“CAN YOU HEAR ME?” ASSESSING LANGUAGE PROCESSING AND AWARENESS IN COMATOSE PATIENTS USING FMRI
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Introduction: Functional magnetic resonance imaging (fMRI) can be used to assess cognitive function in non-responsive patients. fMRI responses to volitional tasks have been used to detect covert awareness in patients with chronic disorders of consciousness such as vegetative state. Higher level speech processing has also been shown to have prognostic value in these patients.

Objectives: Our objective was to extend these fMRI paradigms to patients in the acute phase of coma which could provide new diagnostically and prognostically relevant information.

Methods: Comatose patients were recruited from the Intensive Care Unit at London Health Sciences Centre and underwent fMRI imaging. A passive auditory language task was used to independently assess sound perception, speech perception and language comprehension on an individual basis. Two mental imagery tasks were also employed to determine the level of covert awareness in patients.

Results: Patients who had the most robust activation for both auditory and speech processing, whose activation was similar to healthy control participants, had the greatest functional recovery. All patients who were imaged had an absence of neural activation to both mental imagery tasks.