

Stroke, parkinsonism and meningitis

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Stroke



Definition:

- Occurs when part of the brain loses its blood supply and stops working. This causes the part of the body that the injured brain controls to stop working.
- Also is called a cerebrovascular accident, CVA, or "brain attack."
- A stroke is a medical emergency.
- From onset of symptoms, there is only a 3 to 4 1/2 hour window to use thrombolytics to try to restore blood supply to the affected part of the brain.

Remember FAST if you think someone might be having a stroke:

- Face drooping
- Arm weakness
- Speech difficulty
- Time to call 9-1-1

Learn the signs.



Face. **A**rms. **S**peech. **T**ime to **call 9-1-1.**



.....
1 in 6 people will
experience a stroke
in their lifetime



.....
Around 15 million
people worldwide
have a stroke each
year



.....
But there are 26
million stroke
survivors living
among us

STROKE FACTS



.....
High blood
pressure is one of
the leading causes
of stroke



.....
A stroke is the
leading cause of
death for people
above the age of
60

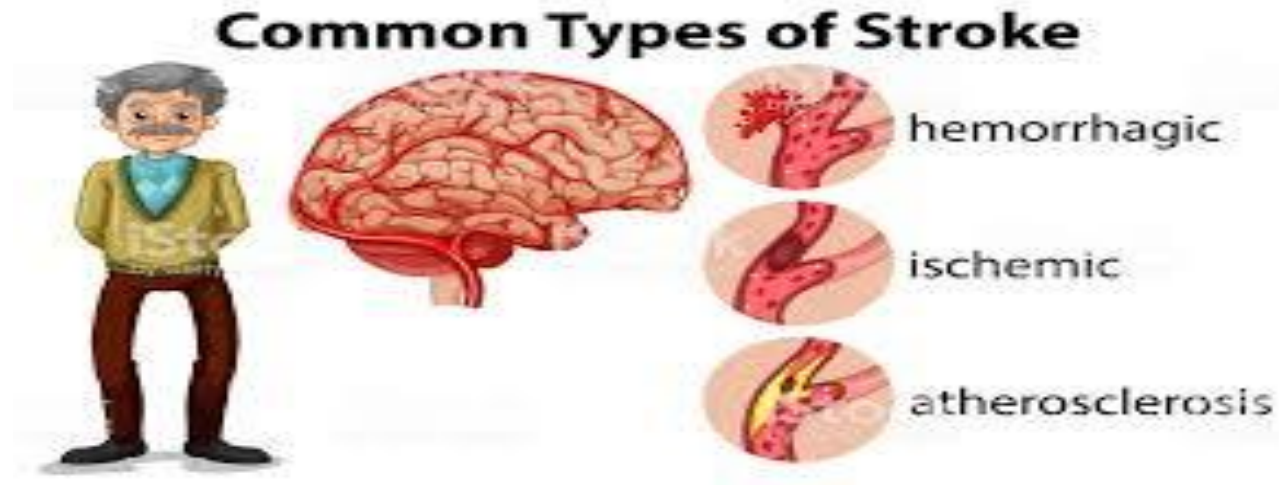


.....
Up to 80% of strokes
can be prevented by
keeping a healthy
lifestyle

Types:

The types of strokes include:

- Ischemic stroke (part of the brain loses blood flow)
- Hemorrhagic stroke (bleeding occurs within the brain)
- **Transient ischemic attack**, TIA, or mini-stroke (The stroke symptoms resolve within minutes, but may take up to 24 hours on their own without treatment. This is a warning sign that a stroke may occur in the near future.)



Risk factors:

- Medical risk factors:

- Those who have high blood pressure,
- High cholesterol,
- Diabetes,
- Those who smoke.
- People with heart rhythm disturbances, especially atrial fibrillation are also at risk.

- Lifestyle risk factors:

- Being overweight or obese,
- Physical inactivity,
- Heavy or binge drinking and Use of illegal drugs such as cocaine and methamphetamine

Other factors associated with a higher risk of stroke include:

- Age — People age 55 or older have a higher risk of stroke than do younger people.
- Race — African Americans have a higher risk of stroke than do people of other races.
- Sex — Men have a higher risk of stroke than women. Women are usually older when they have strokes, and they're more likely to die of strokes than are men.
- Hormones — Use of birth control pills or hormone therapies that include estrogen increases risk.

