

3 Delirium

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*Historical context • Classification • Epidemiology • Clinical features
• Natural history • Aetiology • Mechanisms of delirium • Differential
diagnosis • Diagnosis • Management • Prognosis • Conclusions*

Delirium is a common accompaniment of physical illness in old age, affecting about one in five of those admitted to medical wards and a higher number of those with fractured femurs. Its existence has long been recognised and recorded in general literature. It is a 'final common pathway disorder', the prime feature of which is altered arousal.

Historical context

Before the public health measures and the advent of antibiotics, infectious diseases were rife. Consequently delirium was a common experience in survivors, as was frequently reflected in the literature of the day. The Latin verb 'delire' (to be deranged, crazy, out of one's wits) appears in the Coventry mystery plays in 1400: "God wyl be vengyd on man.... That wyl nevyr be schrevyn, but evermore doth delyre". Other accounts from literature include:

- (a) Shakespeare's death of Falstaff ("a babbled of green fields").
- (b) Lady Macbeth sleepwalking (compounded by guilt and insomnia).
- (c) Tolstoy's depiction of Anna Karenina's post-partum delirium.
- (d) Dickens' account of Fagin's, presumably psychogenic, pre-execution fantasising.

One of the best known literary deliria is that from which King Lear emerges to recognise his discarded daughter Cordelia; this is not only the most moving moment in the least sparing of Shakespeare's tragedies, but the culmination of an extraordinarily astute and perceptive series of clinical observations of madness in old age. Lear begins the play with his judgement deranged, perhaps by cerebral vascular disease. After being rejected by his daughters and exposed to the storm, he becomes delirious as a result of hypothermia, pneumonia, or both? Then (as is the best outcome of delirium) he

recovers and is reconciled with his youngest daughter. The tragedy becomes even more bitter and she is killed, Lear only briefly outliving her. The play indicates some important features of delirium:

- (a) Older patients are especially liable to delirium.
- (b) Exposure and infection are common causes, so is severe emotional disturbance.
- (c) The premorbid personality contributes to its content.
- (d) It is reversible.
- (e) There is a high mortality.

Classification

Definitions

The *Oxford English Dictionary* (1971) defines delirium as: “a disordered state of the mental faculties resulting from disturbance of the functions of the brain, and characterised by incoherent speech, hallucinations, restlessness and frenzied or manic excitement”.

Etymologically, the word is a metaphor, derived from the Latin ‘lira’, a ridge or furrow in ploughing, meaning ‘to go out of one’s furrow’. ‘Delirium’ is a long-established term, expressing in a single word a concept, which is preferable to alternatives, such as ‘acute confusional state’, ‘acute brain syndrome’, ‘acute brain failure’, ‘acute encephalopathy’ and even ‘intensive care unit psychosis’ (Roca, 1988).

Lishman (1978) defines delirium as “a syndrome of impaired consciousness along with intrusive abnormalities derived from the fields of perception and affect”. Mesulam’s (1985) definition is: “a change of mental state in which the most salient features occur in overall attentional tone”, while Lipowski (1987) describes: “acute onset of a fluctuating state of awareness, accompanied by sleep–wake disruption, lethargy or agitation and nocturnal worsening of symptoms are diagnostic”.

ICD-10

The Tenth Revision of the International Classification of Diseases and Related Health Problems (ICD-10; World Health Organization, 1992) describes delirium (not induced by alcohol and other psychoactive substances) as: “an aetiologically non-specific syndrome characterised by concurrent disturbances of consciousness and attention, perception, thinking, memory, psychomotor behaviour and the sleep–wake cycle” (Box 3.1). It may occur at any age but is most common after the age of 60. The delirious state is transient and of fluctuating intensity; most cases recover within four weeks or less.

**Box 3.1 The ICD-10 criteria features of delirium
(World Health Organization, 1992)**

Impairment of consciousness and attention (on a continuum from clouding to coma; reduced ability to direct, focus, sustain and shift attention)

Global disturbance of cognition (perceptual distortions, illusions and hallucinations most often visual; impairment of abstract thinking and comprehension with or without transient delusions, but typically with some degree of incoherence; impairment of immediate recall and of recent memory but with relatively intact remote memory; distortion of time as well as, in more severe cases, of place and person)

Psychomotor disturbances (hypo- or hyperactivity and unpredictable shifts from one to the other; increased reaction time; increased or decreased flow of speech; enhanced startle reaction)

