Week 13

- KW27 - Dementia (Parkinson's)
- O15 - Case Report (RJ)
- Writing workshop: in-class time to work on Clinical Reports which are due next week

KW27 : Parkinson's Disease

DSM-5 NCD - Review

- Minor NCD:
  - A - moderate cognitive *decline* in one or more *domains*
    - 1 - from patient, informant, or clinician
    - 2 - NP deficits : 1-2 SD below expectation
  - B - little interference with ADLs
  - C - not due to Delerium.
  - D - Not due to other disorder
- Major NCD:
  - A - significant cognitive *decline* in one or more *domains*
    - 1 - from patient, informant, or clinician
    - 2 - substantial NP deficits (2+ SD below expectation)
  - B - interference with ADLs
  - C - not due to Delerium.
  - D - Not due to other disorder

DSM-5 Cognitive Disorders Compared

	Delirium	Minor Neurocognitive Disorder	Major Neurocognitive Disorder
Timeframe	acute (hours to days)	insidious (months)	insidious (months)
Domains affected	Attention Consciousness Orientation (and others)	One or more	Two or more*
NP Deficits	(untestable)	1-2 SD below normal	2+ SD below normal
Activities of Daily Living affected?	Yes	Little	Yes

DSM-5 : Etiological SubTypes

- Types
  - Alzheimer's
  - Frontotemporal lobar degeneration (FTD)
  - Lewy Body Disease
  - Vascular Disease
  - Head Trauma (TBI)
  - Parkinson's
  - Huntington's
  - Creutzfeldt-Jakob
  - Other Medical Condition
  - Substance/Medication use

DSM-5 : NCD due to Parkinson's Disease

- A - NCD criteria are met
- B - It is Parkinson's disease -- (see next slides)
- B - insidious onset, gradual progression
- D - not explainable by other medical or mental disorder

- Specifiers:
- 1. No evidence of mixed etiology affecting cognitive decline
- 2. Parkinson's disease clearly predates NCD
- Probable:
  - both 1 and 2 are true
- Possible:
  - either 1 or 2 are true

PD Motor Symptoms

- Positive Symptoms
  - tremor at rest (reduced with purposeful movement)
    - *rest tremor = pathognomonic sign of PD*
  - muscular rigidity
  - involuntary movements
    - akathesia, tics
- Negative Symptoms - disorders of
  - posture (unable to maintain posture, equilibrium / loss of balance)
  - righting (can't stand up or roll over)
  - locomotion (can't walk normally - shuffle with short footsteps)
  - speech: loss of prosody, gravelly speech
  - akinesia / bradykinesia: slow or lack of motor behavior

PD Cognitive Symptoms

- Up to 60% of PD patients have cognitive/emotional symptoms
- Emotional
  - reductions in libido, motivation, attention. Lack of activity (may sit quietly for hours). Apathy
  - Anxiety
  - Depression (25% having *major* depression)
- "Subcortical Dementia"
  - cognitive slowing
  - executive functioning
  - memory deficits
    - retrieval rather than learning
    - recognition better than recall

PD - a *subcortical* dementia

- Subcortical Dementia
  - cognitive slowing
    - can perform tasks given enough time
  - executive functioning
    - attentional control, planning, changing strategies
  - memory deficits
    - retrieval rather than learning
      - --> information *is* being stored
    - recognition better than recall
      - --> information can be found, if given appropriate cues

PD Course

- Insidious onset
  - slight tremor or stiffness at first
  - bradykinesia
  - masked facies (flattened affect)
  - stopped posture, shuffling gait
  - speech slows, monotone (lack of prosody)
  - trouble swallowing, drooling
- Progression is variable - typically 5 years from Dx to disability, 10-20 years until incapacitated

Dementia : Prevalence

Type	Proportion of all dementias
Alzheimer's	*46%
Vascular	22%
Parkinson's	2%
Huntington's	< 1%
Other (including Mixed)	30%

* DSM-5 claims "60% to over 90%"

PD Prevalence

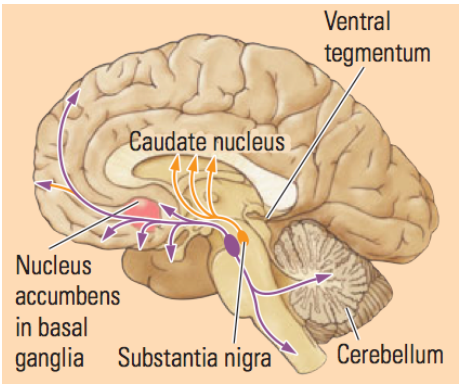
- Prevalence:
  - About 0.1% to 1.0% of adults worldwide, risk increases with age
  - About 4% at age 80+

