Libyan International Medical University
www.limu.edu.ly

Recent Trends in Parkinsonism Treatment

By
Zuhir A. Bodalal
Nada B. Elshehabi

Under the supervision of
Prof. Abdelkader El-Debani

Outline

- Introduction
- History
- Epidemiology
- Symptoms
- Risk Factors
- Conventional Treatments
- New Treatments
- Conclusions and Discussions

Parkinson's Awareness

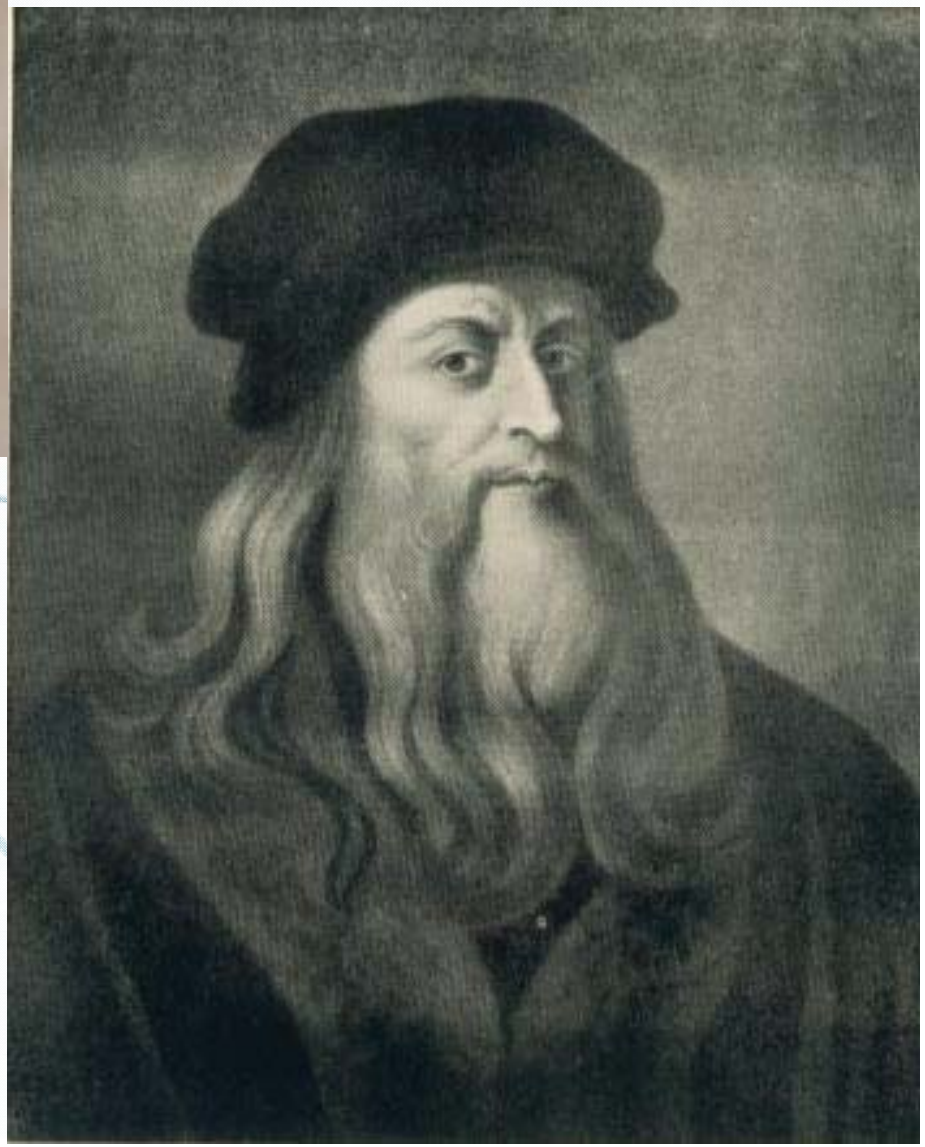
Introduction

- Parkinsonism is a neurodegenerative disease
- Classified as a motor movement disorder
- Caused by a decrease in the neurotransmitter *Dopamine* or an excess of ACh.

History

- Parkinsonism or Parkinson's disease named after English apothecary James Parkinson, who made a detailed description of the disease in his essay: "An Essay on the Shaking Palsy" (1817)
- Interestingly, an earlier description was made by Leonardo da Vinci.