Disturbance of the sleep-wake cycle (insomnia or, in severe cases, total sleep loss or reversal of the sleep-wake cycle; daytime drowsiness; nocturnal worsening of symptoms; disturbing dreams or nightmares which may continue as hallucinations after awakening)

Emotional disturbances, (e.g. depression, anxiety or fear, irritability, euphoria, apathy or wondering perplexity)

Epidemiology

Being a transient disorder, usually associated with physical illness affecting brain function, delirium has a low prevalence in the community and does not appear in epidemiological studies. Even in general hospitals its prevalence is lower than that of dementia, which increases the risk of admission by dependency and self-neglect and is then associated with delayed discharge. Complementary incidence studies are therefore appropriate and informative for delirium.

A number of studies have looked at the incidence and prevalence of delirium in older patients on medical wards (Pitt, 1995). These have found a prevalence of between 10 and 20%, and new cases in 4–10% of medical admissions. O'Keefe & Lavan (1997) found delirium in 18% of patients admitted to an acute geriatric unit, and it arose in a further 24% in the course of their stay.

The nature of the ward, acute or less so, and the procedures undertaken there (e.g. medical or surgical), may well relate to the frequency of delirium. Gustafson *et al* (1988) found an incidence of delirium in over 60% of consecutive patients undergoing surgery for fractured neck of femur.

Clinical features

Impaired consciousness

'Clouding' of consciousness is a classic sign of delirium, but is not of great diagnostic value because it is only intermittently present. Although Rabins & Folstein (1982) claimed to use clouding alone to distinguish patients with dementia from those with delirium, rating them on a continuum from 'accessible' to 'inaccessible' and validating the distinction by the outcome, in clinical practice it is of far less importance in establishing the diagnosis than the length of the history of confusion. Old people with dementia may be drowsy because they are bored, replete, have been awake all night or are sedated. Where cognition is grossly impaired it is not always easy to determine whether there is also any diminution of consciousness.

Impaired consciousness ranges from failure to maintain attention and distractibility, through drowsiness to unconsciousness, all of which fluctuate. The milder degrees of impairment are the most common, and are very easily missed. Rockwood *et al* (1994) found that before training in the recognition of delirium, house staff diagnosed delirium in 3% of patients over 65 admitted to general medical wards, though after training it was recognised in three times as many. However, Harwood *et al* (1997) found that physicians in Oxford recorded the diagnosis in 14 out of 15 patients in whom psychiatrists had diagnosed delirium by DSM-III-R (American Psychiatric Association, 1987) criteria.

Fairweather (1991) points out that there is a paradoxical contrast between a reduced level of consciousness and increased arousal; a sleepy old person may be startled into sudden apprehensive or aggressive vigilance.

Perceptual disturbances

There is a difficulty overall in making sense of what is perceived (Lipowski, 1994). Dreams and reality are muddled, and patients may take personally what is unrelated to them (ideas of reference) or feel distanced and detached from what concerns them closely.

Visual hallucinations (for example, of insects, strange people, shadowy presences, fronds that cannot be brushed away) or illusions (the flecks on the wall or the pattern on the counterpane perceived as mites, ants or beetles on the move) typically predominate. Distortions include increased, diminished or distanced sights and sounds. According to Fairweather (1991), disturbances of body image are not uncommon: some parts feel shrunk, others enlarged or there may be a sensation of floating. Time, too, may be distorted; a day may seem like a week, a week like a few hours.

These phenomena are neither invariably present nor diagnostic. They are sometimes present in dementia, even when uncomplicated by delirium. Even when they are present in delirium they may not be reported by patients who have enough insight to fear that they may be regarded as evidence of madness!

Impairment of abstract thinking and comprehension

Logic, reason and judgement are all jeopardised by delirium, and 'getting hold of the wrong end of the stick' is a basis of the, not infrequent, paranoid delusions. Sometimes talk that almost makes sense is nevertheless unrelated to the present situation and it is hard to 'get on the patient's wavelength'. A son visiting his sick mother in a nursing home found her talking with animation to an empty room; both before, and after, she caught sight of him. She was discussing domestic arrangements and appointments for her late husband's patients, and the son could not get her to address current issues at all, such as her health and his news. Instead, everything he said was grist to the mill of her preoccupation.

Talk may be rapid and hard to follow, or hesitant, repetitive, stammering, laboured and dysarthric – not unlike that of someone who is drunk. Disconnected, muttered, dysphasic ramblings characterise the patient who is seriously ill with delirium. Incoherence (a late, and then fixed, feature of dementia) is a common but fluctuating accompaniment of delirium.

