Intracranial Pressure (ICP) Monitoring

Intracranial Pressure Monitoring

What is intracranial pressure (ICP) and why is it measured?

Intracranial pressure is the pressure of fluid inside the head, sometimes it is useful for doctors to know what the pressure is. There are two invasive ways in which a doctor can do this.

1. Lumbar puncture (see our LP leaflet)
2. ICP monitoring

A poll taken by IIH UK showed that 14 out of 16 patients said they experienced less discomfort through ICP monitoring than lumbar puncture and would prefer ICP monitoring to a lumbar puncture for intracranial pressure readings.

What is ICP monitoring?

- ICP monitoring involves a doctor placing an intracranial pressure catheter inside the skull a few millimetres under the brain tissue surface.
- This catheter is 1.2mm wide with a sensing device on the tip. When placed inside the head it continuously senses the ICP and sends its measurements to a recording device, which then displaysthe pressure reading on the monitor at the bedside.
- It is usually left in place to continuously monitor ICP for 24-72 hours.

- The reading from the intracranial pressure monitor enables doctorsto guide treatment for patients.

- There are different types of monitor. Some have an actual ‘bolt’ type structure with a wing nut to hold them in place. Others are thinwires held in place on the scalp with a stitch.

How is intracranial pressure monitoring set up?

The procedure can take place under GA, sedation or with local anaesthetic. Sometimes a small amount of hair is shaved off.

- For insertion of the intracranial pressure catheter, the doctor ensures the patient is sedated (or under general anaesthetic) the scalp is then made numb by applying local anaesthetic and a fine hole is made in the skull just behind the hairline through which the catheter is placed. (Some patients have reported that they have had the catheter placed with just local anaesthetic)
- The catheter is then kept in place with a locking mechanism (bolt) or the wire coiled and stitched to the scalp to stop it being pulled out.

Back on the ward

Once you are back on the ward the ICP monitor will be connected to the computer. There is no need for regular readings to be taken to measure the pressure by a nurse.

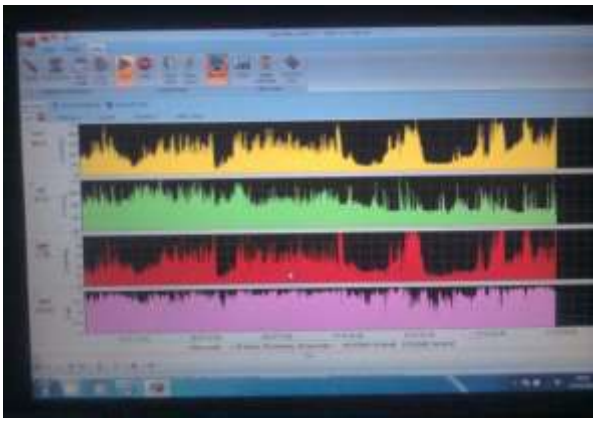
- You may notice a change in the pressure reading if you do anything that alters the pressure inside your head. Things like moving about, changing position in bed, coughing or sneezing, vomiting or crying.

- You will also notice that the pressure reading changes depending on whether you are awake or asleep. Pressure tends to climb when sleeping as we stay still for longer lying down and produce more CSF when dreaming.

- Normal pressure can be anything between 15 and -5 mmHg. Abnormal readings will be above or below this but must be maintained for some time to be recorded as such. ICP is measured in mercury (mmHg) and not water (cmH^2O) as an LP is. The conversion is approximately 1.34 so the measurement of 12 mmhg pictured right would convert to an LP of 16.8cmH^2O.

Information from the monitor (software ICM+; www.neurosurg.cam.ac.uk/icmplus)

This photo was taken from an ICP laptop when the patients LP shunt spinal catheter had broken – it therefore shows high pressure readings taken over 21 hours.



- Yellow shows ICP
- Green shows heart rate
- Red shows pulse amplitude ofthe ICP
- Purple shows index of compensatory reserve.

You may find if your pressure is very high, that an alarm goes off on your monitor. Try not to be worried, this is a regular occurrence whilst having ICP monitoring if your CSF pressure is raised.

Keeping busy whilst 'wired up'

For children and adults alike – being stuck in a hospital bed can be boring so take plenty of things to keep you entertained. E.g. kindle, magazines, DVD player or IPod.

Complications with intracranial pressure monitoring

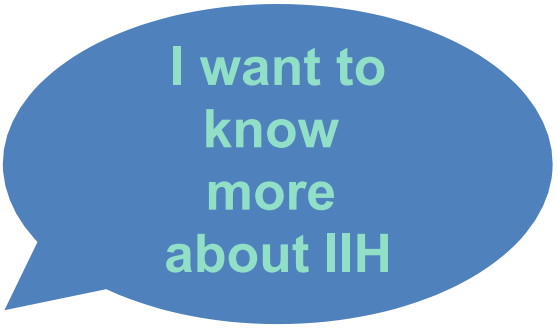
The insertion of the catheter is done with great care to avoid complications. Intracranial pressure monitoring as with any procedure does have some risks attached. The main risk is minor bleeding on insertion.

Other possible but rare risks are:

- Infection, requiring antibiotics and further treatment.
- Bleeding can occur and may require a return to the operating room. Bleeding is more common if you have been taking blood thinning drugs. These drugs should be withdrawn some-time before ICP monitoring as guided by your doctor.
- Stroke or stroke like complications may occur causing neurologicaldeficits such as weakness in the face, arms and legs. This could be temporary or permanent.
- A CSF leak is possible and may require further surgery.
- Inadequate placement or malfunction of the probe and/or device. This may require further surgery

After the ICP monitor is removed.

You may need a few stitches when the catheter is removed. The information from the monitoring will be used to help inform a management plan for you.



Where can I get more information?

IIH UK

website

www.iih.org.uk

Write notes for your appointment here

IIH UK
Idiopathic Intracranial Hypertension

A team of people contributed to this leaflet. It was written IIH UK Trustees. It was critically reviewed by the IIH UK Team. It was reviewed by a group of patients who have IIH. Clare Parr is responsible for this version. The views expressed in this leaflet are of the authors. Please note we have made every effort to ensure the content of this is correct at time of publication, but remember that information may change. This information booklet is for general education only.

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