temporal rhythm was regular and he could not vary it voluntarily, cough, or take a deep breath to command. Tracheal suction generated vigorous coughing. Spontaneous and volitional blinking remained preserved but he could not voluntarily contract the muscles of the upper or lower face; In response to emotional stimuli, however, there were pronounced activation of the lower facial muscles that were generally of similar pattern whether he was upset or amused. When this occurred, there were concomitant respiratory gasps involving both thoracic muscles and diaphragm on inspiration and abdominal muscles and latissimus dorsi on expiration.

After about five months and just before discharge he had regained some limited volitional control of facial muscles particularly on the right but emotionally induced movements remained much more pronounced. Some voluntary jaw opening and tongue movements had returned, his tracheostomy had been closed, and he was able to take limited nutrition by mouth. Before discharge, when he was breathing quietly and no coughing, his respiratory rate was 21/min with a tidal volume of 0·37 litres: a maximum inspiration from functional residual volume was 0·63 litres, and a maximum expiration from end tidal inspiration was 0·66 litres: involuntary sighs of up to 2·5 litres were recorded. He could hold his breath voluntarily for 10-5 seconds. Carbon dioxide rebreathing yielded a normal ventilatory response and ventilation was maintained in sleep with a normal Paco2. He remained tetraparetic.

This patient shows similar respiratory findings to those recently reported, with loss of volitional control of respiration but preservation of metabolic control and evidence of activation in response to emotional stimuli. Voluntary control of facial muscles other than blinking was also lost although pronounced activation with emotional stimuli was preserved. Separate non-volitional pathways to the motor nuclei of the facial nerve are known to exist in uncontrolled coughing or laughter as seen after stroke, whether due to a lesion in the brainstem or due to cortical damage. Such displays of sentiment are activated by the limbic system and are usually under inhibitory cortical control. In this patient the loss of corticobulbar fibres descending through the ventral roots may affect volitional facial and respiratory movement, but emotionally stimulated activity must be mediated independently by fibres descending in the dorsal or lateral roots to terminate on the facial motor nucleus in the caudal third of the ventral tegmental medulla, and on pontomedullary respiratory motor neurons.

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K DAWSON M HOURIHAN C G M CHAWLA
Departments of Neurology and Radiology, University Hospital of Wales, Cardiff CF4 4XW, UK

J C CHAWLA
Department of Neurological Rehabilitation, Roedean Hospital, Roedean, UK

Correspondence to: Dr K Dawson, Ward C4 (Neurology), University Hospital of Wales, Cardiff CF4 4XW, UK.


Screening for cognitive dysfunction in neurodegenerative illness

The current profusion of clinical trials of antiepileptic compounds adds renewed urgency for accurate patient screening. There are a number of brief assessment instruments for use by the clinician to aid in the determination of dementia or other cognitive dysfunction. All scales may not, however, be equivalent or interchangeable.

We have investigated the equivalence of two particularly frequently used scales (mini-mental state examination and the Mattis dementia rating scale) in three clinically demented populations: a Huntington's disease group (n = 13), a Parkinson's disease group (n = 10), and a healthy control group (n = 10). The Mattis scale and mini-mental examination were strongly correlated in the Alzheimer's disease sample (r = 0·78), but not in the Huntington's disease group (r = 0·15) or the Parkinson's disease group (r = 0·15). Further investigation of the subscales in each test yielded a possible explanation for these discrepancies. The tests comprise sets of subscales, each of which assesses function in a different domain of cognitive function. The only common domain covered by both tests is attention and memory. If these are the only domains of interest, then either test will suffice. Both functions are affected in Alzheimer's disease, which may underlie the strong correlation between the two tests in this group. Due to subcortical influences in Huntington's disease and Parkinson's disease, however, frontal lobe dysfunction tends to be a prominent part of the clinical presentation. Only the Mattis dementia rating scale assesses frontal lobe function in its conceptualisation, and initiation and perseveration subscales. In our samples, these two subscales were sensitive to overall dementia severity in the Huntington's disease group and the Parkinson's disease group, but not in the Alzheimer's disease group. No subtest scores on the mini-mental state exam achieved this level of sensitivity to subcortical dementia. Therefore, when integrity of the subcortical and frontal lobe may be of concern, the Mattis dementia rating scale seems to be the more appropriate screening tool to use.

L McFADDEN M SAMPSON P MOHR
Institute of Mental Health Research, Royal Ottawa Hospital, 1145 Carling Ave, Ottawa, Ontario, Canada K1Z 8K4

Role of the pulvinar in ideomotor praxis

The production of learned skilled movements (praxis) is mediated by a modular network of cortical and subcortical structures that may include the thalamus. We report a patient with a left medial occipital, inferior temporal, and pulvinar infarct who showed a bilateral ideomotor limb apraxia. We attribute her apraxia to the pulvinar lesion.

The patient was a 76 year old, right handed woman who had a left posterior cerebral artery embolic infarct. We followed up the patient from five to the end of 17 months after the stroke during which time her examination did not change. On examination she had a right homonymous hemianopia and mild increase of reflexes on the right with normal strength and sensation. She was fully oriented except to year. She produced fluent a flute speech with preserved auditory comprehension and repetition, had anosia, colour anomia, acalculia, a lexical aphasia, and read by a letter by letter strategy. Her figure copying was apraxic. Oral praxis was normal. She showed an ideomotor limb apraxia bilaterally.

Magnetic resonance imaging of the brain with horizontal, coronal, and sagittal slices was performed at five months after the stroke (figure). The stroke involved the left medial occipital lobe, inferoposterior temporal lobe, and the pulvinar nucleus of the thalamus.

We tested the patient with several sections of the Florida apraxia battery. She was able to recognise all tools (for example, hammer, scissors) used in testing.

She was given the name of each of 20 tools (transitive gestures) and 10 intransitive gestures (meaningful gestures that do not involve tool use—for example, salute) and asked to demonstrate the appropriate gesture. She was asked to use her left hand to perform all requested gestures and, subsequently, to use her right hand. Error types' included content errors (the correct movement but for the wrong tool), temporal errors, spatial errors (errors in the movement, relation of the hand to the tool, or the...