THE RISK FACTORS		
<input checked="" type="checkbox"/> High blood pressure	<input checked="" type="checkbox"/> Diabetes	
<input checked="" type="checkbox"/> Smoking	<input checked="" type="checkbox"/> Excess alcohol	
<input checked="" type="checkbox"/> Abdominal obesity	<input checked="" type="checkbox"/> Stress and depression	
<input checked="" type="checkbox"/> Poor diet	<input checked="" type="checkbox"/> Heart disorders	
<input checked="" type="checkbox"/> Lack of exercise	<input checked="" type="checkbox"/> Presence of blood fat molecules called apolipoproteins	

Signs and symptoms of stroke include:

- Trouble speaking and understanding what others are saying. You may experience confusion, slur your words or have difficulty understanding speech.
- Paralysis or numbness of the face, arm or leg. You may develop sudden numbness, weakness or paralysis in your face, arm or leg. This often affects just one side of your body. Try to raise both your arms over your head at the same time. If one arm begins to fall, you may be having a stroke. Also, one side of your mouth may droop when you try to smile.
- Problems seeing in one or both eyes. You may suddenly have blurred or blackened vision in one or both eyes, or you may see double.
- Headache. A sudden, severe headache, which may be accompanied by vomiting, dizziness or altered consciousness, may indicate that you're having a stroke.
- Trouble walking. You may stumble or lose your balance. You may also have sudden dizziness or a loss of coordination.

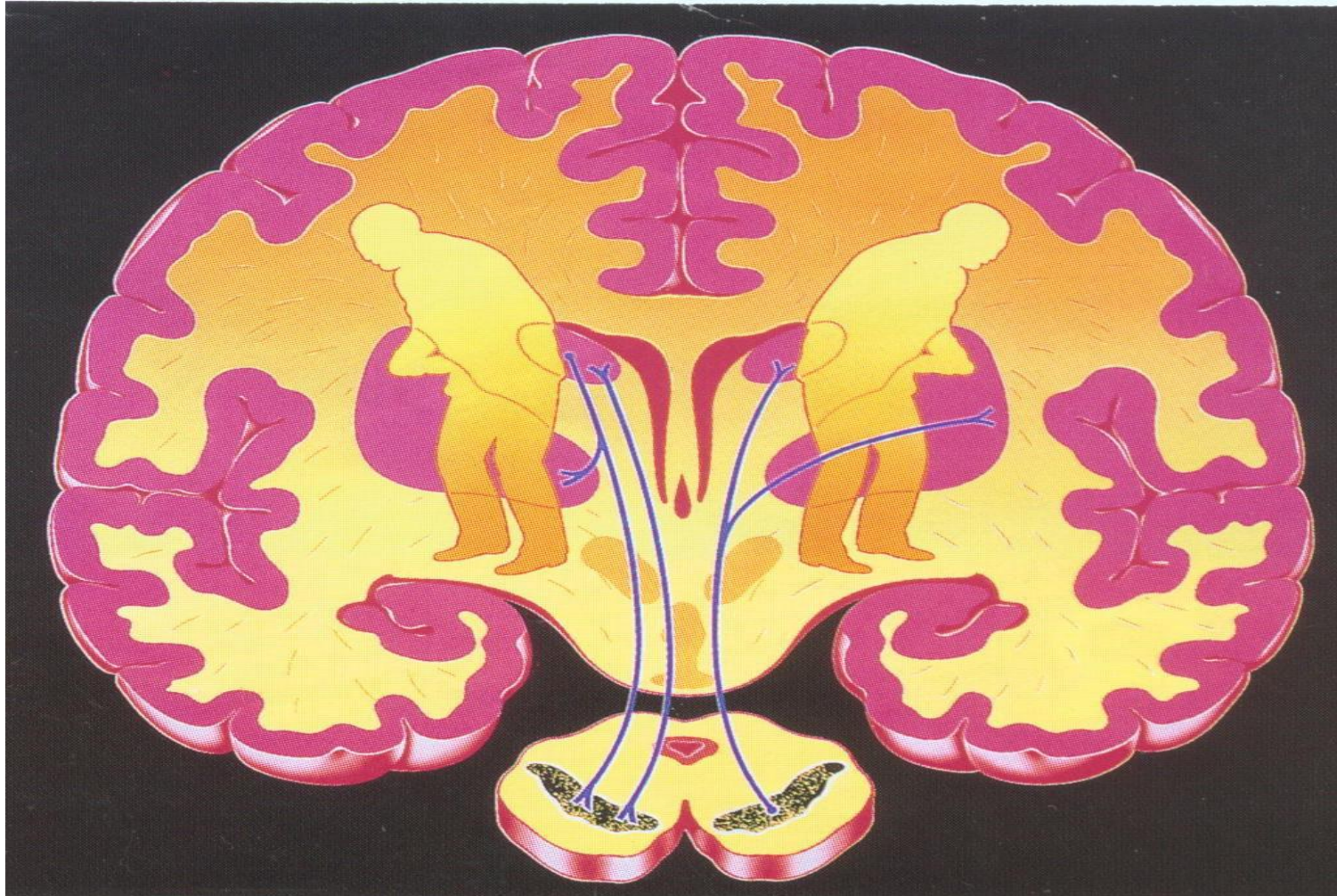
Diagnosis:

