



ACUTE AND CHRONIC BRAIN FAILURE - DELIRIUM AND DEMENTIA

Brain failure is more common and costly than heart, lung or kidney failure: however, as the techniques for assessment and management have only been developed and consolidated recently, they have not received the same priority with healthcare staff.

Two thirds of hospital in-patients are over 65: up to **40%** of them suffer from acute/chronic brain failure.

It is important to detect, as:

- it affects diagnosis and therapy
- can be managed positively
- affects nursing management
- is a marker for morbidity, mortality, institutionalisation and length of stay

We use a four stage approach:

first to detect/establish the presence of cognitive impairment (AgePage 2)

second to establish the presence of dementia, delirium or other psychiatric illness

third determine the specific cause of the dementia/delirium

fourth treat underlying causes and aggravating factors, management package.

Comparison of diagnostic levels in brain and pulmonary disease

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|----------------------|-------------|
| Cognitive impairment | Dyspnoea |
| Dementia | Alveolitis |
| Alzheimer's | Psittacosis |

Once cognitive impairment is established, it is important to work out whether this is acute brain failure (delirium), chronic brain failure (dementia) or a combination.

Delirium

Delirium is common among sick older people. It may be found at admission or may occur during stresses such as when perioperative or during intercurrent illness. It is characterized by

- relatively short onset
- clouding of consciousness
- memory problems

and may be accompanied by

- alteration of the sleep/wake cycle
- increased/decreased psychomotor activity
- delusions/hallucinations
- incoherent speech

Almost any illness or drug can cause delirium. In the presence of a clear cause (drug, infection, metabolic, MI, stroke) the strategy is to

- treat the illness and/or remove the drug

- avoid sedation: if required start low, go slow (NB PRN sedation associated with falls, fractures and death)
- correct metabolic/nutritional abnormalities
- avoid restraints
- do not start planning long-term care precipitously!

Peri-operative delirium can be avoided by scrupulous attention to oxygenation, blood pressure, infection, drugs and nutrition

Dementia

The diagnosis of dementia is relatively straight-forward: three positive and two negative criteria are required

- Significant memory problems
- Other cortical deficits (aphasia, apraxia, personality change, loss of judgement)
- Social or occupational dysfunction as a result of the above
- Absence of altered consciousness (implies delirium)
- Absence of uncorrected secondary causative factors

Assessment of social or occupational dysfunction obviously requires a **collateral history**, i.e., a history from the patient's family or friends. The inclusion of the higher cortical deficit is of some interest: it emphasizes the organic nature of the dementing diseases, and highlights the frequent parietal deficits found in dementia. For example, 100% of patients with Alzheimer's disease have a form of nominal aphasia - in the early stages it is quite subtle, and skillful use of circumlocution by the patient may mask its presence.

The third stage is to diagnose the cause of the dementia: to those who feel that this step is superfluous

- vascular dementia, may stabilize or even improve with the control of such risk factors as smoking and hypertension.
- symptomatic drug therapy (donepezil, rivastigmine) is available for Alzheimer's disease.

Although there are nearly 100 established causes of dementia, approximately ten major causes of dementia are routinely screened for in common practice

- Alzheimer's disease (AD), an exclusion Dx
- Vascular dementia (VaD)
- Mixed (AD and VaD)
- Lewy body dementia
- Alcoholic dementia (not Korsakoff's)
- Parkinson's dementia
- Fronto-temporal dementia
- *B12 deficiency
- *Hypothyroidism
- *Tertiary syphilis
- Depressive pseudodementia...

There are a host of others, including HIV, normal pressure hydrocephalus,



Huntingdon's, Creutzfeld-Jakob. The incidence of *classical 'reversible' dementia is probably quite low in older people

Necessary factors for diagnosis include

- a history from the patient
- a history from a collateral source
 - onset
 - progression
 - behaviour
 - problems
- full physical examination
 - mental state
 - affect
 - neuro/CVS exam
- basic biochemistry / haematology screens
- ESR
- thyroid hormone
- vitamin B₁₂ and folate
- syphilis serology
- ECG
- chest X-ray

A high index of clinical suspicion is required for alcohol abuse, depression, HIV and the features of normal pressure hydrocephalus.

The use of neuro-radiology depends on

- i) the presentation
- ii) the expertise of the clinician in interpreting and using the information, particularly presumed vascular stigmata such as white matter change.

Clinical suspicion or evidence of a space occupying lesion or of normal pressure hydrocephalus should be followed with a CT scan of the brain. Single photon emission computerized tomography (SPECT) is a potentially useful tool: however, its usefulness as a diagnostic technique in SDAT has not been established.

Factors in diagnosis

AD: insidious onset and progression, Fam Hx of dementia, Down's syndrome, cortical signs

Vascular dementia: Vascular signs/stigmata*, may be sudden onset, stepwise progression, gait disturbance, incontinence, emotional lability

- *ie, Hx stroke
- Hx neuro signs
- O/E neuro signs
- Other clinical atherosclerosis, including atrial fibrillation

Lewy body dementia: Parkinsonism, fluctuating mental state, delusions/hallucinations, neuroleptic sensitivity, sub-cortical signs, falls

Fronto-temporal dementia: frontal signs, may be little memory disturbance at the beginning

Huntingdon's: Fam Hx, chorea, sub-cortical signs

Chromosome associated:

AD: 1, 14, 21 pre-senile
19 (ApoE) senile
12?

(see [Nature Genetics 39, 17 - 23 \(2007\)](#))

FTD 17
Huntingdon's 4
Creutzfeld-Jakob 20
Familial AML 20

Management

- 1) Share diagnosis with carer, and usually, the patient
- 2) Information
Alzheimer Society of Ireland
- 3) Treat underlying cause(s)
AD, VaD, Mixed
- 4) Treat aggravating factors
Depression, alcohol, medication
- 5) Assess function, problem list
Behaviour, safety, driving..
- 6) Psycho-social care package

For further practical information, see

www.dementia.ie

www.alzheimer.ie