Delirium and quantitative EEG

We appreciate the comments about our paper from Dr Prinzen and colleagues at the University of Genova. We are familiar with the confusion assessment method developed by Inoye et al, and agree that it represents an improvement over DSM-III-R criteria in the hands of non-psychiatrist evaluators.

In our laboratory, quantitative EEG (QEEG) studies are always done in conjunction with conventional EEG studies for the very reason that Primavera et al note: some electrophysiological abnormalities that may be associated with certain aetiologies of delirium periodic lateralised epileptiform discharges (PLEDs), triscicopic (sharp waves, sharp and slow waves) may be detected only on conventional EEG. We would like to raise the point, however, that once the initial EEG/QEEG study of a delirious patient has been analysed, it might be possible (and less costly) to monitor the course of treatment/resolution with follow-up “quick looks” by QEEG alone. We would emphasise that a careful study of this application would be needed before this practice could be recommended.

We have also performed a study of serial EEG/QEEG in delirium, and found similarly that one electrophysiological measure that remained abnormal after clinical delirium by DSM-III-R criteria had resolved. We recognise that EEG/QEEG measures are the more sensitive index, and have found that minimal cerebral state examination in the same range of sensitivity. We would be interested to hear of any other objective measures of delirium that are as sensitive, particularly those that assess aspects of delirium other than cognitive.

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Management of subarachnoid haemorrhage

The very long review on the management of subarachnoid haemorrhage by Kopitnik and Samson is full of statements that are at least controversial. For a discussion of all of these, we would need more space than is available here. We therefore list the controversial statements in italics with our refutation and reference to the appropriate literature beneath it. Finally, we fully agree with the last sentence of the review by Kopitnik and Samson which says that physicians who diagnose and manage patients with subarachnoid haemorrhage would be well advised to keep up with the evolving developments in the management of this ubiquitous and catastrophic condition.

“At least one third of patients with aneurysmal subarachnoid haemorrhage will have a minor leak.”

All studies on these so-called warning leaks are retrospective and hospital based.

“Brief loss of consciousness occurs in most patients [with subarachnoid haemorrhage]...”

Half the patients with subarachnoid haemorrhage do not lose consciousness at all, in the other half, the loss of consciousness can last a few seconds but may also be never-ending.

“The Fisher grading system is used to relate the amount of subarachnoid blood on a CT scan to the probability of developing delayed [cerebral] ischemia...”

This method is difficult to apply outside the centre of origin.

“Visual examination of CSF obtained by lumbar puncture can confirm the diagnosis of [subarachnoid haemorrhage]...”

Visual examination of CSF is an unreliable method to confirm subarachnoid haemorrhage.

“Xanthochromia... is usually undetected at three weeks.”

At three weeks the probability of detecting xanthochromia is over 70%.

“If a traumatic lumbar puncture is suspected, partial... cleared by the CSF may occur...”

This partial clearing may also occur in patients with subarachnoid haemorrhage.

“One of the more universally accepted grading scales... is that of Hunt and Hess...”

Problems in applying grading systems such as these were shown by two studies.

“...the angiogram is repeated [for vaso- spasms] if a portion of the cerebral vasculature is not adequately visualised on the initial study, or in patients who have a large amount of subarachnoid blood visualised on CT scanning.”

The pattern of haemorrhage on CT is a crucial factor in assessing the need for follow-up angiograms in patients with an initially negative study.

“...80% of patients with [subarachnoid hemorrhage] of undetermined aetiology will have a good outcome.”

All patients with perimesencephalic haemorrhage have a good outcome, whereas 25% of patients with an aneurysmal pattern of haemorrhage on CT and a negative angiogram die or are left disabled.

“We have frequently observed that the interpeduncular or perimesencephalic cisterns often demonstrate focal blood collection when [subarachnoid hemorrhage] of unknown aetiology occurs.”