- **A physical exam.** such as listening to your heart and checking your blood pressure. You'll also have a neurological exam to see how a potential stroke is affecting your nervous system.
- **Blood tests.** You may have several blood tests, including tests to check how fast your blood clots, whether your blood sugar is too high or low, and whether you have an infection.
- **Computerized tomography (CT) scan.** can show bleeding in the brain, an ischemic stroke, a tumor or other conditions.
- **Magnetic resonance imaging (MRI).** An MRI can detect brain tissue damaged by an ischemic stroke and brain hemorrhages. Your doctor may inject a dye into a blood vessel to view the arteries and veins and highlight blood flow (magnetic resonance angiography or magnetic resonance venography).
- **Echocardiogram.** An echocardiogram uses sound waves to create detailed images of your heart. An echocardiogram can find a source of clots in your heart that may have traveled from your heart to your brain and caused your stroke.

How stroke is treated?

- If the diagnosis of ischemic stroke has been made, there is a window of time when thrombolytic therapy. For many patients, that time window is 3 hours after the onset of symptoms. In a select group of patients, that period may be extended to 4.5 hours.
- Hemorrhagic strokes are difficult to treat, so it's imperative to consult a specialist (neurosurgeon) immediately, Treatment for hemorrhagic strokes, in contrast to ischemic strokes, does not use thrombolytic agents, as these could worsen bleeding,
- Management of some controllable risk factors like hypertension and diabetes
- Physiotherapy for rehabilitation of disability if present.

PARKINSONISM: a kinetic-rigid syndrome



Parkinsonism:

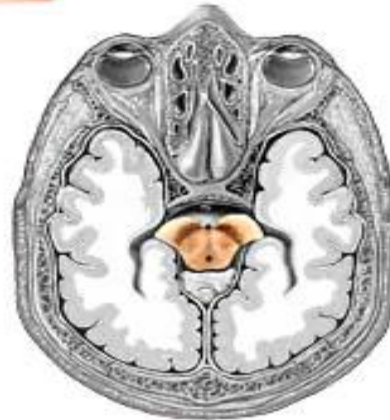
- Parkinsonism is any condition that causes a combination of the movement abnormalities seen in Parkinson's disease — such as tremor, slow movement, impaired speech or muscle stiffness — especially resulting from the loss of dopamine-containing nerve cells (neurons).
- Parkinson's disease itself refers to dysfunction and cell death of the portion of the brain that produces dopamine. Dopamine is a neurotransmitter — a chemical that transmits signals between brain and nerve cells. It is partially responsible for making controlled movements in the body.
- A person who has Parkinsonism will also have another disorder that causes additional neurological symptoms, ranging from dementia to the inability to look up and down.