PD Causes

- Types:
  - idiopathic
  - postencephalitic
    - sleeping sickness of 1916-1917 to 1927
    - Oliver Sack's book *Awakenings*
  - drug-induced
    - antipsychotics
    - MPTP (bad batch of synthetic MPPP, a synthetic opioid)
- Causes:
  - degeneration of substantia nigra ("black area")
  - loss of dopamine projections to cortex

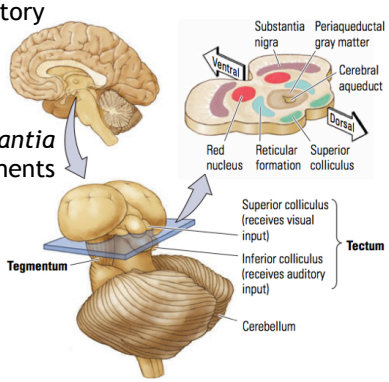
Dopaminergic Activating System

- Nigrostrial
  - Functions:
    - normal motor behavior
  - Damage/Disease:
    - Parkinson's
- Mesolimbic
  - Functions:
    - reward & pleasure
  - Damage/Disease:
    - addiction
    - schizophrenia



Midbrain

- Nuclei related to motion
- superior & inferior colliculi coordinates visual/auditory motor responses
- red nucleus - limb movements
- black substance - *substantia nigra* - initiating movements & rewards



PD Treatment

- Drugs
  - Dopamine Agonists
    - L-Dopa - converted to dopamine in the brain
      - combined with carbidopa (which prevents peripheral conversion to DA). Patients suffer ON/OFF syndrome with severe motor symptoms (e.g. MJF, RJ)
    - amphetamines
    - MAOIs
  - Anticholinergics
    - block ACh which is overactive in low DA conditions
- Surgery
  - thalamotomy
  - stem cells
  - DBS : deep brain stimulation

PD Risk Factors & Prevention

- Risk Factors
  - Some genetic risk (but not strong: 15% of cases?)
  - 60% higher risk in those exposed to pesticides (correlated with living in rural areas/drinking well water/ being a farmer?)
- Prevention:
  - consumption of both coffee and tobacco associated with reduced risk
    - highest caffeine drinkers had up to 80% reduction in risk of PD
    - tobacco, however, causes much other harm

O15 : RJ (Parkinson's Disease)

Ogden Ch. 15: Parkinson's Disease : "Robert"

- ID & Presenting Problem
  - RJ 58 year old MD, referred by neurologist for baseline NP workup
- Background
  - Family Hx: father had hand tremor
- Sx & Hx
  - Noticed tremor in LH during a talk he was giving (ironically, about Parkinson's disease). Tremor in LH (he is Left handed) mostly while not using it
  - 4 months later, son (also MD) noticed it while golfing
  - family "encouraged" RJ to get evaluated by neurologist
- Initial Dx from neurologist
  - stage 1 PD: unilateral tremor, bradykinesia, rigidity

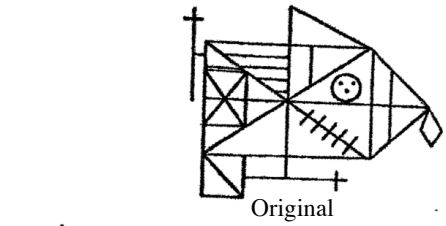
Ogden Ch. 15: Parkinson's Disease : "Robert"

- Tx:
  - started L-Dopa with very good results
  - tremor controlled
  - reduced work schedule, took on partner at work
  - Prozac for depression
- After 3 years
  - voice very faint, micrographia, wetting bed
  - seeing only easiest cases
- After 5 years
  - ON/OFF symptoms after taking L Dopa
    - ON: 30 minutes after taking: choreatic dyskenesias
    - 60 minutes of normality
    - OFF: bradykinesia (could be stuck in a chair)

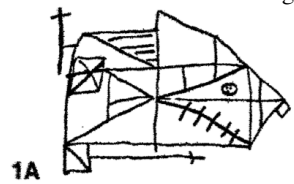
Robert : NP Testing

- Age 58
  - High overall IQ, especially on Verbal abilities
  - Mild visuospatial deficits
  - Cognitive slowing
  - Executive dysfunction
  - Rey Complex Figure test
    - copy : fair
    - memory poor but not as bad as Alzheimer's patient
- Age 60
  - no significant worsening in NP tests
  - however, gave up driving (having trouble changing lanes)

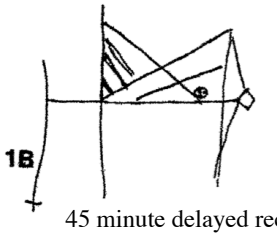
RJ: Rey Complex Figure



Original



Copy age 58



45 minute delayed recall

Ogden Ch. 15: Parkinson's Disease : "Robert"

- After 6 years, he had right-sided pallidotomy with good results
  - symptoms reduced, ON/OFF syndrome much better
  - could show facial expressions again
- After 7 years
  - tried DBS for left-side of brain, good results
  - by enabling "magic wand", could reduce symptoms