Sphenopalatine Ganglion Block: A Revolutionary Treatment for Postdural Puncture Headaches

Helen McGuire RN, BSN
Danielle Zamarelli RN, BSN
Objectives

- Describe postdural puncture headache (PDPH)
- Discuss the available treatments for PDPH
- Introduce sphenopalatine ganglion block (SPG) and describe proposed mechanism of action
- Explain how to perform SPG block
- Discuss the risks, benefits, relative contraindications associated with the SPG block
- Compare the efficacy of Epidural Blood Patch to SPG Block
- Discuss clinical scenarios
Postdural puncture headache (PDPH)

- Complication of neuraxial technique
- Incidence low with smaller diameter, noncutting, pencil-point spinal needles
- Characteristic frontal or occipital headache
- N/V, blurred vision, tinnitus, vertigo
- Worsens in upright position, relieved by lying supine
- Symptoms begin within 3 days of procedure (66% within first 48 hours)
“cocainization of the spinal cord”
Postdural Puncture Headache (PDPH)

Decrease in CSF → Intracranial hypotension

1. Loss of hydraulic support, stretching of tentorium
2. Cerebral autoregulation and adenosine induced cerebral vasodilation
Postdural Puncture Headache (PDPH)

Monro-Kellie Hypothesis

[Diagram showing the relationships between skull, brain tissue, CSF, and blood]
Factors that increase PDPH Incidence

- Female
- Pregnancy
- Young age
- Hx of PDPH
- Larger needle size
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Factors that do not increase PDPH Incidence

- Timing of ambulation
- Smoking
- Obesity?
- Loss of resistance technique
PDPH Treatment

- Supine
- Hydration
- Methylxanthines (caffeine)
- NSAIDS/analgesics
- Gabapentin, hydrocortisone
PDPH Treatment

Neuraxial

- Saline
- Morphine
- Catheters
- Epidural fibrin glue
PDPH Treatment

Definitive therapy: epidural blood patch

- 90% initial improvement
- Persistent resolution in 61-75% of cases
- May repeat 24-48 hours if first is ineffective
- Prophylactic blood patch not efficacious
What is the Sphenopalatine Ganglion (SPG)?
Block Mechanism

- CSF leakage from dural puncture
- SPG activation
- Acetylcholine, Nitric Oxide, and Vasoactive Intestinal Peptide release
- Cerebral Vasodilation
- Trigeminal Nociceptor activation
- PDPH
Block Mechanism

- CSF leakage from dural puncture
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- Trigeminal Nociceptor activation
- PDPH
How do you perform the SPG?
SPGB tools and post-block monitoring

• **Tools**
  • 4% Lidocaine, 0.5-1.5mL
  • 10cm cotton-tipped applicator

• **Monitoring**
  • 40-60 minutes post-treatment
  • Epistaxis
  • Worsening of headache
  • Fever
  • Facial numbness
Benefits

- Quick relief
- Faster hospital discharge
- No reported post-treatment complications
- Easy to perform
- Inexpensive

Risks

- Potential for nasopharyngeal bleeding
- Temporary patient discomfort

Relative Contraindications

- Facial malignancies, distorted facial or nasopharyngeal anatomy
- Thrombocytopenia and coagulopathy*
Epidural Blood Patch vs. SPGB

Clinical Scenarios

- University of Wisconsin: Successful PDPH relief for thrombocytopenic AML patient with SPG (2017)
- Portugal: Cardoso et. al describes relief for 41yo F with PDPH within 5 minutes of block treatment (2017)
- Korea: Nair & Rayani report success in 3 out of 3 patients with SPG (2017)
- RWJUH New Jersey: 11 out of 13 SPG recipients report relief (2011, 2018)
- Atlanticare Regional Medical Center: 2 out of 3 SPG recipients report relief (2018)
Questions?
References