Memory impairment

The impairment of memory in delirium is the most constant sign and is fairly readily elicited by the judicious use of such cognitive tests as the Abbreviated Mental Test Score (AMTS; Hodkinson, 1973) and the Mini-Mental State Examination (MMSE; Folstein *et al*, 1975) (see Chapter 1). Ni-Chonchubhair *et al* (1995) found a drop of two points on the AMTS, from the pre-operative to the third post-operative day, to diagnose delirium with a specificity of 84% and a sensitivity of 93%. Registration is especially affected by inattention, distractibility and clouding of consciousness, so that many patients, after recovery from delirium, recall very little of the experience – except, perhaps, the more horrific or bizarre hallucinations. Recent memory suffers more than remote and contributes to the disorientation, which, at some time or other, is always found in delirium (of time and place most commonly, but also of person).

Psychomotor disturbances

Excited or agitated over-activity is less common in delirium in old age than apathetic inactivity, although one may suddenly give way to the

other. Tremor is apparent, especially when the patient tries to hold a cup or glass, and the sickest patients pluck at the bedclothes (the 'typhoid state' of the past century). Lipowski (1990) distinguishes three types of delirium according to the state of alertness and psychomotor behaviour:

- (a) Hyperalert–hyperactive: the patient is agitated, distractible, emotional, more likely to hallucinate and show such autonomic features as tremor, sweating, a rapid pulse and breathing, dry mouth, raised blood pressure and dilated pupils.
- (b) Hypoalert–hypoactive: lethargic, withdrawn, slow to respond and frequently incontinent.
- (c) Mixed, with unpredictable rapid shifts from vigilant restlessness to inactivity.

Disorder of the sleep–wake cycle

Lipowski (1980) describes "disorder of wakefulness" as the second core feature of delirium (the first being cognitive impairment). He points out the similarity of the sense of unreality, illusions and hallucinations in the delirious patient to a 'waking dreamer'. Likewise, the reversal of the sleep–wake cycle is similar to the sleepiness by day and restless insomnia at night. The 'waking dream' state has been related to stage one rapid eye movement sleep, from malfunction of serotonergic neurones in the raphe nuclei and/or noradrenergic neurones in the locus caeruleus (Hishikawa, 1981).

Emotional disturbance

While apathy is the most common emotional accompaniment of delirium in old age, anger, irritation, terror, apprehension, bewilderment, depression and even euphoria are also seen, although not usually for long. Lability is characteristic of emotional states other than apathy, laughter giving way to tears, tears to rage, rage to fear, and fear again to laughter, or any of these ending in sudden sleep. Anger may be associated with aggression or paranoia, fear with attempts to escape, euphoria to sexual disinhibition, all of which may cause problems in management. It is worth bearing in mind that however troubled or troublesome the patient is, the state may well not last long.

Natural history

Typically the onset of delirium is acute; one day it is not present, the next it is (or it even develops in the evening, not having been there

Box 3.2 Physical: mnemonic for the clinical features of delirium

Perplexity: because the onset of delirium is so acute the patient is often bemused and bewildered, which may better distinguish it from dementia than, say, clouding of consciousness

Hallucinations: mainly visual

Yawning: by day, because of lack of sleep at night

Suspicion: misapprehensions and frank delusions, secondary to cognitive disorder

Illusions: distorted perceptions

Cognitive impairment: memory, communication, comprehension, judgement

Apathy or agitation: psychomotor disturbances

Lability of mood: laughter, tears, anger, terror

during the day). The prodromal symptoms described by Roca (1988), restlessness, nocturnal agitation, daytime drowsiness, irritability, hypersensitivity to noise and light for a few days before the frank disorder, are probably delirium itself writ somewhat small.

Delirium usually lasts up to a week or two, subsiding as the underlying disorder abates, although cognitive recovery often lags behind physical recovery. Rockwood (1989) found that 18 out of 24 delirious states lasted less than a day (and could, therefore, very easily have been overlooked), while of the rest, the longest was for a week. Koponen *et al* (1989), on the other hand, found that the average duration in 70 elderly subjects in a psychiatric setting was 20 days, with a range of three to 81 days.

ICD-10 states:

“However, delirium lasting, with fluctuations, for up to six months is not uncommon, especially when arising in the course of chronic liver disease, carcinoma or subacute bacterial endocarditis. The distinction that is sometimes made between acute and subacute delirium is of little clinical relevance; the condition should be seen as a unitary syndrome of variable duration and severity ranging from mild to very severe.”