PARKINSON'S - PATHOPHYSIOLOGY

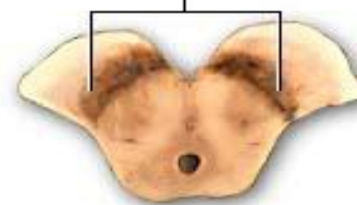
- Loss of **dopaminergic** neurones in the **substantia nigra** and appearance of eosinophilic inclusion bodies (**Lewy bodies**)



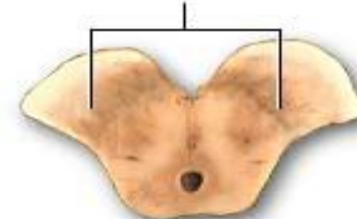
Cut section
of the midbrain
where a portion
of the substantia
nigra is visible



Substantia nigra



Diminished substantia
nigra as seen in
Parkinson's disease



General Considerations (PARKINSON'S DISEASE)

- The second most common progressive neurodegenerative disorder
- The most common neurodegenerative movement disorder
- Estimated prevalence globally 10 million
- Males 1.5 to 1 female
- 41/100,000 before 50 vs 1900/100,000 after 80
- May be multifactorial and heterogeneous in etiology (genetic and environmental factors).
- Misdiagnosis rate of PD is about 10-25%
- US annual incidence @60,000/yr
- It's the most common type of parkinsonism

Causes of parkinsonism:

- **Medications**, such as those used to treat psychosis, major psychiatric disorders and nausea
- **Repeated head trauma**, such as injuries sustained in boxing
- **Certain neurodegenerative disorders**, such as multiple system atrophy, Lewy body dementia and progressive supranuclear palsy
- **Exposure to toxins**, such as carbon monoxide, cyanide and organic solvents
- **Certain brain lesions**, such as tumors, or fluid buildup
- **Metabolic and other disorders**, such as chronic liver failure or Wilson's disease

Symptoms:

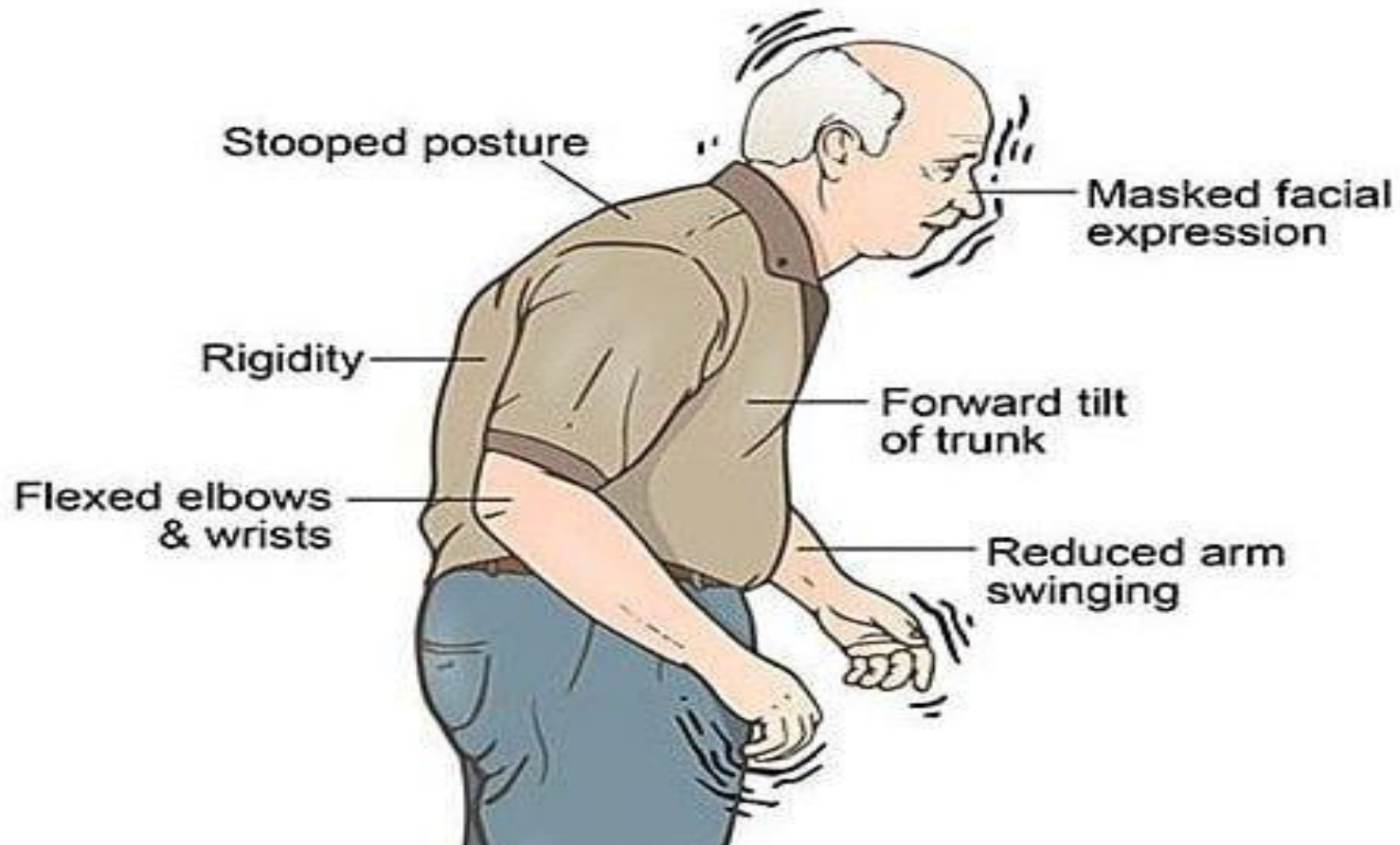
Parkinson's disease can cause varying and progressive symptoms throughout its course. include:

- difficulty showing facial expressions
- muscle stiffness(Rigidity)
- slowed, affected movements(bradykinesia)
- speech changes
- tremor, especially of one hand

Other symptoms associated with Parkinsonism include:

- dementia
- issues with the autonomic nervous system, such as problems with controlled movements or spasms
- early problems with balance
- rapid onset and progression of symptoms

Typical appearance of Parkinson's disease



PARKINSON'S DISEASE

WHAT IS PARKINSON'S DISEASE?



BRAIN

NEURON CELL



NEURON CELL

TERMINAL BRANCH



TERMINAL BRANCH

DOPAMINE



DOPAMINE

WEAK SIGNAL

PARKINSON'S DISEASE SYMPTOMS



MEMORY LOSS, DEMENTIA

ANXIETY, DEPRESSION

HALLUCINATIONS



SLOW BLINKING

NO FACIAL EXPRESSION

DROOLING

DIFFICULTY SWALLOWING



SHAKING, TREMORS

LOSS OF SMALL OR FINE
HAND MOVEMENTS



PROBLEM WITH BALANCE
OR WALKING

STOOPED POSTURE

ACHES AND PAINS

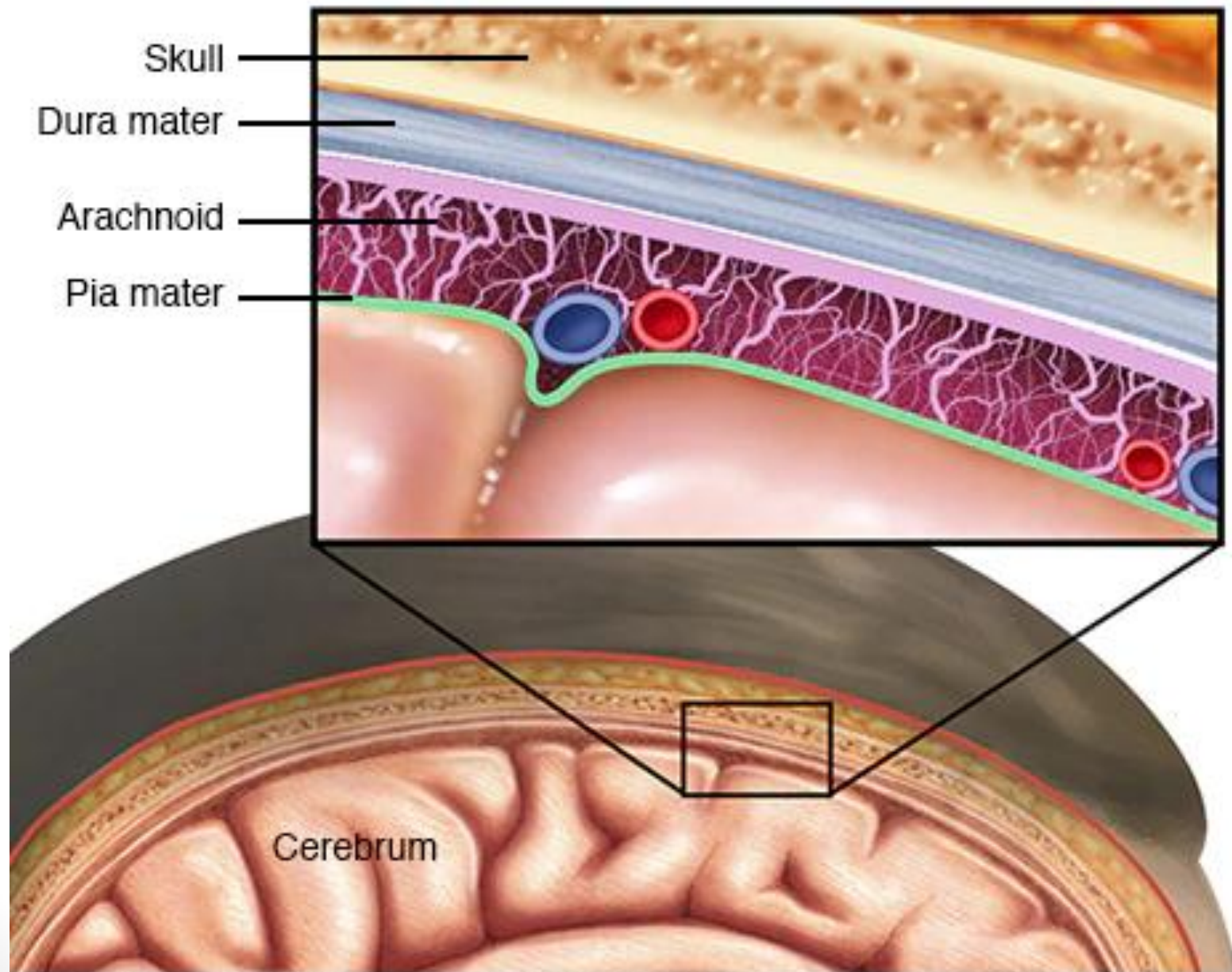
CONSTIPATION

How do doctors diagnose Parkinsonism?

- A doctor will start by taking a person's health history and review their current symptoms. They will ask for a medication list to determine if any medicines could be causing the symptoms.
- A doctor will likely also order blood testing to check for underlying potential causes, such as thyroid or liver problems. A doctor will also order imaging scans to examine the brain and body for other causes, such as a brain tumor.
- Doctors can perform a test that tracks the movement of dopamine in the brain. The test uses radioactive markers designed to track dopamine in the brain. This allows a doctor to watch the release of dopamine in a person's brain and identify the areas of the brain that do or do not receive it.

Meningitis:

- Meningitis is an inflammation of the fluid and membranes (meninges) surrounding your brain and spinal cord.
- Seek immediate medical care if you suspect that someone has meningitis. Early treatment of bacterial meningitis can prevent serious complications.
- The most common causes of meningitis are viral and bacterial infections. Other causes may include:
 - ✓ cancer
 - ✓ chemical irritation
 - ✓ fungi
 - ✓ drug allergies



- **Bacterial Meningitis**

Meningitis caused by bacteria can be deadly and requires immediate medical attention. Vaccines are available to help protect against some kinds of bacterial meningitis.

