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Dementia: Alzheimer's Disease, Vascular Dementia, Dementia with Lewy bodies and Fronto-temporal Dementia.

Dementia (a contraction of 'de', meaning 'without' and 'ment', meaning 'mind' in Latin), refers to a group of disorders characterized by memory impairment (which often occurs as the earliest symptom) and one or more cognitive deficit. Patients may have difficulty remembering recent events or conversations, registering and consolidating new knowledge, misplace objects, forget to do things (like turn off the stove), and in more severe stages, forget names and fail to recognize relationships, and lose well-learned information from the past. There may also be losses in spatial ability, receptive and expressive language and reasoning, judgement and insight which increases risk in activities of daily living (such as driving a vehicle) and detrimentally affects awareness of personal functional losses, which as a consequence may lead to injudicious, often overoptimistic or grandiose ventures.

Dementia is differentiated from normal age related cognitive decline in that the decline occurs to a greater extent than could be reasonably explained as the result of normal aging. Dementia is far more commonly seen in people older than 65 (i.e. the geriatric population), but may occur prior to this age, in which case it is referred to 'early onset' dementia.

Dementia is usually progressive and neurodegenerative, i.e. follows a worsening course resulting in irreversible damage to the neurons. Deterioration is usually slow. In a few, rarely found types of dementia, progression may be rapid.

Many types of dementia exist, based on etiology, with each of these dementias further differentiated by characteristic onset, course and symptomatic presentation. Commonly found dementias are;

- Alzheimer's disease (AD)
- Vascular dementia (VD)
- Lewy Body dementia (DLB)
- Fronto-temporal dementia (FTD)
- Substance-induced persisting dementia
- Head trauma
- Multiple sclerosis
- Parkinson's disease
- HIV related dementia
- Pick's disease
- Hydrocephalus
- Creutzfeld-Jacob disease
- Huntington's disease

The most commonly found dementias are AD, VD, DLB and FTD. AD, VD and DLB respectively account for 55%, 20% and 15% of incidence. In developed countries, the prevalence of dementia is approximately 1.5% at age 65, which doubles every four years after age 65, and reaches 30% in 80 year olds.

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Differential Diagnosis of AD, VD, DLB and FTD

Alzheimer's Disease (AD)

- AD is marked by multiple cognitive deficits, however the hallmark symptom is gradual and insidious-onset of impairment in deficient consolidation (rapid loss) of new information.
- The condition progresses gradually towards the development of accompanying cognitive deficits such as aphasia, apraxia, agnosia and disturbance in executive functioning.
- The development manifests in significant functional decline.
- The classic neuropathological signs of Alzheimer's disease are an increase in deposits of amyloid-beta protein plaques, an increase in neurofibrillary tangles and synaptic and neuronal loss. Additionally, oxidative stress, or damage to cellular structures by toxic oxygen molecules called free radicals, is also regarded as a pathology characteristic of AD
- Older patients with Alzheimer's show signs of cerebrovascular disease in addition to typical Alzheimer's neuropathology.

Vascular Dementia (VD)

- In contrast to AD, VD has an abrupt onset and a clear temporal relationship between vascular insult (stroke) and cognitive deterioration.
- Progression is stepwise, rather than gradual, typically in correspondence to further vascular insult.
- Neurological and neuropsychological symptoms are more inclined to be focal and 'patchy' and are specific to affected neurological areas.
- Additional features as impaired executive functioning and early development of a gait disturbance.

Mixed AD/VD

- The degenerative changes of AD and the vascular changes of VD commonly co-exist, as small strokes and risk factors for VD appears to increase the symptomatic expression of gradual deterioration (AD).
- Mixed AD/VD is especially common in the very old.

Dementia with Lewy Bodies (DLB)

- Similar to AD, however pronounced varying attention and alertness, visual-spatial difficulties and disorder of executive function occurs early on in the condition, rather than memory decline.
- Well defined visual hallucinations, systematized delusions and the presence of agnosia helps distinguish DLB from AD early in the disease.
- The presence of REM sleep disorder against the backdrop of dementia suggests DLB.
- The presence of Lewy bodies, usually concentrated in the substantia nigra, throughout the cortex, however, approximately 20% of autopsies reveal the significant presence of Lewy bodies in patients with AD.
- Marked day to day fluctuation in deficits, with particularly pronounced variation in attention and alertness.
- Repeated falls.
- Syncope, i.e. transient loss of consciousness or postural tone.
- Motor features of Parkinson's disease.
- In comparison to patients with AD, patients with DLB tend to perform better on tests of confrontation naming and verbal memory and worse on tests of executive function and visuospatial abilities.
- Neuroleptic sensitivity.

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Fronto-temporal Dementia (FTD)

- Like AD, FTD has an insidious onset and progresses gradually, and tends to present in middle-aged patients.
- It is caused by degeneration of the frontal lobe of the brain, which may extend to the temporal lobe.
- Memory, perception, spatial skills and praxis remain relatively preserved, and where they do occur, they signal onset of later stages in the disease.
- Executive function, i.e. planning and organizing are compromised with patients typically become apathetic and/or disinhibited.
- Apathetic patients may become socially withdrawn remain in bed and decline in capacity for self-care and personal hygiene. Emotional blunting more typically occurs in the initial stages of the disease, and may be mistaken for a psychiatric disorder.
- Disinhibited patients may make inappropriate (sometimes sexual) comments or perform inappropriate acts or steal, which may lead to police involvement. Disinhibition occurs later in the development of the disease.
- Other signs are mental rigidity, distractibility, hyperorality and perseveration.
- Prominent language changes frequently occur with reduction in verbal output. This includes Progressive Nonfluent Aphasia (PNFA), which is a breakdown in speech fluency due to articulation difficulty, phonological and/or syntactic errors but in which word comprehension is preserved and Semantic Dementia (SD) in which fluency with normal phonology and syntax is retained but difficulty with naming and word comprehension increases.
- Psychotic symptoms are rare in FTD, possibly due to limited temporal-limbic involvement in this disorder.
- Additionally, primitive reflexes (known as frontal release signs) may be elicited. Usually the first of these frontal release signs to appear is the palmomental reflex which occurs relatively early in the disease, whereas the palmar grasp reflex and rooting reflex appear late.

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