Aetiology

Why does one old person with pneumonia become delirious while another does not? The severity of the infection may differ, but so may susceptibility to delirium. Box 3.3 lists factors which increase the liability of elderly people to delirium (Lipowski, 1987).

Predisposing factors

Age

Seymour and colleagues (Seymour & Pringle, 1983; Seymour & Vaz, 1987) found higher rates of post-operative delirium in patients over 75 years than in those aged 65–74. Burrows *et al* (1985) gave a battery of psychological tests (sorting shapes, recall of an address after 10 minutes, digit span, random reaction time included) to patients before and after cataract extraction, comparing a younger group of subjects (mean age 50) with an older group (mean age 74). Transient cognitive impairment was significantly greater in the older group, who were significantly worse at performing the tests mentioned during the first three days after surgery.

Brain damage

Dementia is a major risk factor for delirium, which sets the clinician the taxing task of distinguishing one cause of confusion from another. Koponen *et al* (1989) found predisposing brain disease in 81% of delirious elderly patients admitted to a psychiatric hospital, and 30% of Rockwood's (1989) delirious old people admitted to medical wards had had dementia previously. Dementia was identified as one of three major risk factors for delirium by O'Keefe & Lavan (1996). Other forms of brain damage than dementia (stroke, Parkinson's disease, head injury, learning difficulties) may also lower the threshold for delirium.

Sensory deprivation

Blindness and deafness limit sensory information and may predispose to the perceptual disturbances of delirium.

Environment

Sudden inadequately explained removal of an old person from one place to another (usually within an institutional setting) might facilitate delirium, especially when cognition is already somewhat impaired. Stories of mentally frail old people who become acutely confused on holiday or when moved from one ward to another are all too common. Inouye & Charpentier (1996) identified the use of physical restraints as a risk factor.

Sleep disturbance

This may contribute to and warn of imminent delirium. Sleep may be disturbed by worry, depression, noisiness, excessive heat or cold,

discomfort, pain, itching, shortness of breath and a full bladder or bowel, among other causes, some of which are easily preventable.

Drugs and alcohol

Foy *et al* (1986) studied patients, aged over 65, admitted to the department of medicine at the Royal Newcastle Hospital. They found that the half who were using benzodiazepine hypnotics had a greater risk of developing a confusional state during the admission, especially if the drugs were stopped abruptly. Habituation to hypnotics may be a more frequent risk factor for delirium in old people than alcohol misuse, which is of great importance in younger adults. Any 'iatrogenic event', notably the prescription of three or more drugs, is implicated as putting the patient at risk of delirium according to Inouye & Charpentier (1996).

Personal characteristics

While it is unlikely that there is any personality susceptibility to delirium, the classic paper by Wolff & Curran (1935) showed that people having a subsequent episode of delirium, even for a different cause, repeated the clinical pattern and content of the first, suggesting a 'host' component.

Precipitating factors

Any physical illness has the potential to cause delirium in a susceptible old person but some seem especially liable to do so. O'Keefe & Lavan (1996) found a raised serum urea and severe illness to be important risk factors. Inouye & Charpentier (1996) identified the use of a bladder catheter. Rockwood (1989) listed the most common causes of delirium, in older patients on admission, as: congestive cardiac failure, gram-negative sepsis (mainly associated with pyelonephritis) and pneumonia.

Box 3.3 Predisposing factors

Ageing or disease of the brain
Impairment of vision and hearing
Reduced synthesis of neurotransmitters (especially acetylcholine)
Changes in pharmacokinetics and dynamics of drugs
High prevalence of chronic diseases
High susceptibility to acute diseases
Reduced capacity for homeostatic regulation

Heart disease

Cardiac causes other than congestive cardiac failure include myocardial infarction (often painless) and transient arrhythmias (notably paroxysmal supraventricular tachycardia) which can cause recurrent delirium and may be revealed by an ambulatory electrocardiograph (ECG). Another cause of recurrent delirium is cerebral emboli from a fibrillating left atrium or carotid atheromatous plaque. Sudden bleeding (e.g. from esophageal varices or a peptic ulcer) may present with delirium, as may other states of acute hypotension, perhaps induced by drugs. Temporal arteritis should not be overlooked (Pascuzzi *et al*, 1989).

Infection

Levkoff *et al* (1988) found a urinary tract infection to be the major risk factor in delirium, while I have found cellulitis (not always apparent until the patient is properly undressed) to be another infection often associated with the syndrome.

