Confusion Assessment Method (CAM) – an instrument for the diagnosis of acute Confusion

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SUMMARY

❖   Acute confusion (delirium) is a common problem in elderly postoperative patients.

❖   Acute confusion is a multi-factor syndrome with acute onset and different clinical manifestations.

❖   Early recognition and intervention by nursing staff will reduce the impact of acute confusion on the patient.

❖   The Confusion Assessment Method (CAM) (Inouye et al. 1990) is a structured assessment for the identification of acute confusion.

INTRODUCTION

While working in the intensive care unit of the Department of Cardiothoracic Surgery at the University Hospital Essen I have often seen postoperative patients suffering from delirium or acute confusion. Acute confusion is a common problem in elderly post-operative patients (Rummans et al. 1995). I have developed an interest in this issue and I am currently participating in a research project that is investigating a multidisciplinary approach to the detection and treatment of acute confusion in cardiac surgical patients.

This article reviews the definitions associated with acute confusion and describes the Confusion Assessment Method (CAM), a tool for the detection and assessment of acute confusion.

DELIRIUM AND ACUTE CONFUSION
Definitions
In the literature, terms like 'acute organic confusion syndrome', 'delirium' and 'acute confusion' are often used (Gallinat et al. 1999, Rapp et al. 2000). The American Psychiatric Association (1997) suggests that delirium is an acute disturbance of alertness and perception. Gallinat et al. (1999) adds to this by defining delirium as 'an acute organic psychotic episode that is character-ised by a combination of disturbed consciousness, cognition, psy-chomotor abilities, emotion and an altered sleep/wake cycle due to an organic cause' (p.507-508). It is a multi-factor syndrome with acute onset and a variety of clinical manifestations. In general, it lasts between several days or weeks, but sometimes up to six month (Gallinat et al. 1999). Lipowski (1990) describes delirium as a somatically caused mental disease characterised by an acute change in the level of consciousness, with disorientation, deficits of memory, alertness, thinking and behaviour. These definitions all identify the acute nature of delirium and the fact that there is an organic cause resulting in transient and reversible perceptual changes for the patient. It can occur suddenly with fluctuating course and clinical manifestations. The terms 'delirium' and 'acute confusion' appear to be used interchangeably to mean the same type of condition. Inouye defines it as an acute disturbance of alertness and perception. This definition of delirium is used in the CAM instrument.

Because this condition is common in elderly patients, it is important to differentiate it from other conditions, for example dementia. Dementia is a neurodegenerative process and has a progressive and non-reversible course (Foreman and Zane 1996). Careful consideration of the patient's past medical history should allow an assessment to be made of their likelihood of suffering from dementia.

Consequences of delirium
Delirium has multiple causes and differing clinical manifestations, which make early, accurate diagnosis difficult. Patients with acute confusion are found in a variety of nursing settings. Acute confu-sion has a particular health care impact, especially for critically ill patients who need special nursing care (Inouye 1994, Inouye et al. 1990, Inouye et al. 1999). Delirium often leads to further impairment of the patient, such as urinary or faecal incontinence, decubitus ulcer, and infections, or patients putting themselves at higher risk of self-injury, for example self-extubation, falls and sub-sequent fractures, and immobility (Inouye 1998). In many cases, the result is a prolonged stay in hospital, more intensive nursing care and admission to a nursing home (Inouye et al. 1990). These facts impact on rehabilitation requirements and ambulant care (Inouye 1998). Finally, there could be higher levels of morbidity and mortality with prolonged hospital stays and higher treatment costs.

Early diagnosis of delirium
It is often the nursing staff who first recognise delirium in patients, and assessment is subjective and based on altered behaviours and inappropriate answers to questions. A reliable and valid assess-ment tool would reduce subjectivity and confirm a diagnosis as a basis to commence treatment at an early stage. Inouye et al. (1990)

developed such a tool, called the Confusion Assessment Method (CAM). Fast diagnosis and treatment of delirium in critically ill patients is especially important because an episode of delirium will clearly delay recovery.

An accurate diagnosis of delirium is crucial to the prescription of a specific treatment plan. If delirium is identified properly and at an early stage, preventative measures can be taken to reduce the triggering and promoting factors. Clearly nursing staff have a key role to play in the assessment and also the management of this condition.

