كلية المستقبل الجامعة

قسم الفيزياء الطبية

المرحلة الثالثة

Medical Physics

Lecture Six

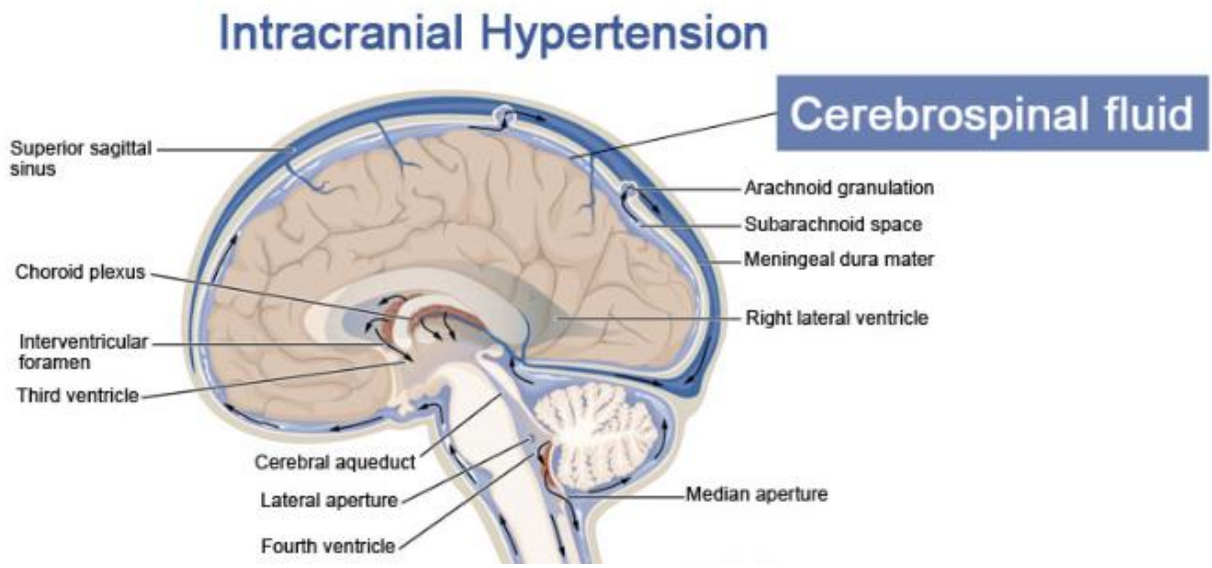
Pressure in the Skull

Assistance Lecturer : Mohammed Salih

Intracranial Hypertension (IH) :

Intracranial hypertension (IH) is a build-up of pressure around the brain.It can happen suddenly, for example, as the result of a severe head injury, stroke or brain abscess. This is known as acute IH.

It can also be a persistent, long-lasting problem, known as chronic IH. This is rare and sometimes it's not clear why it happens.



In many cases, the cause of chronic IH is unclear. This is known as idiopathic (IIH) .

Experts don’t know what causes IIH. But there are other types of intracranial hypertension that do have known causes:

- Acute intracranial hypertension happens suddenly, usually because of an accident or stroke

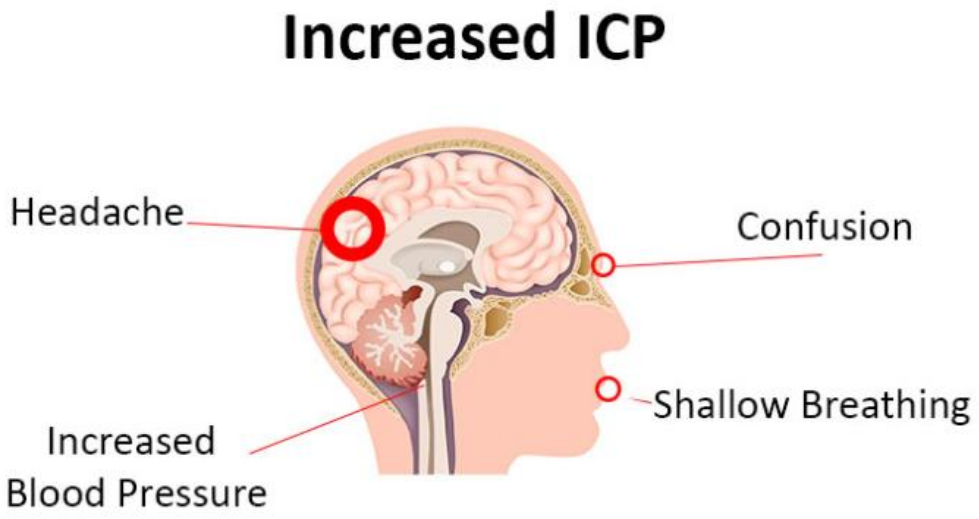
- Chronic intracranial hypertension develops over time, usually because of a health problem like a blood clot or brain tumor, or from taking certain medicines

