Post-Dural Puncture Headache – Recognition & Diagnosis

A proforma for recording management and follow-up of each case and instructions for patients can be found in Appendix 2, in the anaesthetic office or can be downloaded from the departmental intranet site.

Post-partum headache is a common symptom with multiple causes. Deliberate dural puncture after spinal anaesthesia, or more commonly accidental dural puncture after epidurals for labour pain relief, may result in cerebrospinal fluid leakage, intracranial hypotension, meningeal stretching, compensatory intracranial vasodilation and the development of post-dural puncture headache (PDPH).

PDPH is the commonest cause of litigation in obstetric anaesthesia. Parturients should be warned about the local risk of PDPH and consented (consent labels are available in epidural trolley).

PDPH can be debilitating for the mother and if misdiagnosed and left untreated may result in serious morbidity and mortality due to intracranial haemorrhage or coning. All health care staff (midwives, obstetricians, anaesthetists, community midwives and GPs) should be alert to the signs of PDPH. Although most commonly PDPH occurs when the patient is ambulant, the onset may be delayed for several days particularly with spinal needles. Early discharges from the hospital may result in missed cases and prolonged suffering (chronic headache). All patients who had neuraxial blockade (spinal-epidural) should be followed up in the first 24 hours by the epiduralist, including at weekends. Any post-partum headache after neuraxial blocks (spinal or epidural) should be reported to the anaesthetist on bleep 2124 (24 hours). Similarly, community midwives or GPs can contact the duty anaesthetist for any advice or consultation on the same above bleep number.

Patients who had recognised dural puncture after epidurals should be followed up daily by the epiduralist. This follow up should be documented and a clear handover to other colleagues is mandatory. Not all dural punctures are recognised in labour so medical staff should be alert to the possibility of PDPH even in uncomplicated epidural analgesia.

The incidence and severity of PDPH may vary according to size of the needle puncturing the dura and the immediate management technique. It is approximately 70% after dural puncture with 16-18G epidural Touhy needle whereas it is less than 2% using fine 25G Whitacre spinal needles.

Diagnosis of PDPH is clinical. Medical history, including recent maternal history should be taken and appropriate clinical examination should be performed and documented.

Common features of PDPH include:

Typically postural

- Aggravated by standing, walking, coughing and straining
- Relieved by the supine position (often absent after overnight bed rest but returns after mobilizing) and abdominal compression (contraindicated after LUSCS)


Location is non-specific and of little diagnostic value. Usually fronto-occipital which may radiate to the neck with associated neck stiffness.
Other associated symptoms are non-specific and include:

- Photophobia, diplopia, tinnitus, hearing loss and vertigo
- Nausea (up to 60% of cases) and vomiting

The International Headache Society diagnostic criteria are:

Bilateral headache developed less than 7 days after lumbar puncture

Headache occurs or worsens less than 15 minutes after assuming the upright position, and disappears or improves less than 30 minutes after resuming the recumbent position

Headache disappears within 14 days after lumbar puncture.

The severity of the headache should be documented. The Lybecker classification of severity for PDPH is modified to include the response to treatment.

I. Mild PDPH (Score 1)
Postural headache with slight restriction of daily activities
Not bedridden
No associated symptoms
Responds well to non-opiate analgesics (Paracetamol, NSAID, Caffeine)

II. Moderate PDPH (Score 2)
Postural headache with significant restriction of daily activities
Bedridden part of the day
Associated symptoms may or may not present.
Requires the addition of opiate derivatives

III. Severe PDPH (Score 3)
Postural headache with complete restriction of daily activities
Bedridden all day
Associated symptoms present (photophobia, diplopia, tinnitus, nausea, vomiting)
Not responsive to the above conservative management.
Medical staff should have a high index of suspicion for other serious causes of post-natal headache. These do not have the postural component and should be excluded.

Pre-eclampsia headache (recent labour complicated with pre-eclampsia – up to ten days post-partum)

Migraine headache (history of migraine)

Meningitis (neurological symptoms and signs of infection)

Intracranial haemorrhage (signs of intracranial hypertension)

Intracranial mass lesion (signs of intracranial hypertension)

Cortical vein thrombosis (convulsions, intracranial hypertension, fever, deteriorated consciousness, MRI & MRA are diagnostic)

Post-natal depression headache

Non-specific postnatal headache.

Further investigations include:

In moderate/severe post-natal headache FBC & U&E’s should be done

Markers of infection such as pyrexia and raised WBC, CRP should be checked

Heart rate and blood pressure should be monitored if indicated

Blood culture and urine samples should be sent for microbiological examination if signs of infection are present.
Early referral or consultation should be considered in non-PDPH cases for advanced investigations (CT/MRI/LP), precise diagnosis and management.