James Parkinson



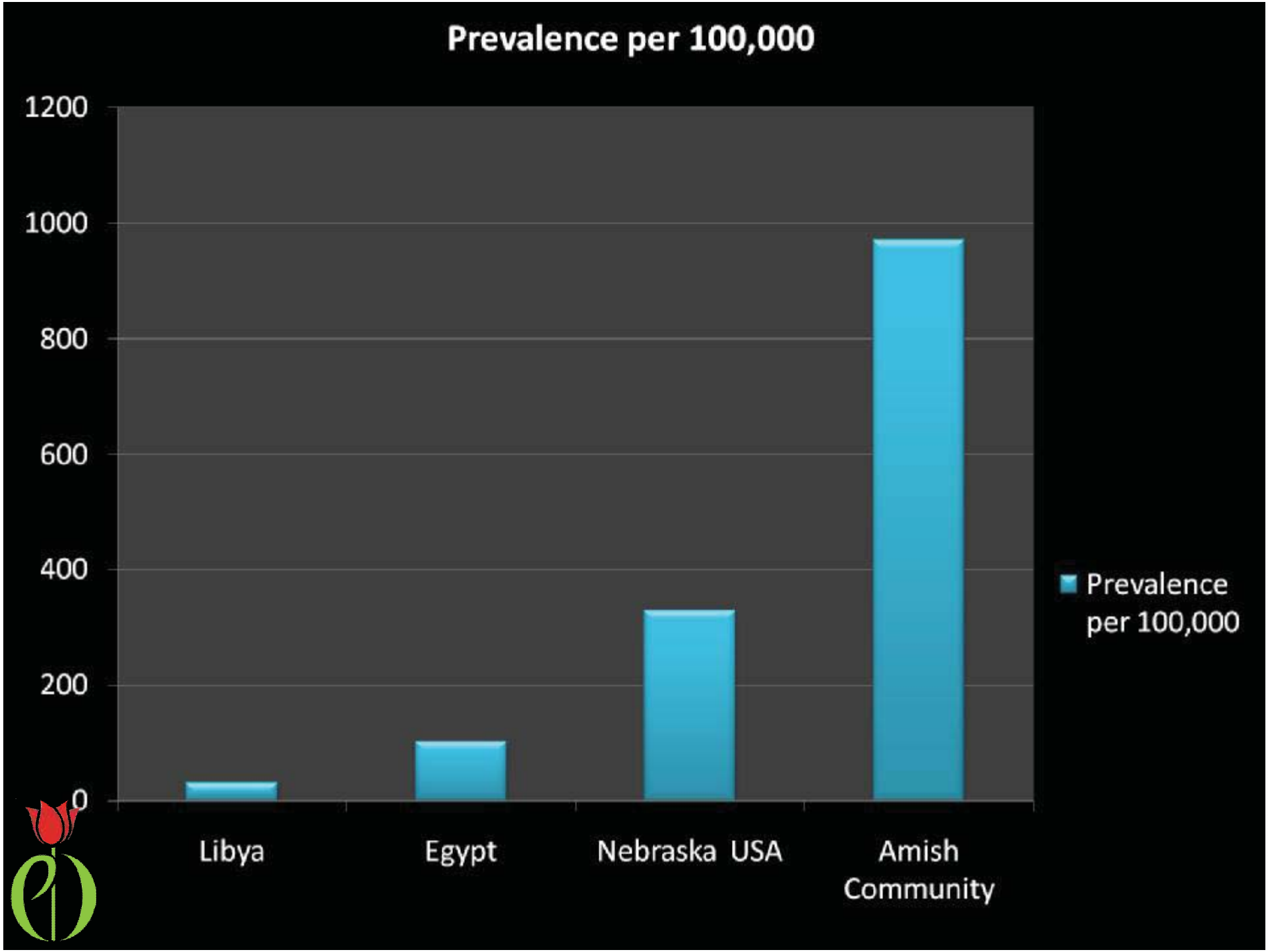
Leonardo da Vinci

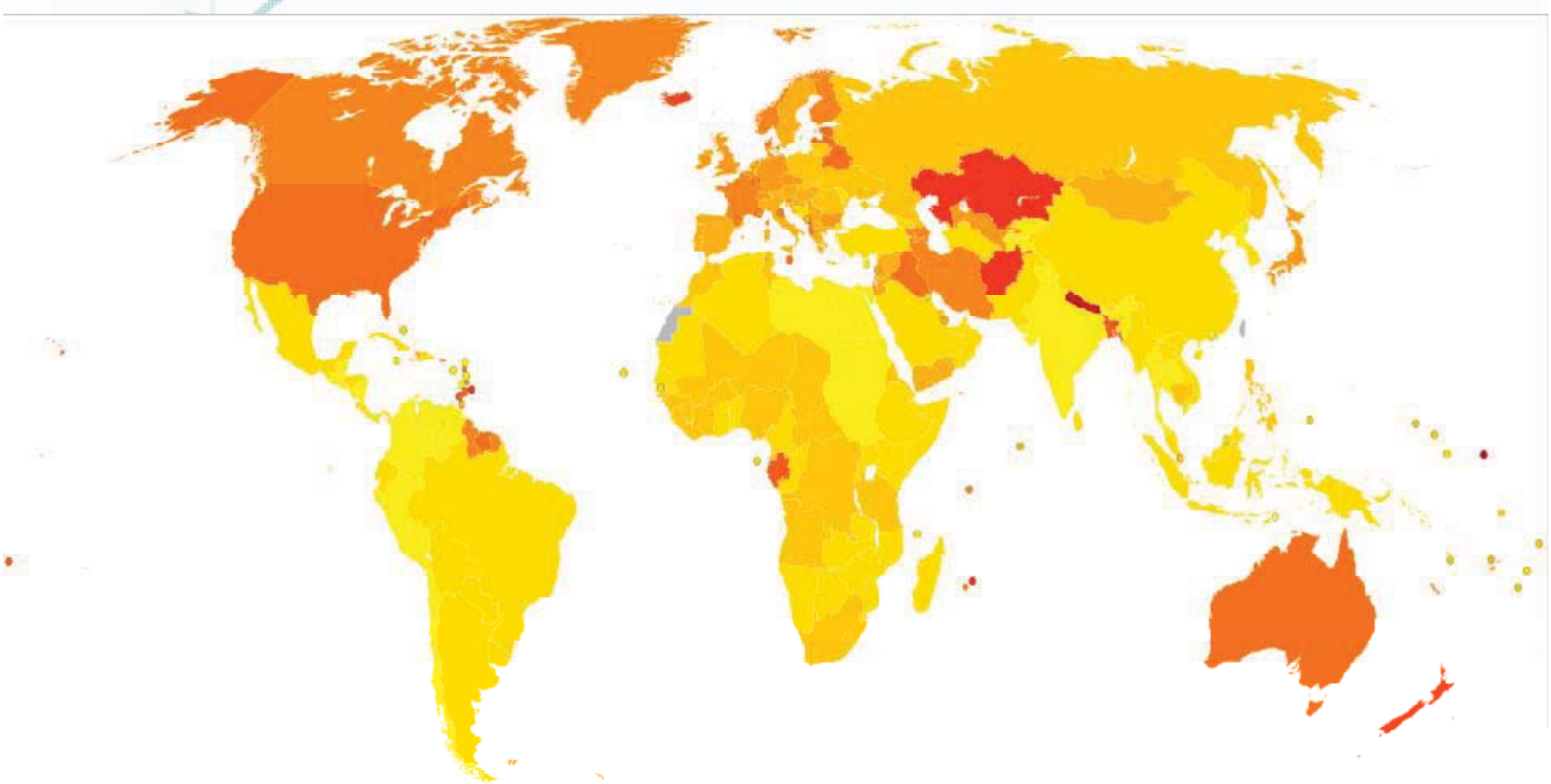
Epidemiology

- There is a large variety of different prevalence rates for PD across the globe.
- However some trends are observed such as a lower incidence in Africa and Asia.

Epidemiology

- Libya (Benghazi) has a low prevalence rate of PD (31.4/100,000).
- Egypt has a much higher prevalence rate of 102/100,000.


Prevalence per 100,000
1200
1000
800
600
400
200
0
Libya
Egypt
Nebraska USA
Amish Community
Prevalence per 100,000



Symptoms of Parkinsonism

- Primarily divided into **primary** and **secondary**
- Primary symptoms are **TRAP**
  - **T**remors
  - **R**igidity
  - **A**kinesia
  - **P**ostural Instability