Respiratory failure

Respiratory failure, perhaps precipitated by further infection in a patient already crippled by chronic obstructive airways disease, must be mentioned: the patient's wretched plight is compounded by fluctuating confusion from hypoxia and respiratory acidosis or alkalosis. Whitney & Gannon (1966) described obstructive sleep apnoea presenting as acute delirium.

Falls

Many old people fall over and do not remember having done so, so the possibility of concussion, a subdural hematoma or even a fractured femur (in a patient who is anyway not very ambulant) should be considered even if there is no history of a fall. Neglected, impoverished, infirm, depressed, eccentric or miserly old people are at risk of malnutrition and hypothermia, both of which may present with delirium (Inouye & Charpentier, 1996).

Endocrine disorders

Diabetes may be associated with delirium (ketosis, vascular and renal complications, hypoglycaemia from insulin treatment). Hyperparathyroidism (Peterson, 1968), hyperthyroidism and hypothyroidism ('myxoedematous madness'; Asher, 1949) are other endocrine disorders that occasionally present with delirium.

Drug reactions

Delirium may present as a serious adverse drug reaction. Grimley Evans (1982) points out that illness may result from an adverse reaction to a drug previously well tolerated (e.g. digitalis toxicity following a decline in renal function). Anticholinergic drugs, present in eye drops and anaesthesia and used in the treatment of Parkinson's disease and depression, are especially 'deliriogenic' (Tune *et al*, 1981; Blazer *et al*, 1983). Potential precipitants of delirium are listed in Box 3.4.

Mechanisms of delirium

The blood-brain barrier to corporeal toxins may be impaired by ageing (Fairweather, 1991) and dementias are associated with increased vascular permeability (Alafuzoff *et al*, 1983; Elovara *et al*, 1985), which may help to explain the susceptibility of the demented brain to delirium.

Engel & Romano (1959) postulated that there is a widespread reduction of cerebral metabolism, reflected in slowing of background activity on the electroencephalogram (EEG). Blass & Plum (1983) suggested that the synthesis of acetylcholine is especially affected. Delirium has been induced clinically by anticholinergic drugs, and reversed by the anticholinesterase physostigmine (Greene, 1971; Summers & Reich, 1979). Itil & Fink (1966) proposed an imbalance between central cholinergic and noradrenergic activity. Banki & Vojnik (1978) have also implicated serotonin, and Hebenstreit *et al* (1989) claim to have mitigated delirium both prospectively and currently by L-tryptophan transfusions.

Grimley Evans (1982) saw delirium as the consequence of an exacerbation of 'neural noise' distorting attention, memory and perception. Noise, already somewhat increased by age, is increased further by disordered neurotransmitter activity, from anoxic or toxic effects on neurones, while perception is impaired by sensory deprivation (Slade, 1984).

Differential diagnosis**Dementia**

I have pointed out elsewhere (Pitt, 1987) the many similarities between delirium and dementia (thereby agreeing with Isaacs (1992) and others, who talk of brain failure, acute or chronic). Macdonald & Treloar (1996), in an elegant essay about validating concepts of dementia, suggest that the only definite difference between dementias

Box 3.4 Precipitating factors (adapted from Davison, 1989; Fairweather, 1991)

Intracerebral

Vascular: transient ischaemic attack, stroke (infarction or haemorrhage), subarachnoid haemorrhage

Head injury: concussion, subdural haematoma

Infection: meningitis, encephalitis, cerebral abscess

Epileptic: ictal or post-ictal

Neoplasm: primary (glioma), secondary (carcinoma of breast, bronchus)

Extra-cerebral

Vascular: myocardial infection, heart failure, arrhythmia, aortic stenosis, temporal arteritis, haemorrhage, severe anaemia, hypotension

Trauma: surgery, fractures, burns

Infection: respiratory, urinary tract, cellulitis, subacute bacterial endocarditis, herpes zoster, AIDS

Neoplastic: carcinomatosis

Metabolic: hypoxia (heart or lung disease), hepatic failure, renal failure

Endocrine: hyperthyroidism, hypothyroidism, hyperparathyroidism, hypoparathyroidism, hypoglycaemia, diabetic precoma

Electrolyte imbalance: diarrhoea, vomiting, dehydration

Body temperature: Pyrex, hypothermia

Starvation: hypoglycaemia, vitamin deficiency

Drugs

Alcohol use, misuse and withdrawal of alcohol

Benzodiazepines and their withdrawal

Anticholinergics: tricyclic antidepressants, some antipsychotics, old anti-Parkinsonian drugs

Dopamine agonists: levodopa, bromocriptine, amantidine, selegiline

Anticonvulsants: phenytoin, barbiturates,

Cardiovascular: digoxin, diuretics, beta-blockers

Miscellaneous: lithium carbonate, cimetidine, non-steroidal, anti-inflammatory drugs

and deliria is that the latter recover – or do they? (see below). However, the traditional distinctions between the syndromes are of prime importance to the clinician (Table 3.1).

