Parkinson's Disease

Defn :- Parkinson disease is a chronic progressive neurological disease that is associated with a loss of dopaminergic neurons in substania nigra pars compacta in brain

Intro :-

- It is a type of movement disorder.
- It happens when nerve cells in the brain don't produce enough of brain chemical called dopamine.
- Oxidative stress is plays an important role in dopaminergic neurotoxicity.
- Dopamine is a chemical messenger that transmits the signals between two regions of the brain

Etiology :-

- Parkinson's signs & symptoms :-
  - tremor of hands, arms, legs, jaw & face
  - ~~arms~~ Bradykinesia or slowness of movement
  - Rigidity or stiffness of limbs & trunk
  - postural instubility or impaired balance
  - Ataxia Incoordination
  - Speech & writing changes
- Non-motor symptoms such as sleep disturbance depression

- Environmental factors may increase a person's risk of developing parkinson's disease.
- The Pesticides & herbisids in furming & traffic or industrial pollution may contribute to developing parkinson's disease.
- The other causes are medication, progressive bacin condition & cerebro-vasculor disease.

Pathophysiology :-

- Various pathway & their dysfunctions
- resulting from genetic modifications are lead to an increased oxidative stress.
- Mutations or altered expression of these proteins result in mitochondrial dysfunction oxidative stress & protein misfolding. also dopamine metabolism may be oxidized
- Environmental toxins impair mitochondrial function, increase the generation of free radicals & lead to aggregation of proteins.
- Neuroinflammatory mechanisms might contribute to cascade of consequences leading to cell death

Genetic disposition

Age

Environmental factors

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induction of lewy bodies & deposition of neuromelanin

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mitochondrial dys-function, inflammation

oxidative damage to DNA, lipids & proteins

Alteration in dopamine metabolism axonal transport dysfunction

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Induction of apoptosis & abnormal movements

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Symptoms of Parkinson's

- tremor
- Bradykinesia
- Rigidity
- postural instability
- Ataxia
- speech & writing changes

Treatment :-

- Treatment include medication & surgical therapy.
- Other treatments also include life style modifications like getting more rest & more exercise

Medications

1) Anticholinergics : atropine, Benzoatropine
2) Dopaminergics : levodopa
3) Dopamine agonist : Bromocryptin
4) MAO inhibitor : Selegine

Sergical treatment

1) Thalamotomy
2) Pallidotomy
3) Fetal tissue transplantation