin echo, fast spin echo, and gradient echo sequences. T1- and T2-weighted images were obtained, and the images were compared with those obtained using computed tomography (CT) and magnetic resonance imaging (MRI) techniques.

Preliminary Clinical Results of Proton (H) Imaging of Cranial Neoplasms: In vivo Measurements of T1 and Mobile Proton Density

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Proton magnetic resonance (NMR) imaging at 1.5 T was used to study three patients with brain tumors, including a meningioma, a glioblastoma multiforme, and a glioblastoma multiforme. The NMR images were obtained using a modified spin echo sequence, with a 2.5-second repetition time and an echo time of 25 milliseconds. The images were compared with those obtained using computed tomography (CT) and magnetic resonance imaging (MRI) techniques.

Results

Significant differences were found in the T1 and mobile proton density parameters between the brain tumors and normal brain tissue. These findings suggest that proton NMR imaging may be a useful tool for the diagnosis and characterization of brain tumors.

Materials and Methods

The study was performed on a Picker NMR scanner with a 2.5 T magnet. A 10-mm-diameter, 10-cm-long surface coil was used to excite and receive the NMR signal. The imaging parameters included spin echo, fast spin echo, and gradient echo sequences. T1- and T2-weighted images were obtained, and the images were compared with those obtained using computed tomography (CT) and magnetic resonance imaging (MRI) techniques.