

## Understanding of BRAIN TUMOURS

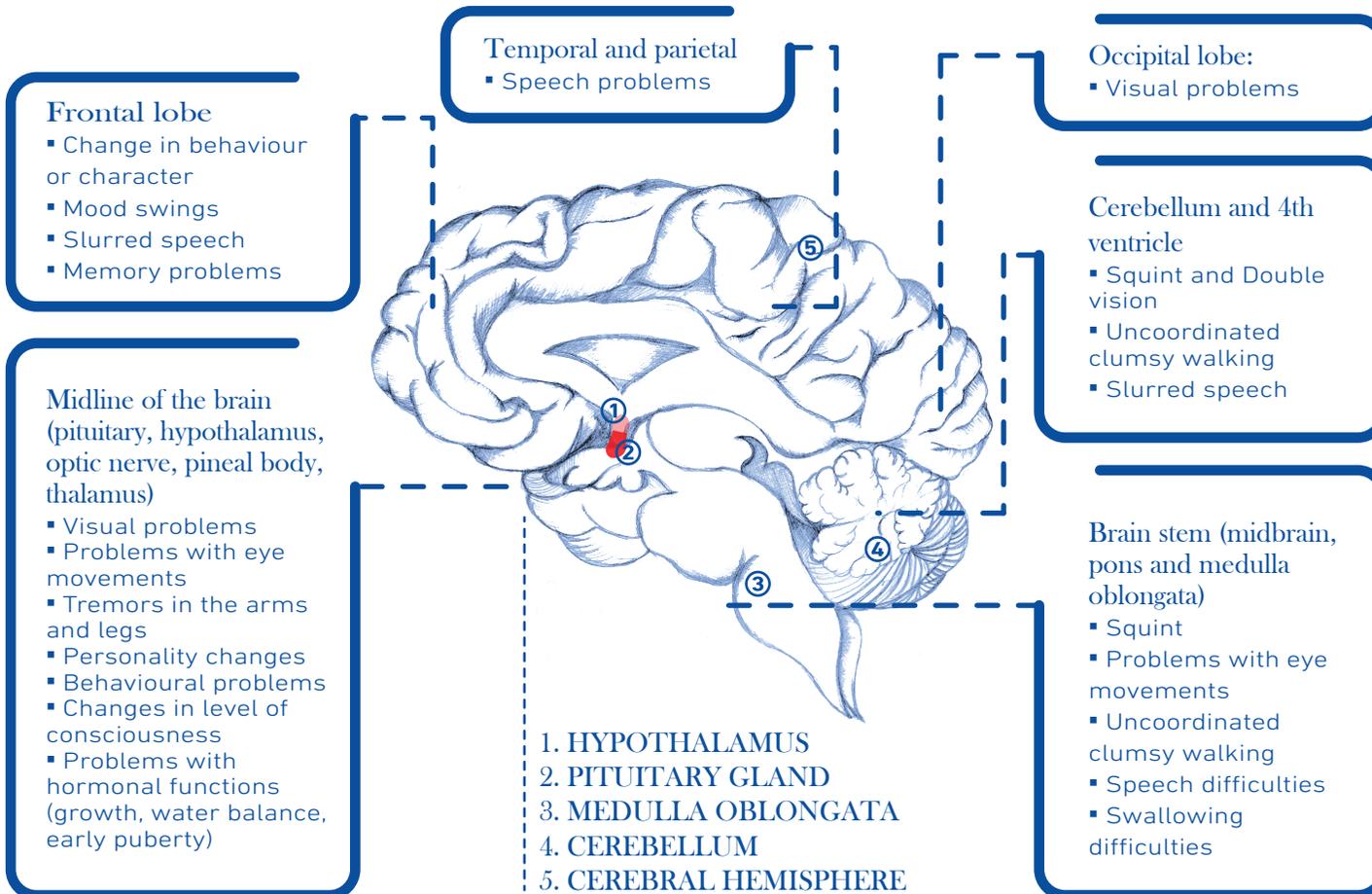
Brain tumours or cancers are groups of cells that grow uncontrollably into a lump in the brain. It is the 2nd most common childhood cancer.

