

MRI WITH INTRATHECAL GADOLINIUM TO DETECT A CSF LEAK: A PROSPECTIVE OPEN-LABEL COHORT STUDY

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Objectives: The techniques currently used to detect a CSF leak are indium radio nucleotide scan or CT scan with intrathecal iodinated contrast agent. They have a low spatial and temporal resolution and are unpleasant for the patient. This open label prospective observational cohort study was designed to investigate the feasibility, success ratio, complications and therapeutic consequences of MRI with gadolinium administered by lumbar puncture to detect a CSF leak.

Methods: Patients were selected with confirmed liquorrhoea, recurrent bacterial meningitis or symptoms and MRI findings of spontaneous intracranial hypotension. High resolution T1 weighted MRI with fat suppression of the spinal column at 1 hour and of the brain at 6 and 24 hours post injection of 0.5 ml of gadolinium was performed.

Results: 59 patients were included. The clinically suspected CSF leak was found in 11 of 20 patients with liquorrhoea, 4 of 7 patients with recurrent bacterial meningitis and 21 of 32 patients with spontaneous intracranial hypotension. The procedure was easy to perform and generally well tolerated. One patient developed streptococcal meningitis in the hours following the procedure but recovered completely with antibiotic treatment. 28 of 36 patients in whom a dural defect was found underwent surgery. All patients became symptom free after closure of the dural leak.

Conclusions: Spinal cord and brain MRI after intrathecal gadolinium injection is an easy to perform and accurate technique for detection of a dural defect with excellent anatomical detail helpful in surgical treatment of these refractory patients.