Without a history, the distinction is not always easy. Impairment of cognition, affective reactions (Farrell & Gauzini, 1995) and perceptual disturbances are common to both, and clouding of consciousness is neither always present in the delirious nor always absent in those

who have dementia. People with dementia hallucinate sometimes and when they do they see rather than hear things. They may also develop (mainly paranoid) delusions, although these tend to be much more sustained than those of delirium. Delirium is not associated with a manifest physical cause in a quarter of sufferers, who, on other grounds, seem likely to be delirious (Lipowski, 1980), while people with dementia are not infrequently physically ill. Even the duration of the delirium, as long as six months (World Health Organization, 1992), overlaps with that of dementia (three months according to Marsden, 1978). The distinction of prolonged delirium from Lewy body dementia (McKeith, 1995) may present problems, though complete lucidity during the fluctuating course of the latter is unusual.

However, the onset of delirium is acute, within a day or two, and even in those who already have dementia an acute change in the level of cognition and functioning is usually reported. Clouding of consciousness is nearly always evident at some time during any 24-hour period, and most of the time there is an obvious physical illness (or prescription) to account for the delirium. Hallucinations and illusions dominate the scene more than is usual in dementia. And (although this is a bit late in the day for a diagnosis) the outcome is

Table 3.1 Features of delirium and dementia (adapted from Lipowski, 1987)

Feature	Delirium	Dementia
Onset	Acute	Insidious
Course	Fluctuating	Consistent
Duration	Hours to weeks	Months to years
Lucid spells	Common	Early – occasional
Sundowning	Always	Often
Awareness	Reduced	Clear
Alertness	Heightened or reduced	Usually normal
Attention	Fitful, distractible	More sustained
Sleep–wake cycle	Always disrupted	Occasionally disrupted
Orientation	Variably impaired	More consistently impaired
Memory	Immediate and recent impairment	Recent and remote impairment
Speech	Variably rambling and incoherent	Early – losing words Late – incoherent
Hallucinations	Common, visual	Occasional
Delusions	Fleeting	Early – more sustained Late – absent
Affect	Labile, intense	Often normal or apathetic
Physical illness	Usual	Occasional
Recovery	Common	Very rare

likely to be death or recovery: only the former is usually available to people with dementia.

Mania

Acute mania may take the form of pseudodelirium (Lipowski, 1980). Flights of ideas, especially where the associations are loose, are not unlike delirious ramblings, and manic patients are both inattentive and distractible. Cognition is not easily tested in mania, although the occasional remark may reveal that the patient is quite 'au fait' with matters personal and general. Euphoria is not always part of mania in old age (Pitt, 1982) and there may not always be a past history of affective disorder. However, the absence of an underlying physical disorder and the patient's continuing volubility, over-activity and disinhibition will generally make the diagnosis clear in a week or two. There is, of course, no reliable biochemical test for mania.

Depression

Agitated or retarded depression superficially resembles Lipowski's (1990) hyperalert-hyperactive and hypoactive forms of delirium. Farrell & Gauzini (1995) found that 42% of 'delirious' medically ill old people referred to a consultation-liaison service, were in fact depressed. There is some cognitive impairment in severe depression, but the onset is more gradual than is usual in delirium (except in the recurrent bipolar form of the illness, when the history should be known), and the depth and persistence of the depression, with ideas of profound despair, guilt, poverty or nihilistic delusions, far exceed what is occasionally experienced in delirium. Any refusal of food or fluids is far more resolute, and could actually cause delirium, complicating the depression, through dehydration.

Schizophrenia

Now that so many 'graduate' people with schizophrenia, who are not always able to take proper care of themselves, are back in the community; sick, thought-disordered elderly people appearing in acute medical and geriatric wards could be thought to be delirious by those unfamiliar with schizophrenia. Acute schizophrenia (apart from paraphrenia, in which cognition and personality are well preserved) is rare in later life, but may at first resemble delirium: organic incoherence and schizophrenic thought-disorder are not so easily distinguished. However, lucid spells are lacking in schizophrenia; hallucinations are mainly auditory; the affect may be flat or incongruous rather than labile; rapport may be elusive; and, unless

there is a superimposed delirium, the psychosis will persist without psychopharmacological treatment.

Diagnosis

History

As in every medical diagnosis, the history and examination are paramount. Cognitively impaired patients cannot give a reliable history, so information from others must be sought at the earliest opportunity. This will include when and how the condition developed; what seemed to precipitate it (especially any recent medication); its subsequent course; and any risk factors, especially dementia.

Mental state examination

Mental state examination includes a cognitive test such as the AMTS (Hodkinson, 1973) or the MMSE (Folstein *et al*, 1975) (see Chapter 1).

Specific scales

A number of specific scales have been introduced, mainly for the purpose of research:

- (a) The Delirium Rating Scale (DRS; Trzepacz *et al*, 1988), developed as a complement to DSM criteria to indicate the severity of delirium, has items which refer to aetiology and course. Rockwood *et al* (1996) found that a cut off point of 10 on the DRS diagnosed delirium with a sensitivity of 82% and a specificity of 94%.
- (b) The Delirium Symptom Interview (Albert *et al*, 1992), based on DSM-III, assesses three 'critical' symptoms (disorientation, disturbance of consciousness, perceptual disturbance), as well as disruption of the sleep-wake cycle, incoherence, altered psychomotor behaviour and fluctuations. There is a behavioural sub-scale for patients who do not communicate. The instrument is designed to be usable by other than doctors.
- (c) The Confusion Assessment Method Questionnaire (Inouye *et al*, 1990) requires the following features for the diagnosis of delirium (based upon DSM-III): acute change in mental state, fluctuating course, inattention and either disorganised thinking or altered level of consciousness.
- (d) The Confusional State Evaluation (CSE) has been introduced by Robertson *et al* (1997) in the hope that it will supersede its predecessors. There are 12 core items: disorientation in four modes, thought, memory and concentration disturbance,

distractibility, perseveration, impaired contact, paranoid ideation and hallucinations. There are seven associated symptoms: irritability, lability, wakeful disturbance, increased/reduced psychomotor activity, unease and disturbance of the sleep-wake pattern. Three items relate to the duration and intensity of the delirium.

- (e) The Informant Questionnaire on Cognitive Decline in the Elderly (IQCDE; Jorm, 1994) is a useful means of recording information from informants.

Physical examination

A thorough physical examination will usually indicate the most likely cause of the problems suggested by the history. Such an examination may not be all that easy in an uncooperative or resistant patient, and tact, persuasiveness and opportunism may be demanded to bring it to a conclusion. It is tempting, but not good practice, to wait until the patient is more compliant, because the sooner the diagnosis is made and appropriate treatment started the better. Physical signs suggestive of delirium, fever, tachycardia (Rabins & Folstein, 1982), dysarthria, tremor, asterixis and myoclonus (Fairweather, 1991), may be detected at this time.

Investigations

Body temperature, urine analysis, full blood count and erythrocyte sedimentation rate, biochemical profile including plasma glucose, liver function tests, thyroid function tests, ECG and chest X-ray are always indicated, and serum B12, serology, blood culture, blood gases and ambulatory ECG are often also required. More invasive investigations, such as lumbar puncture and cerebral imaging, are sometimes necessary.

EEG typically shows slowing of alpha rhythms, the emergence of theta waves, and eventually bilaterally symmetrical predominantly frontal delta waves (Davison, 1989). Rabins & Folstein (1982) found diffusely slow EEGs in 81% of their delirious subjects but in only 33% of their patients with dementia. While it is rarely appropriate to use EEG in the diagnosis of delirium per se, it can help to identify focal lesions: infarcts, tumours and epilepsy.

Management

Delirium is an ominous syndrome with a high mortality, so unless it is a terminal event in a patient with a long illness in continuing care

it demands active treatment, which usually means in a well-equipped general hospital. Apart from specific treatment for the underlying disorder, the patient needs:

Fluids

A fluid balance chart; subcutaneous or intravenous fluids if oral intake is inadequate.

Nourishment

Nutritious and high calorie drinks are needed until an appetising balanced diet is accepted; weighing is a useful check. Routine administration of vitamin supplements is not necessary.

Excretion

Urinary output of less than 1 litre a day suggests possible dehydration or retention (needing catheterisation), while constipation may warrant laxatives or a gentle enema.