## Signs And Symptoms Of BRAIN TUMOURS

**Headache is a common symptom** in brain tumours but it is also common in many

childhood illnesses (e.g. viral fever, short-sightedness, earache or toothache). Features of headaches that are due to brain tumours:

- ▶ Persistent headache with no other reason (for weeks or months).
- ▶ Severe headache - it awakens child from sleep.
- ▶ Worsening headache
- ▶ Headache associated with early morning vomiting
- ▶ Headache with weakness or seizures
- ▶ Headaches with other symptoms listed in the diagram shown:



## Diagnosing Brain Tumour

May be delayed diagnosing due to mild non-specific symptoms that worsen slowly or are seemingly unrelated. Once brain tumour is suspected, a scan will be done. There are 2 types of scans:

### ▶ CT Scan (Computerised Tomography)

This scan is fast and can see structures and fluids within the brain. Best used for looking for brain swelling or bleeding associated with the tumour. Contrast may be given to see the tumour more clearly on the scan. It is not as detailed as an MRI.

### ▶ MRI Scan (Magnetic Resonance Imaging)

This scan uses a strong magnet to create very detailed pictures of the brain and spinal cord. It shows the exact position of any tumour in it. It takes a longer time to perform than a CT scan. A sedative or general anaesthetic is usually given so that child lies still during the scan.

## What other Tests May Be Needed?

Certain tumours (**germ cell** tumours) release chemicals into the blood, e.g. A blood test can diagnose these tumours without needing a biopsy.

### Biopsy

A biopsy is the process of taking a small sample of the tumour. This can be done by:

- ▶ an **operation** by directly opening up the skull.
- ▶ a **stereotactic method** (a needle is inserted through the skull and guided accurately to the tumour using with the help of a scanner)

## Treatment

### Neurosurgery

The main aims of neurosurgery

1. Surgically remove the tumour
2. Relieve the increased pressure in the brain

### Removing the tumour

The surgeon will try to remove the tumour without damaging the surrounding brain. In some tumours (low-grade **astrocytomas**), surgery may be the only treatment required. Complete removal greatly improves the chances of survival. If this is not possible, a biopsy or a partial removal may be performed, and chemotherapy and radiotherapy will then have to be considered.

### Relieving raised intracranial pressure (hydrocephalus)

The brain and spinal cord are surrounded by **cerebrospinal fluid (CSF)**. This is a constantly flowing system. A tumour may block or interrupt this flow causing **hydrocephalus** (accumulation of CSF) which may increase the pressure in the brain (increased 'intracranial pressure') which can be life-threatening. If the hydrocephalus is severe, emergency surgery may be done to remove the excess fluid/CSF by inserting a tube (external ventricular drain). Once the child is stable, surgery to remove the tumour is performed. At a later time, a permanent shunt (ventriculoperitoneal shunt – VP shunt) or a ventriculostomy may be performed if needed.

### Radiotherapy

Radiotherapy uses high-energy radiation to destroy cancer cells. It is usually used after surgery. It is rarely used in children less than 3 years of age. The radiation is focused into a beam using specialised equipment and aimed at the tumour. The energy dose is divided into small daily amounts called fractions. These fractions are usually given every day, Monday to Friday, with a rest at weekends. Careful planning of the beams and their dose is done before performing radiotherapy. This targets the exact position of the tumour while causing as little harm as possible to the normal healthy tissue.

### Chemotherapy

This uses drugs (called cytotoxic drugs) that interfere with the ability of a cell to divide and reproduce itself. Normal cells can repair the damage caused by chemotherapy but cancer cells usually cannot. These damaged cancer cells eventually die. This is usually given after surgery together with radiotherapy.

### Possible long term effects from disease and treatment

- ▶ Deficits in cognition / attention span / memory
- ▶ Behaviour problems.
- ▶ Drop in IQ after whole brain irradiation.
- ▶ Hormonal imbalance eg short stature
- ▶ Paralysis / paresis
- ▶ Visual impairment
- ▶ Scoliosis / Other skeletal abnormalities
- ▶ Kidney and hearing impairment

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In collaboration with  
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## Understanding BRAIN TUMOURS In Children



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