In the last 20 years there has been increasing concern relating to the impact of delirium on both the individual patient and health care in general. Several tools have been developed to try and provide an accurate assessment of a patient's psychological state. The Delirium Rating Scale (DRS) was developed for general hospitalised patients (Trzepacz et al. 1988), the Delirium Symptom Interview (DSI) for hospitalised medical or surgical patients (Albert et al. 1992), and the NEECHAM Confusion Scale for elderly hospitalised and nursing home patients (Neelon et al. 1996). However, the validity of these instruments has been questioned (Rapp et al. 2000).

CONFUSION ASSESSMENT METHOD (CAM)

The Confusion Assessment Method is a structured tool to determine whether the diagnosis is delirium/acute confusion state or not. It can be used as a quick bedside test that can be performed by nurses. The tool has been used by several research studies in different settings, for example: on general medicine wards and in an outpatient geriatric assessment centre (Inouye et al. 1990), with elderly patients (Rockwood et al. 1994), in an emergency department (Zou et al. 1998), and in a cardiac surgery setting (Rolfson et al. 1999). The CAM instrument is available in five languages (Inouye 1998) and consists of a questionnaire and a diagnostic algorithm. A training manual, pre-test and pre-test answers are available to help nurses understand and use the instrument correctly.

The questionnaire is filled out by the nurse after a short structured interview with the patient. The patient's behaviour and additional comments should also be included in the evaluation (Inouye 1991). The design of the CAM was based on the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 1997). It comprises the following nine operational criteria:

1. Acute onset
2. Inattention
3. Disorganised thinking
4. Altered level of consciousness
5. Disorientation
6. Memory impairment
7. Perceptual disturbance
8. Psychomotor agitation/psychomotor retardation
9. Altered sleep/wake cycle

These criteria are used in the CAM questionnaire (Inouye et al. 1990). To diagnose delirium, only the first four items (acute onset, inattention, disorganised thinking and altered level of consciousness) are needed (see Table 1). The remaining five items are used to complete the overall impression of the patient. The diagnosis of delirium by CAM requires the presence of features 1 and 2 and either 3 or 4 (Inouye et al. 1990).

CONCLUSION

In different studies the CAM has been proved as a reliable and valid instrument, achieving a high sensitivity and specificity (Inouye et al. 1990, Monette et al. 2001, Rockwood et al. 1994, Rolfson et al. 1999, Zou et al. 1998). The CAM is feasible when used by non-medical staff, but has been shown to work very well when used by trained nursing staff (Zou et al. 1998).

To use this instrument, proper training of the interviewers is necessary and a structured interview setting is needed. This cannot be achieved with all patients in an intensive care unit. A definite diagnosis cannot be made for unconscious, sedated or intubated patients. These patients often raise problems due to acute confusion.

By implementing the CAM, the diagnosis of delirium could be confirmed in a relatively short time, not only by medical specialists but also by nursing staff. The CAM proved to be a safe, reliable and quick method for evaluating the state of confusion of patients at an intensive care unit. The early recognition of delirium by the nursing staff is an important factor for early diagnosis and treatment. It can help prevent further impairment of the patients and so reduce these patients' morbidity and mortality.

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1. Acute onset	Is there evidence of an acute change in mental status from the patient's baseline?		
2. Inattention	a)	Did the patient have difficulty focusing attention, for example, being easily distractible, or having difficulty keeping track of what was being said?	
	b)	If present or abnormal, did this behaviour fluctuate during the interview; that is, did it tend to come and go or increase and decrease in severity?	
	c)	If present or abnormal, please describe this behaviour.	
3. Disorganised thinking	Was the patient's thinking disorganised or incoherent, such as rambling or irrelevant conversation, unclear or illogical flow of ideas, or unpredictable switching from subject to subject?		
4. Altered level of consciousness	Overall, how would you rate this patient's level of consciousness? Alert (normal), vigilant (hyperalert, overly sensitive to environmental stimuli, startled very easily), lethargic (drowsy, easily aroused), coma (unarousable), uncertain.		

Table 1: Questions used to determine the first four criteria used in the CAM (Abridged from *Inouye et al.* 1990, p946).

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