If doctors can’t find a reason for the high pressure, it’s called IIH.

Increased Intracranial Pressure (ICP) :

A brain injury or another medical condition can cause growing pressure inside your skull. This dangerous condition is called increased intracranial pressure (ICP) and can lead to a headache. The pressure also further injure your brain or spinal cord.

This kind of headache is an emergency and requires immediate medical attention. The sooner you get help, the more likely you are to recover.



What Causes ICP :

1- Too much cerebrospinal fluid (the fluid around your brain and spinal cord) .

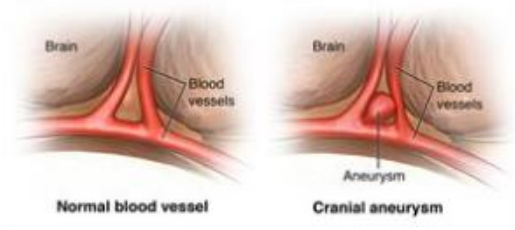
2- Bleeding into the brain .

3- Swelling in the brain .

4- Brain or head injury .

5- Blood pooling in some part of the brain .

6- Aneurysm .



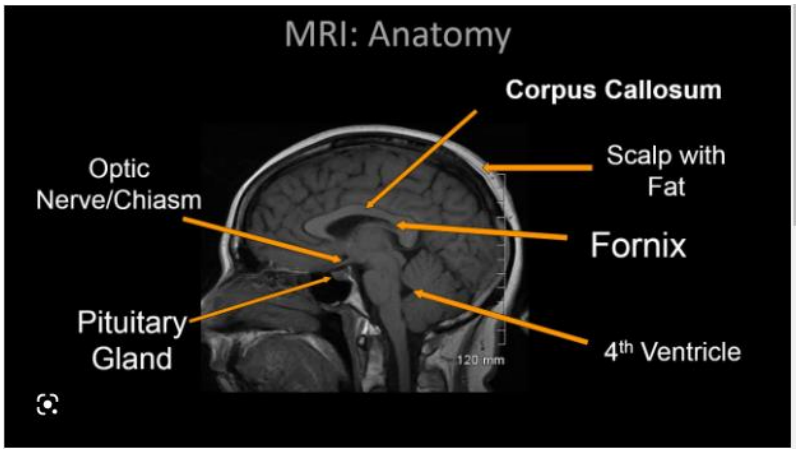
How is (ICP) Diagnosed :

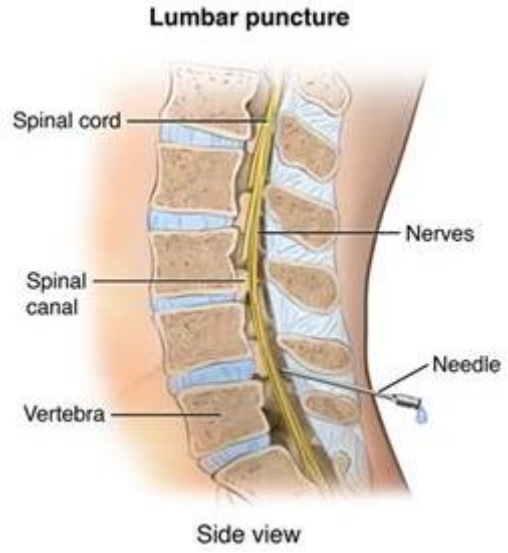
1- Medical history and physical exam including a neurological exam to test senses, balance and mental status .