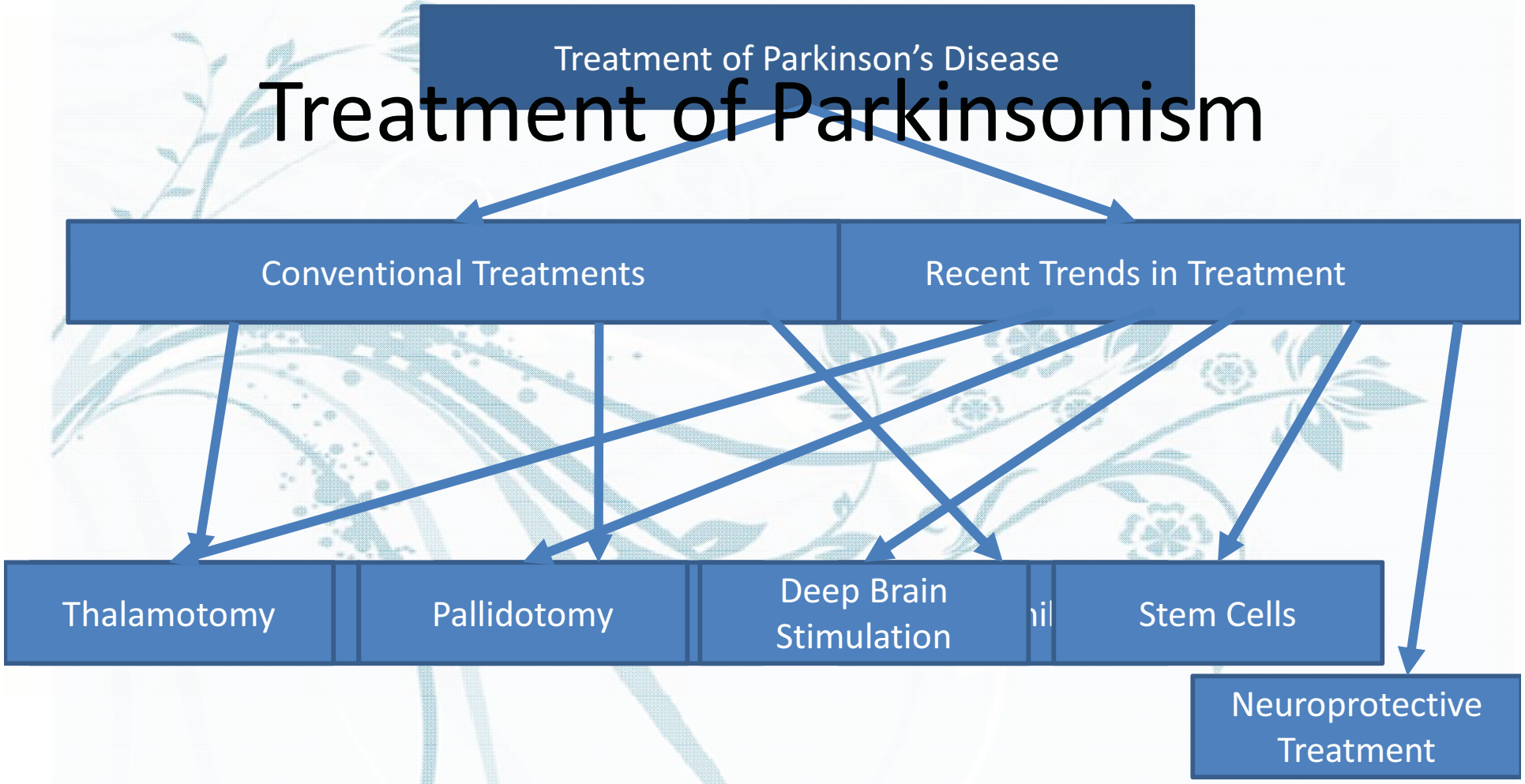
Symptoms of Parkinsonism

- Secondary symptoms include
  - Constipation
  - Micrographia
  - Microphonia
  - Masked face
  - Dysphagia
  - Dimentia

Risk Factors

- The vast majority of Parkinsonism cases are idiopathic (are of unknown cause).
- However there are a few predisposing factors such as:
  - Age, Gender, Vitamins
  - Genetics
  - Trauma

