

POST DURAL PUNCTURE HEADACHE



Café Florian, Piazza San Marco, Venice, (from Alain Stella's, The Book of Coffee, Flammarion, 1996).

From its deepest origins in Arabia, in the Tenth Century coffee brews were taken by goatherds in crude tin pots on the steps of Yemen. According to ancient legend of the Arabian Nights, goatherds had noticed that their camels (or goats) after eating certain wild berries “remained wakeful throughout the night and frolicked in an unaccustomed manner”. They partook of the berries themselves and to their astonishment found themselves more energized and wakeful as a result - perhaps even "frolicking in an unaccustomed manner"! From these humble beginnings coffee rapidly spread to Europe and India, becoming increasingly popular during the Seventeenth century.

The stimulating brew rapidly progressed to the pinnacle of sophisticated European refinement and by the Eighteenth century reached its pinnacle with the opening of Florian’s Coffee House in Venice in 1720. Over the ensuing centuries many of the most famous and interesting people would take coffee at Florian’s, including Charles Dickens, Marcel Proust, the notorious Casanova, Lord Byron, Johann Wolfgang von Goethe, François-René, vicomte de Chateaubriand, and many others. In the Eighteenth century the only coffee house in Europe that would admit women was Florian's.

By the Twentieth century this refinement manifested itself in the machines that were designed for its concoction as well as the coffee house establishments that were built in which to partake of it. Achille Gaggia in 1948 invented the perfect espresso machine and the marbled tables of the magnificent Florian’s in Venice and the Mulassano café in Turin provided the perfect ambiance for its enjoyment.

It may come as some surprise that in the 21st Century coffee has found a medicinal use for the treatment of post lumbar puncture headache! Unfortunately however, unlike the best coffees which must only be drunk in the finest establishments, it is administered under the blazing fluorescent light bulbs and the bare white walls of a hospital cubicle, (a décor incidentally that proved remarkably effective for North Korean interrogation techniques during the cold war). Not only is this ambiance most disrespectful to the ancient Arabian brew, but its means of administration, alas, is even more so as it is administered not by the Gaggia, but by means of a concentrated tablet or even, most sacrilegiously, by an intravenous drip!



Achille Gaggia’s coffee maker, 1948.

POST DURAL PUNCTURE HEADACHE

Introduction

Post dural puncture headache (PDPH) is a specific type of headache that occurs following puncture of the dura as a result of:

- Spinal anaesthesia.
- Diagnostic lumbar puncture.
- Accidental dural puncture while performing an epidural.

Pathophysiology

Mechanism:

Different mechanisms for the headache have been postulated including:

- Loss of the brain's normal "buoyancy" from leakage of cerebrospinal fluid, resulting in traction on pain-sensitive intracranial structures.
- Adenosine mediated venodilatation from CSF loss.

Risk Factors:

There are a number of recognized risk factors for the condition, including:

- Younger aged patients
- Obstetric patients
- Puncture with a large bore needle, such as an epidural needle.

Clinical Features

Important points of history:

1. There is a history of dural puncture in the preceding hours to days:
 - 65% within 24 hours.
 - 90% within 3 days.

2. Headache:

Clinical features typical of a dural puncture headache include:

- It is usually “postural” i.e. it is relieved by lying flat, but returns if the patient sits upright or stands.
 - It is usually frontal or occipital. Less commonly it may be temporal or nuchal in location.
3. Associated symptoms may include:
- Nausea, vomiting
 - Tinnitus/hearing loss
 - Photophobia.

Important points of examination:

1. Clinical examination is almost always unremarkable.

Abnormal clinical findings should alert the clinician to look for other causes of the headache, and perform appropriate investigations.

- If there is a fever, meningitis and spinal epidural abscess need to be considered.
 - If there is significant neck stiffness, alternative diagnoses, such as meningitis should be considered.
2. Rarely there can be cranial nerve palsies:
- Classically the sixth (abducens) nerve is involved.

Investigations

The diagnosis of PDPH is a clinical one.

The need for investigation will primarily be directed to ruling out alternative diagnoses

- FBE and clotting profile should be done if a coagulopathy is suspected.
- CT or MRI may show evidence of dural venous sinus engorgement, but more commonly will be normal.

Management

The headache will almost always resolve spontaneously within 7-10 days, but on occasions may be sufficiently severe to require intervention.

The following initial measures may be useful:

1. Rehydration:
 - IV fluids may assist especially if there is associated dehydration.
2. Maintaining a comfortable posture, i.e. supine rest.
3. Simple oral analgesics:

Options include:

 - NSAIDs
 - Paracetamol
 - Oxycodone
4. Anti-emetics, as required.

Additional pharmacological measures may include:

5. Caffeine:
 - This may help by producing cerebral vasoconstriction.
 - The usual dose is 500mg one to two times daily, either **orally** or **IV**.
6. Failing above measures, or if there is a particular contra-indication to caffeine, there is some *limited* evidence for the following two further options:

Hydrocortisone: 200 mg IV bolus followed by 100mg IV tds for 2 days

Or

Gabapentin: 300 mg orally tds for 4 days.

For more severe, debilitating headaches, or those that fail to settle with conservative management, more aggressive treatment is indicated. Further therapy aims to restore CSF volume, seal the dural puncture and prevent cerebral vasodilatation.

6. **Epidural blood patch:**

It is thought that the mass effect of injecting the blood causes compression of the thecal space, an elevation in intracranial pressure, and thus rapid relief of the headache. The blood may “plug” the hole in the dura thus preventing further leakage of CSF. This is however probably an over-simplistic explanation of how

blood patches work and a more precise understanding may evolve with future research.

There is no evidence that patients who have had epidural blood patches have more problems than normal with any future epidurals as the blood is resorbed over several weeks.

There is a 70-90% success rate in producing rapid improvement in PDPH using this technique.

Contraindications:

Contraindications to the procedure include:

- The patient is febrile
- Has local infection at the site of the epidural
- Coagulopathy
- Uncooperative patient.

Complications:

Possible complications of the procedure include:

- Infection (cellulitis, meningitis, spinal epidural abscess, septicaemia)
- Performing another epidural carries the same risk of *further* accidental dural puncture and exacerbation of the headache

Technique:

- **The procedure is performed by the anaesthetic staff.**
- It is performed in the operating theatre because strict sterile conditions are required for the procedure.
- Under strict sterile conditions an epidural needle is inserted into the epidural space at or near the site of the previous dural puncture.
- Approximately 15-30 mls of the patient's own blood (collected aseptically by an assistant) is slowly injected into the epidural space.
- Occasionally, a repeat blood patch is required if the first fails to control the headache, or if the headache recurs. The success rate of a repeat patch is similar to the first.

Post Procedural Care:

- **Analgesia** as required.

Some back pain during and following the injection is common, but usually resolves within 48 hours.

- Following the patch, patients should **rest in bed for 4 hours**, then **gradually** begin to mobilise i.e. sit out of bed, then stand and walk around.
- A concern with epidural blood patches is the possibility of epidural infection.

Patients should have **4 hourly temperature checks for 24 hours** after a blood patch and **rises in temperature, increasing or severe back pain or neurological problems must be reported immediately to the anaesthetist-in-charge.**

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Disposition

All patients who may require an epidural blood patch should be referred to the Anaesthetics Department.

Patients who require admission into hospital for further management of their PDPH may be admitted to an **SSU** as in most cases this will be for one or two days only.

Whilst in the SSU the Anaesthetics Department will oversee the management of the patient in conjunction with the SSU consultant.



Mulassano Café Turin, Italy, (from Alain Stella's, The Book of Coffee, Flammarion, 1996).

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