

## Dementia

### Definition of dementia

- Dementia is a syndrome comprising a combination of symptoms resulting from the decline in function of the brain.
- As will be discussed below, there are a number of different underlying disease processes for different forms of dementia, and the pattern of presentation, progression, and symptoms suffered depend on these underlying processes, and the areas of the brain that are being affected in an individual.
- ***“It is a physical disease, not some mystic curse. Therefore, it will fall to a physical cure. There is time to kill the demon before it grows.”*** – Sir Terry Pratchett (1948-2015) on his diagnosis of Posterior Cortical Atrophy.

### Epidemiology of dementia

- Within the UK the estimated population with dementia is 850,000 (as of 2015)
  - Projected to rise to 1,000,000 by 2025
- Increasing prevalence with age
  - Proportion of sufferers doubles within each successive 5-year age group
  - One in six people aged >80 have dementia
  - Some types can affect younger people, with 40,000 dementia patients aged <65
- Female:Male ratio of 2:1
- Estimated cost to UK of £26 billion/year
- Almost half of people living with dementia have no diagnosis

### Type of dementia

- Alzheimer’s dementia – most common, ~60% of dementia cases
- Vascular dementia (25%)
- Lewy body dementia (15%)
- Other, rarer causes:
  - Frontotemporal dementia (Pick’s disease, higher incidence in younger patients)
  - Neurosyphilis
  - CJD

### Investigations in dementia

- The aim of investigations is twofold: to rule out other conditions that might give a dementia-like picture and to help identify the aetiology of any underlying dementia.
- Ultimately, the exact cause of a dementia can only be proven at post-mortem (eg the finding of beta-amyloid in Alzheimer’s dementia), and diagnosis is a clinical one with clues gained from corroborating investigations.
- Blood tests (in roughly descending order of importance...)
  - Thyroid function tests
    - Rule out hypothyroidism as a cause of a dementia-like presentation
  - B12

- Low levels can cause mental retardation, memory impairment, mood changes
  - Blood glucose
    - Independent risk factor for dementia
    - Unclear if high blood sugars are direct cause
    - Iatrogenic hypoglycaemic episodes can also cause worsening dementia
      - Indeed, tightly controlled blood sugars in the elderly has a negative impact on mortality
  - Urea and electrolytes
    - Severe disturbances can cause cognitive impairment (e.g. renal failure and hyperuraemia)
    - Sodium and calcium are particularly important
  - Liver function tests
    - Metabolic causes in liver dysfunction (e.g. hyperammonaemia in cirrhosis)
    - Rarer causes (e.g. Wilson's disease)
  - Infective screen
    - FBC, ESR, CRP to look for superimposed infection as cause of confusion
    - HIV-associated dementia
  - Autoimmune screen
    - Should be considered in rapidly progressive dementia
  - Further tests
    - More specific tests are rarely needed. However, if there is diagnostic uncertainty they may include: serum and urinary copper and caeruloplasmin (Wilson's disease); ammonia (liver disease and inherited metabolic abnormalities); HIV; syphilis serology
- CT brain
  - Rule out other causes of cognitive impairment such as:
    - Tumour
    - Chronic sub-dural bleeds
    - Stroke
  - Helps point to aetiology
    - Small vessel disease suggestive of vascular dementia
    - Predilection to certain brain areas (e.g. frontotemporal dementia)
- MRI
  - Can provide more detail than a CT scan
  - Better at identifying prion disease (e.g. CJD)
- EEG
  - Certain waveforms can be associated with certain dementia causes
  - Rarely used in practice, more of academic interest (so details not included here)
- Lumbar puncture is infrequently needed but may be indicated if there is suspicion of prion disease
- In reality, the standard tests for a memory assessment clinic would be FBC, U+Es, bone profile, LFTs, CRP, ESR, TFTs, B12, folate, CT head

### Cognitive function tests in dementia

- [Click here](#) to learn about the Mini Mental State Exam (MMSE) , Montreal Cognitive Assessment (MoCA), CLOX test, Hopkins Verbal Learning Test

## Management of dementia

- At present – despite what mass media frequently misreports – there is no cure or treatment yet developed that might halt or reverse the degeneration of the brain in dementia. Management is therefore both a generalised and practical one aimed at managing the condition to prevent complications (e.g. falls and fractures, self-harm from a lack of safety awareness etc...) and hospital admission, though with some medical treatments available in some conditions to help with symptoms.
- **General management**
  - Obtain the diagnosis so that advanced care plans can be made
  - Community day centres
  - Social services involvement with packages of care, pendant alarms, meals on wheels etc.
  - Nursing or residential care if required
  - Provision for future finances and care e.g. power of attorney
  - Driving
    - Patient must inform DVLA if diagnosed with dementia
    - Should consider stopping driving if memory impairment advancing to avoid potentially deadly accidents
  - Dossett boxes for medication compliance
- **Medical management**
  - Replacement of low-levels of neurotransmitter chemicals seen in some dementias
    - Acetylcholinesterase inhibitors (e.g. donepezil, rivastigmine, galantamine)
      - ECG to show no PR interval prolongation
      - Can cause issues with muscurinic excitation e.g. incontinence
    - NMDA receptor antagonist (e.g. memantine)
      - Protects against excess glutamate production seen in Alzheimer's
  - L-dopa
    - Can help with symptoms of Parkinsonism, but only in around 1/3 of patients with LBD
    - Can worsen cognitive symptoms and hallucinations seen in LBD
  - Secondary prevention of risk factors
    - Particularly relevant for vascular dementia
    - Stop smoking!
    - Aspirin/clopidogrel (based on nature of any underlying cardiovascular dx)
  - Anti-psychotics
    - Should be avoided if at all possible
    - Can increase risk of seizures (especially is patient on other seizure threshold-lowering drugs such as donepezil)
    - Can lead to worsening of any associated movement disorders