Information

This, par excellence, is a situation for reality orientation (Holden & Woods, 1988); a large clock and calendar and a familiar photograph may help (Macdonald *et al*, 1989).

Reassurance

Reassurance should be combined with reorientation. "Mr Jones, you're here in St Saviour's Hospital on Ward Nine and I'm nurse Brown; you've got a nasty chest infection and it's made you a bit confused. You came in the day before yesterday, and it's 10 o'clock in the morning of Thursday the 14th of April; your wife was here last evening and she'll be here this afternoon. I'm just going to ask you to take these antibiotic capsules which will soon put you right; here are some 'Get well' cards, for you to look at when you're ready. Ring that bell if you need me for anything – nurse Brown: all right?" (Pitt, 1995). Such an approach requires well-trained, well-supported, patient, empathic and accepting staff. They are still to be found, but not always and not everywhere. Anxious, rejecting staff, more concerned about potentially disruptive behaviour than what underlies it, are quick to shunt the patient into a side-room, use cot-sides and call for sedation or transfer, which may be to the patient's detriment.

Rest

Bright, plain, well-lit surroundings, ready access to the nursing team, quiet, physical comfort and a regular routine all tend to lessen anxiety and promote rest without recourse to sedation.

Sedation

Sedation is sometimes needed, especially when agitation and restlessness are causing exhaustion. Major tranquillisers are useful (see chapter 16). Phenothiazines, like chlorpromazine and thioridazine are anticholinergic, and chlorpromazine is hypotensive too. Drugs with a high affinity for dopamine receptors are preferable. One is haloperidol, 0.5–3 mg orally (tablets or liquid) up to four times a day (or by intramuscular injection). Extrapyramidal side-effects (stiffness, tremor, akathisia, drooling) may rarely require an anti-Parkinsonian (and anticholinergic) drug such as orphenadrine, 100 mg thrice a day by mouth or procyclidine two or three times a day by injection. However, reducing the dose or stopping the neuroleptic is to be preferred. Newer antipsychotics such as risperidone or olanzapine may prove useful.

Minor tranquillisers (benzodiazepines) also have a place in withdrawal syndromes, partly because they are anticonvulsant, although they themselves can cause delirium when withdrawn from those who are habituated to them. The longer-acting are the most suitable (Davison, 1989), e.g. diazepam up to 20 mg a day in divided doses by mouth or intravenous injection. Temazepam (10–20 mg at night) or zopiclone are useful hypnotics.

Meagher *et al* (1996) found that only four of eight potential environmental modifications were used in over 50% of delirious patients referred for consultation–liaison, and these were for the more severely delirious, agitated and emotionally labile patients with sleep–wake disturbance rather than (as might have been more appropriate) those who were disorientated or suffered altered perceptions and disturbed thinking.

Prognosis

There is good evidence that the presence of delirium worsens the chances of surviving the underlying illness (Pitt, 1985). A third of Bedford's (1959) huge series of 4000 patients, delirious on admission to hospital, died within a month. Of the survivors, 80% made a full mental recovery but after six months 5% were still confused. Rockwood (1993) found that after a year, recovery from delirium was complete in only 59% of their sample; prolonged memory impairment was common. While it is most

clinicians' experience that delirious patients who survive, recover, there is a dearth of good studies to demonstrate that this is so, or that if there is continuing cognitive impairment it is part of previous dementia and not the consequence of the delirium.

Saravay & Lavin (1994), reviewing 11 outcome studies, concluded that impaired cognition associated with delirium was a major factor leading to longer stay in hospital and increased use of medical resources. O'Keefe & Lavan (1997) found delirium in patients admitted to an acute geriatric unit to be independently associated with longer stay, functional decline, increased risk of hospital-acquired complications and long-term care

Conclusions

Age and dementia are major predisposing factors of delirium. Infections, anoxic, vascular, metabolic and drug-induced disorders the most common precipitants. Mechanisms include impairment of the blood-brain barrier, neurotransmitter derangement (especially acetylcholine) and increased 'neural noise'. Delirium carries a serious risk of mortality – much greater than dementia, and up to 20 times greater than that of like illness without delirium. It is mainly differentiated from dementia by its abrupt onset and brief duration; otherwise the disorders are strikingly similar. Fluids, nourishment, excretion, information, reassurance, rest and judicious sedation are part of the general management, best undertaken in a general hospital. Mental recovery in survivors is thought to be the rule.

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