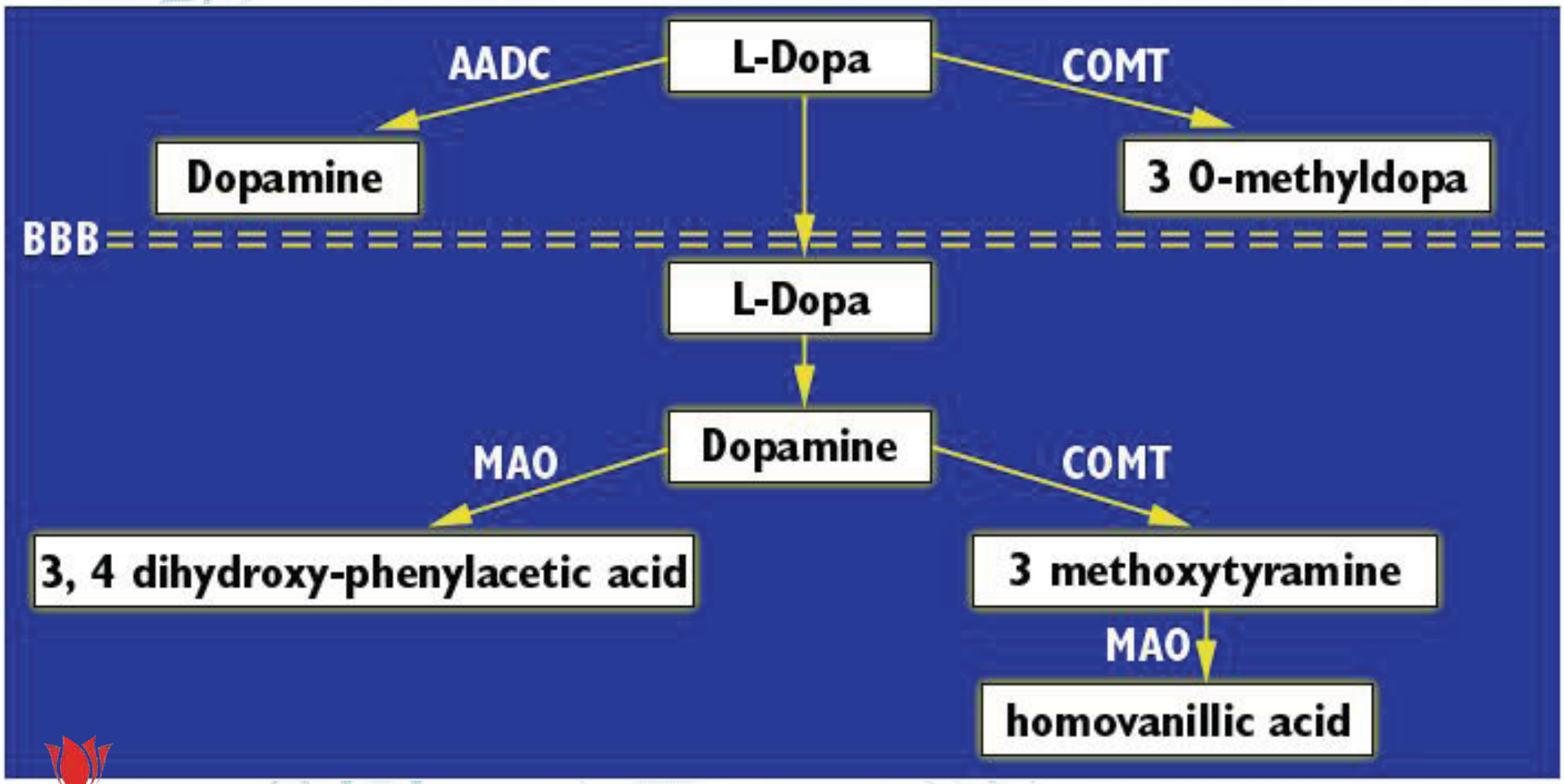
Treatment of Parkinsonism



L-Dopa

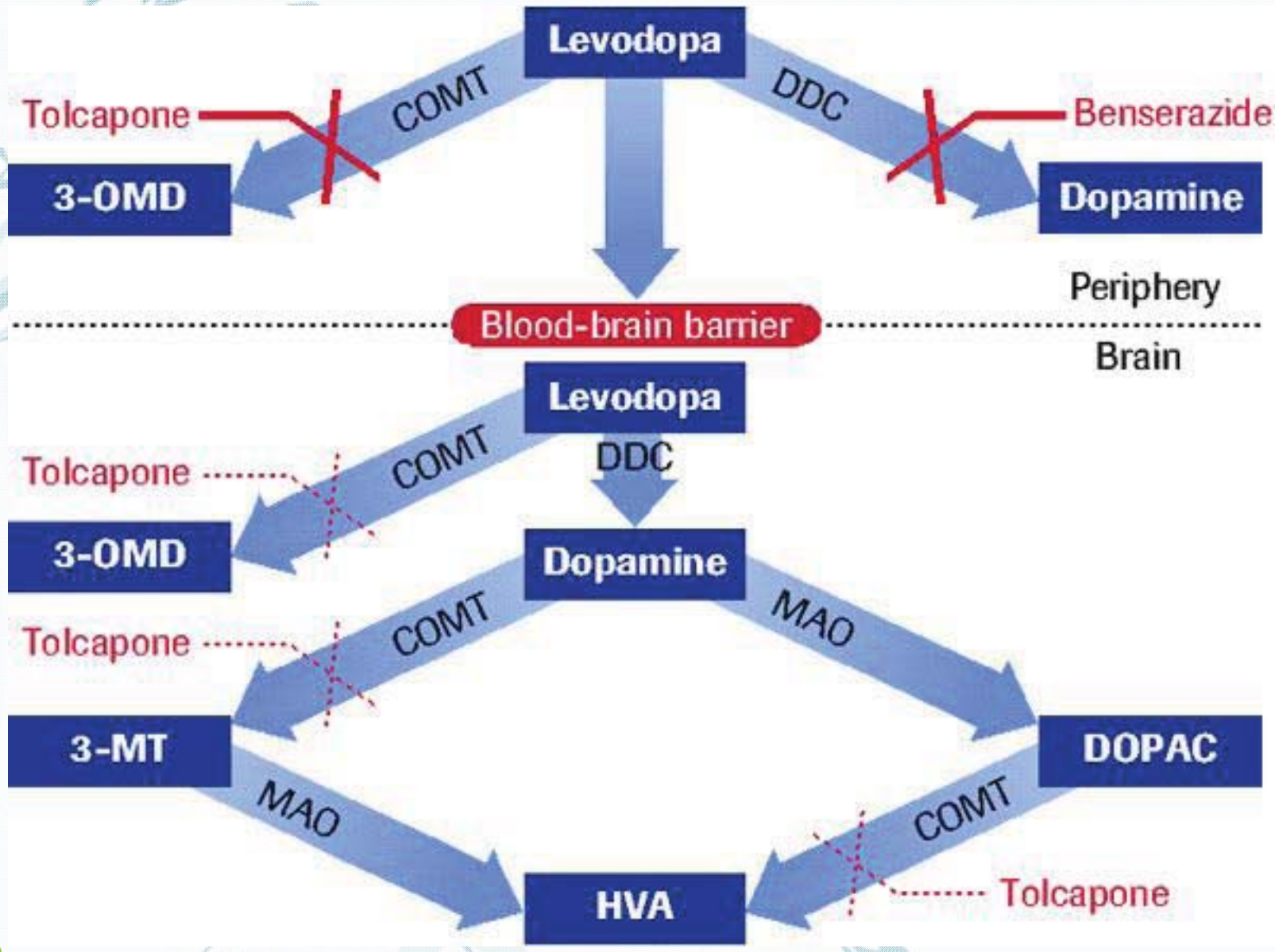
- Probably, the best known treatment is L-dopa (Levodopa).
- This drug works by giving the precursor of dopamine whose lack causes Parkinson's disease.
- It crosses the BBB and enters the brain to be converted to dopamine.

L-Dopa Metabolism



L-Dopa

- While levodopa is useful in the treatment of the symptoms of Parkinsonism, there are various side-effects.
- First of all, of the amount administered, only 1-5 % actually reaches the brain. The rest is metabolized in other locations producing side effects. (Hence given with Carbidopa)
- Also, after prolonged use, L-dopa produces inhibition for the body's endogenous L-dopa and hence worsens Parkinson's.


Levodopa
COMT
DDC
Tolcapone
Benserazide
3-OMD
Dopamine
Periphery
Blood-brain barrier
Brain
Levodopa
COMT
DDC
Tolcapone
3-OMD
Dopamine
COMT
MAO
Tolcapone
3-MT
DOPAC
MAO
COMT
HVA
Tolcapone

L-Dopa

- Levodopa also exhibits the **ON-OFF** phenomenon in which patients under the effect of the drug, suddenly lose control of their movements (PD movements).
- It lasted for minutes up to two hours.
- Then they would regain control again.

D2-Agonists

- Dopamine Agonists are also used such as ropinirole , piribedil, cabergoline and apomorphine.
- Moderately effective however same problem as L-dopa in that there is peripheral metabolism of the drug.
- Also prolonged use of DA agonists → decreased sensitivity of the receptors → aggravate PD