In all stages of diagnosis the patient should be kept up to date with simplified information about the possible differential diagnosis and the management plan.

References & further readings:


Post-Dural Puncture Headache – Postnatal Management

A proforma for recording management and follow-up of each case and instructions for patients can be found in Appendix 2, in the anaesthetic office or can be downloaded from the departmental intranet site.

The epiduralist or other obstetric anaesthetic staff should:

- Review patients with recognised accidental dural puncture daily
- Establish a diagnosis of PDPH according to diagnosis guidelines
- Assess the severity of PDPH, onset and duration
- Discuss with patient the treatment modalities available for PDPH

Treatment aims to relieve symptoms with conservative management while waiting for dural tear to heal itself, or to seal the puncture with epidural blood patch (EBP).

Management is based on the severity of headache according to the Lybecker classification (details in Post-Dural Puncture Headache (PDPH) – Recognition & Management).

Mild PDPH

- Bed rest – relieves the symptoms but does not prevent them
- Ensure that the patient has DVT prophylaxis
- Adequate hydration
- Regular simple analgesics, such as Paracetamol and NSAIDs if not contraindicated
- Oral Caffeine, up to 200 mg three times daily (600 mg/day). The last dose should be at 6 pm. One cup of coffee contains 150 mg of Caffeine. Doses up to 376 mg do not diffuse freely into breast milk and appears safe for breast feeding. Use with caution if the risk of seizures exists.

Moderate PDPH

- Conservative management as above
- Introduce weak opioids, such as Codeine 30 to 60 mg 4 hourly as required, or Tramadol 50 to 100 mg 4 to 6 hourly as required
- Consider laxatives
- Discuss epidural blood patch with the patient including the success rate (60 – 90% after the first attempt), complications (list below) and possible recurrence of PDPH.

Severe PDPH...
Conservative management including weak opioids as above

Offer the patient epidural blood patch and consent

Request FBC, U&Es and ask for temperature, BP, and HR monitoring.
Epidural Blood Patch
Epidural blood patch (EBP) in the first 24 hours after dural puncture has a lower success rate and a higher risk of bacteraemia. It should be considered only in moderate to severe headache not responsive to conservative management and after 24 hours have elapsed since dural puncture.
Epidural blood patch is contraindicated in the presence of signs of bacteraemia. The patient should be apyrexial, haemodynamically stable and have normal WBC and CRP.
Complications include:

>10%
- Failure to work or recurrence of PDPH
- Backache, mild to moderate for 48 hours to 27 days post EBP

~1%
- Another dural tap

Rare
- Nerve damage Temporary 1:1000, Permanent 1:13 000

Very rare (exact incidence unknown but <1:100 000)
- CNS infection (meningitis).
- Epidural abscess.
- Neurological deficits.
- Epileptic fits.

EBP should be performed by an experienced anaesthetist (Consultant) to restore patient’s confidence and minimise complications. Bed rest in the supine position is advised for 1 to 2 hours before the procedure to reduce CSF leakage into the epidural space.

A second competent anaesthetist is required as an assistant and to withdraw blood in strictly sterile manner for injection into the epidural space and another sample to send for blood culture at the same time.

The procedure should be done in the lateral position to minimise CSF leakage and dilution of the injected blood.

The procedure should be strictly sterile in the operating theatre. Both anaesthetists scrub and wear hat, mask, gown and gloves. A suitable vein is prepared with antiseptics and draped. Two samples of blood are withdrawn (2 20ml syringes) while the other anaesthetist prepares the back for epidural
Blood injected into the epidural space predominantly spreads cephalic, so the blood patch is performed at the same or lower interspace of the dural puncture.

Blood should be injected slowly into the epidural space to a maximum of 20-25 ml or until the patient experiences pain or discomfort in the back or legs.

Immediately after the procedure the patient is turned supine and advised to:

Remain supine for at least 2 hours to allow time for the clot to form.

Gradually and slowly mobilise after the previous bed rest.

Avoid lifting (including the baby), straining and excessive bending for the next 48 hours.

Warn the patient of the possibility of back pain.
Short term follow up after EBP

The anaesthetist should reassess the PDPH after the 2 hours bed rest

At least two reviews are required in the first 24 hours after EBP

If the headache is relieved, the patient can be discharged home, preferably after an overnight stay but earlier if necessary with telephone follow-up the next day

If the headache recurs, discuss repeating blood patch (blood injected into the epidural space is cleared remarkably quickly).

Long term follow up

Clear instructions should be given to all patients who suffered PDPH to contact the anaesthetist in labour ward if the symptoms recur after home discharge

Ask permission for a telephone follow up at one week and one month after discharge if suitable

Keep all patient’s details confidential in a special PDPH records file in the anaesthetic office and write a note for telephone follow up dates.

References & further Readings:


K Razouk 2005
Revised: B Brampton