- Death can occur in as little as a few hours. Most people recover from meningitis. However, permanent disabilities (such as brain damage, hearing loss, and learning disabilities) can result from the infection.
- Several types of bacteria can cause meningitis. Leading causes in the United States include:

Streptococcus pneumoniae

Group B Streptococcus

Neisseria meningitidis

Haemophilus influenzae

Listeria monocytogenes

Signs and symptoms:

Meningitis symptoms include sudden onset of:

- Fever
- Headache
- Stiff neck
- Nausea
- Vomiting
- Photophobia (eyes being more sensitive to light)
- Altered mental status (confusion)

Newborns and babies may not have or it may be difficult to notice the classic symptoms listed above. Instead, babies may

- Be slow or inactive
- Be irritable
- Vomit
- Feed poorly
- Bulging fontanel (soft spot on infant's head) or abnormal reflexes.

- "meningococcal meningitis" can be differentiated from meningitis with other causes by a rapidly spreading petechial rash.

MENINGITIS SYMPTOMS



Fever



Sleepiness



Headache



Light sensitivity



Vomiting



Joints pain



Rash



Seizures

Diagnosis:

- If a doctor suspects meningitis, they will collect samples of blood or cerebrospinal fluid (fluid near the spinal cord). A laboratory will test the samples to see what is causing the infection. It is important to know the specific cause of meningitis so the doctors know how to treat it.

Treatment:

- Doctors treat bacterial meningitis with a number of antibiotics. It is important to start treatment as soon as possible.

Prevention

- Vaccines are the most effective way to protect against certain types of bacterial meningitis. There are vaccines for 3 types of bacteria that can cause meningitis:
 - Meningococcal vaccines help protect against *N. meningitidis*
 - Pneumococcal vaccines help protect against *S. pneumoniae*
 - Hib vaccines help protect against Hib
- Make sure you and your child are vaccinated on schedule.
- Like with any vaccine, the vaccines that protect against these bacteria are not 100% effective. The vaccines also do not protect against all the types (strains) of each bacteria. For these reasons, there is still a chance vaccinated people can develop bacterial meningitis.

Viral Meningitis

- It is often less severe than bacterial meningitis, and most people get better on their own (without treatment). However, anyone with symptoms of meningitis should see a doctor right away because some types of meningitis can be very serious.
- **Causes:** Non-polio enteroviruses, Mumps virus, Herpesviruses, Measles virus, Influenza virus, Arboviruses and Lymphocytic choriomeningitis virus.
- **People at Risk:** Children younger than 5 years old, People with weakened immune systems caused by diseases, medications (such as chemotherapy), and recent organ or bone marrow transplantations

Symptoms:

-Common symptoms in babies:

- Fever
- Irritability
- Poor eating
- Sleepiness or trouble waking up from sleep
- Lethargy (a lack of energy)

-Common symptoms in children and adults:

Fever , Headache, Stiff neck, Eyes being more sensitive to light, Sleepiness or trouble waking up from sleep, Nausea, Irritability, Vomiting, Lack of appetite, Lethargy (a lack of energy)

-Most people with mild viral meningitis usually get better on their own within 7 to 10 days.

- However, bacterial meningitis is usually severe and can cause serious complications, such as brain damage, hearing loss, or learning disabilities.

Diagnosis:

If a doctor suspects meningitis, he or she may collect samples for testing by:

- Swabbing your nose or throat
- Obtaining a stool sample
- Taking some blood
- Drawing fluid from around your spinal cord

Treatment:

In most cases, there is no specific treatment for viral meningitis. Antibiotics do not help viral infections

People who develop severe illness, or are at risk for developing severe illness may need care in a hospital.

Prevention:

- There are no vaccines to protect against non-polio enteroviruses, which are the most common cause of viral meningitis. But general preventive measures like: wash your hands often with soap and water for at least 20 seconds, avoid close contact with people who are sick, clean and disinfect frequently touched surfaces and stay home when you are sick and keep sick children out of school.
- Vaccines can protect against some diseases, such as measles, mumps, chickenpox, and influenza, which can lead to viral meningitis. Make sure you and your child are vaccinated on schedule.



Thank you