2- Spinal tap (also called lumbar puncture), which measures the pressure of cerebrospinal fluid .

3- Computed tomography (CT) scan, the gold standard imaging test, creates a series of cross-sectional X-ray images of the head and brain .

4- Magnetic resonance imaging (MRI) (used after the initial assessment) uses magnetic fields to detect subtle changes in brain tissue content and can show more detail than X-rays or CT .





How is ICP Treated :

Increased intracranial pressure is an emergency. Treatment might include:

- Medicine to reduce swelling .

- Draining extra cerebrospinal fluid or bleeding around the brain .

- Removing part of the skull (craniotomy) to ease swelling (though this is rare) .

Pressure in the Urinary Bladder :

A person usually feels the urge to urinate several times a day. Pressure in the bladder causes this feeling, which should disappear after a person urinates.

However, some people experience this pressure constantly, and it may feel like an ache. This is not normal and is likely caused by interstitial cystitis. This condition is sometimes known simply as bladder pain syndrome.

What Causes Bladder Pressure :

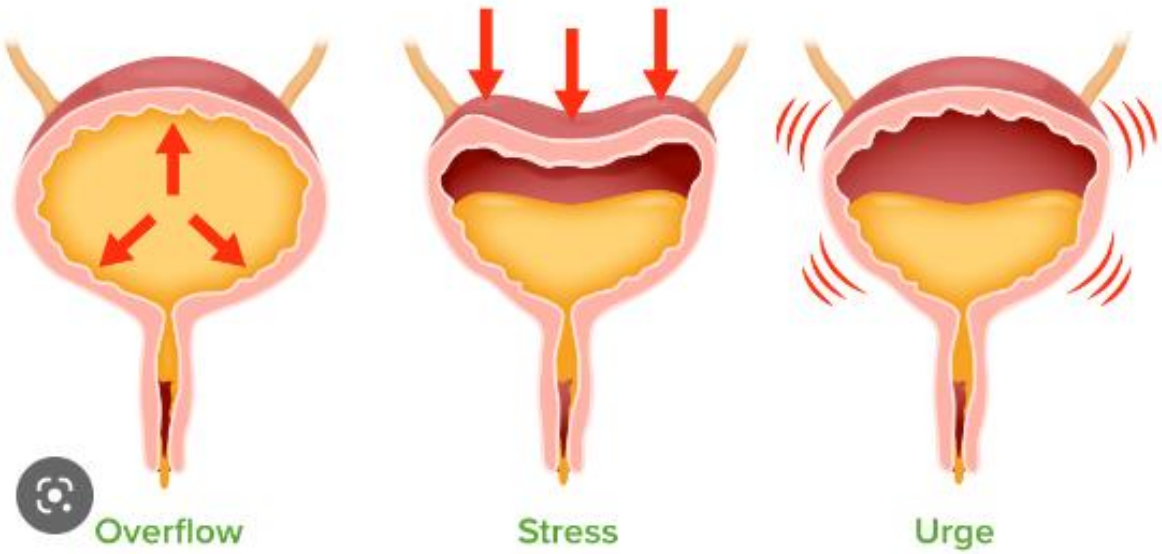
1- Allergies

2- Infections

3- Genetics

4- Damage to the bladder lining

5- Reactions of the immune system



Methods of Treating Bladder Pressure :

1- First-line treatments:

a. Physical therapy: Working on muscle tenderness and connective tissue issues in your pelvic floor may help relieve pain.

b. Over-the-counter medications: Options such as ibuprofen (Advil) or acetaminophen (Tylenol) can help relieve pain.

c. Prescription medications: The doctor may prescribe a tricyclic antidepressant to help relax your bladder to help with urgency.

2- Advanced therapies :

a. Nerve stimulation: This includes options for transcutaneous electrical nerve stimulation (TENS) and sacral nerve stimulation. These procedures can help with anything from pain to urgency to frequency of urination.

Transcutaneous Electrical Nerve Stimulation (TENS) : is a treatment that uses electrical signals to help control bladder contractions. It can reduce the number of times a person feels the urge to urinate

b. Bladder distention:

c. Instilled medications: