WIDE SHORT BORE MR AT 1.5T: REDUCING THE FAILURE RATE IN SEVERE CLAUSTROPHOBICS

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Introduction:

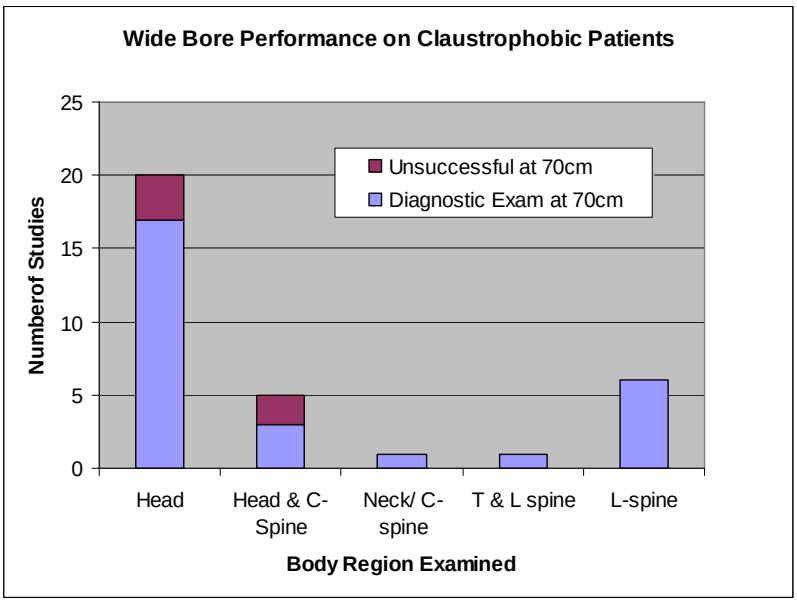
Claustrophobic reactions in patients undergoing MRI have a significant impact on the workflow, patient acceptance[1], and ultimately the costs involved in obtaining a diagnostic scan. Although the introduction of shorter bore scanners and the use of mild sedation[3] have helped reduce the number of cancelled or prematurely terminated scans, it is estimated that up to 10% of patients referred for MRI examinations are unable to tolerate an MR study because of claustrophobia. At our institution patients who have previously failed exams on one of our standard 60 cm-diameter, 1.9 m-long bore scanners are rescheduled with anesthesia assistance utilizing deep IV sedation or general anesthesia. The purpose of this study was to determine if the use of a wide, short bore MRI scanner could obviate the need for general anesthesia assistance in claustrophobic patients who had failed MRI examinations on a standard bore (60 cm) magnet.

Methods:

During an 11 month period between September 2006 and July 2007, all patients for which MRI examinations of the head and/or spine were cancelled or prematurely terminated due to claustrophobia on a standard 60 cm bore, 1.5T scanner were scheduled to be re-scanned on a 70 cm-wide bore, 1.25 m long 1.5T scanner (MAGNETOM Espree, Siemens Medical, Erlangen Germany). This attempt was made one to two days prior to their scheduled anesthesia-assisted MRI appointment. If the patient successfully completed the wide bore MRI examination, the anesthesia-assisted MRI appointment was then cancelled. The body region and patient orientation for the scan remained the same between the 60cm and 70cm examination and the study duration was similar but not identical due to vendor specific variations in study protocols and workflow.

Results:

A total of 32 patients met the above criteria and were included in this study. Examination regions were the Head, Head & C-spine, Neck/C-spine, T&L-spine, and L-spine alone. One patient underwent a Head & L-spine combination which was not tabulated separately and was counted as two separate studies. Twenty-seven patients (84%) successfully completed a diagnostic examination on the 70cm scanner. Five patients (16%) were unable to complete the examination on the wide bore scanner and proceeded with their anesthesia-assisted MRI appointment. Of the 5 wide bore failures, all examinations were either solely of the head or included imaging of the head. 20 of 25 of the MRI examinations that were either solely of the head or included imaging of the head were successfully scanned on the wide bore magnet (80%).



Discussion:

By utilizing a 70 cm-wide, 1.25 m-long bore, the need for anesthesia-assisted MRI examinations can be substantially reduced. Modern shorter bore scanners have demonstrated some reduction in claustrophobia failures, which is supported in this study by the result that head examinations make up the largest portion of the study group. The fact that all of the failures in the 70 cm bore occurred in head examinations further suggests that other factors such as the presence of the head coil or immobilization of the head could have played a role in the claustrophobic reaction of these patients.

Conclusion:

A 1.5T wide short bore scanner substantially reduces the need for anesthesia-assisted MRI examinations when dealing with claustrophobic patients. Our data suggests the need for anesthesia to address claustrophobia potentially could be eliminated altogether if the examination is only of the spine.

References:

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