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specialist workplace, healthcare and hazard management

Dementia

Cognitive decline in older people

Dementia inheritance

Who is Dr Simon Ryder-Lewis?

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- Medical doctor
- Specialist Occupational Physician
- High hazard industries: oil, maritime, commercial diving, rail
- CMO

Outline

- What is dementia?
- Brain function
- The normal ageing brain
- Causes of dementia
- Features of dementia
- Dementia vs normal ageing
- Dementia vs delirium
- The ageing worker and cognitive decline
- Assessing cognitive function
- Treatment of dementia
- Questions?

What is dementia?

- Dementia is a syndrome due to disease of the brain, usually of a chronic or progressive nature, in which there is disturbance of multiple higher cortical functions, including memory, thinking, and orientation, and comprehension, calculation, learning capacity, language and judgment.
- Deterioration in emotional control, social behavior, or motivation
- Many different causes

Brain Function

- Frontal – intelligence / judgement / behaviour / personality (=>familiarity, tactless and sexual indiscretions) / distractibility / poor motivation / Inability to adapt to new situations / poor problem solving skills
- Temporal – memory
- Parietal - language

The normal ageing brain

- Volume shrinks
- Neurons are lost
- Begins in our 20’s
- Is some memory loss normal?

Causes of dementia

- Most common is Alzheimer's dementia 2/3.
  - Deposits of amyloid in the brain referred to as "plaques" – eventually lead to "tangles"
  - Causes – genetics, exposure to some glues / paints, history of TBI, smoking
- Other causes
  - Vascular (second most common)
  - Picks (fronto-temporal)
  - Infection (CJD)
  - Infection (AIDS)

Causes - genetics

- Most dementia is not inherited (including Alzheimer's – 99% sporadic)
- Alzheimer's Genetics - two forms;
  - Early onset:
    - Rare, <65, tends to cluster in families. Caused by mutations in one of 3 genes. Amyloid precursor protein gene (APP) or one of 2 presenilin genes (PSEN-1 and PSEN-2).
    - Account for < 1/1000 cases. Testing available.
  - Late onset:
    - >65, inheritance is more complex.
    - APOE (2,3,4) gene is best known. APOE4 carries the highest risk.

Features of dementia

- More common over 65 yrs.
- Often unmasked when a person is left alone suddenly, e.g. after the loss of a partner
- Usually a history of several months of slow deterioration with lack of self-care, memory

Dementia vs normal ageing

Normal age-related “forgetfulness”	Mild cognitive impairment	Dementia
Sometimes misplaces keys, spectacles, or	Frequently misplaces items	Forgets what an item is used for or puts it in an
Momentarily forgets an acquaintance’s name	Frequently forgets people’s names and is slow	May not remember knowing a person
Occasionally has to “search” for a word	Finding words becomes more difficult	Begins to lose language skills. May withdraw
Occasionally forgets to run an errand	Begins to forget events or newly learned	Loses sense of time. Doesn’t know what day it
May forget an event from the distant past	May forget more recent events or newly learned	Working memory is seriously impaired. Has remembering new information
When driving may momentarily forget where to self	May temporarily become lost more often. May understanding and following a map	Becomes easily disoriented or lost in familiar hours
Jokes about memory loss	Worries about memory loss. Family and friends	May have little or no awareness of cognitive

Dementia vs delirium

- Whys is this important? Reversible

Feature	Delirium	Dementia
Onset	Acute	Insidious
Course	Fluctuating	Consistent
Duration	Hours to weeks	Months to years
Lucid spells	Common	Early - occasional
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

The ageing worker and cognitive decline

- Age 25-50 slow onset of cognitive decline
- But many CEO's of companies are in their 60's ? why
- Fluid vs crystallised cognition
  - Peak age for mathematics 26.5
  - Peak age for historians 38.5
- General cognitive ability **"G"** is a better measure than IQ

Cognition and work

- **“G”** is primary determinant of work success and income
- G predicts training performance
- Higher G – less depression and general health
- G predicts work violence (inverse proportion)
- High G => longer life, especially MVA’s. ? genetic ? better work health ? better able to assess risk
- Work success G, emotional intelligence, personality, creativity…etc.

Age and work performance

- Older workers may be…
  - More motivated, team players etc.
- Overall for many jobs there is little decline in performance with age
  - Air Traffic Control is an exception
- Practical application - Look at job tasks
  - Avoid or modify fluid tasks – e.g. avoid driving in rush hour.

Assessing cognitive function

- Medical history
  - writing, reading, money. Also interview partner / family
- Cognitive Assessment tools:
  - MMSE < 24/30. Poor frontal lobe and non dominant parietal lobe (Visuospatial) assessment.
  - Addenbrookes (ACER NZ 2007)
  - MOCA
  - Problems - effort not assessed, anxiety a confounder, differential diagnoses include delirium and depression etc.
  - Formal neuropsychological assessment
- Dementia screen
  - CBC, U&E (B12, folate), MSU, TFT, CT head and ? syphilis / HIV serology

Dementia treatment

- Treat the cause – e.g. hypertension / diabetes if possible.
- Symptoms such as pain can cause BPSD (behavioural and psychosocial symptoms of dementia)
- Counselling for the family, support groups
- Medication - cholinesterase inhibitors (Alzheimer's) Aricept, Exelon and Reminyl – some success in improving memory and attention skills and help behavioural symptoms such as aggression.

Dementia treatment

- Antipsychotics in dementia for distressing features:
  - Calling out, aggression, agitation, “sundowning”
  - Medications used:
    - Risperidone commonly used (? Increased risk of stroke)
    - Quetiapine

Thankyou…

Questions?