

Epidural blood patch to treat impending tonsillar herniation

Dear Editor,

Spontaneous intracranial hypotension (SIH) is also referred to as low CSF pressure headache or post-dural puncture headache.^[1] These clinical situations will produce symptoms that include postural headache, neck stiffness, nausea, and vomiting, photophobia, anorexia, vertigo, tinnitus, and diplopia.^[1,2] The headache tends to be localized to the occipital or frontal regions.^[1] Post-dural puncture headaches are mostly an iatrogenic complication from either lumbar puncture or neuraxial anesthesia. Patients with post-dural puncture headache can be treated with an epidural blood patch, though there have been reports of using dextran 40, hetastarch, fibrin glue, gelatin, or cryoprecipitate.^[3]

This case describes a young male with no significant medical history who developed spontaneous onset of bilateral frontal headache, neck pain, nausea, and vomiting for several weeks. He did not report any previous history of spinal or neuraxial procedures. On presentation to our institution, a computed tomography (CT) angiogram was normal and then a lumbar puncture was performed with a 20-gauge spinal needle showing increased red blood cell count.

The headache became postural in quality and worsened following the lumbar puncture. The patient was reevaluated in the emergency department 9 days later and his physical exam

showed generalized hyperreflexia and downward Babinski reflex bilaterally. A CT head with contrast was ordered at this time and showed new bilateral fronto-parietal subdural hematomas. A CT angiogram showed cerebral edema and impending tonsillar herniation. No direct CSF pressures were obtained. Due to persistent symptoms, the patient was scheduled for an epidural blood patch, rare use of this treatment modality for this pathology.

After the risks and benefits were explained in detail including the possibility of a worse neurological outcome, informed consent was obtained. The epidural blood patch was placed at the lumbar L4-L5 interspace using the standard fluoroscopic technique. Once the procedure was completed, the patient began to verbalize and reported nearly immediate resolution of the headache. A repeat MRI of the brain and cervical spine 4 days after the epidural blood patch showed alleviation of impending herniation.

SIH is thought to be caused by CSF leakage through small dural tears, reduced CSF production, or hyperabsorption of CSF.^[1,4] There is scientific data to support the dural tear theory.^[1] Individuals with certain medical conditions are more likely to have SIH; these include Marfan syndrome, Ehlers Danlos syndrome, neurofibromatosis, and disc disease.^[4] Management of a patient with SIH includes caffeine, bed rest, abdominal binder, steroids, continuous saline infusion, and epidural blood patch. Spontaneous resolution of this condition can take weeks to months.^[1]

There have been previous studies showing that epidural blood patches are effective for low-pressure CSF states.^[1,5] The mechanism of action behind the usefulness of a blood patch occurs from replacing CSF volume, occluding the area of the leak, and from delayed clot formation. Rettenmaier *et al.* reported successful treatment of a cervical CSF leak using a targeted technique.^[2] After reviewing the literature, the decision was made in our case to attempt a lumbar epidural blood patch with resolution of tonsillar herniation and improvement in symptoms.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

**Sarang Koushik, Todd Schultz, Naum Shaparin,
Andrew Kaufman**

Department of Anesthesiology, University of Southern California
Keck School of Medicine, 1520 San Pablo Street, Los Angeles, CA,
90033 United States

Address for correspondence: Dr. Sarang Koushik,
Department of Anesthesiology, University of Southern California
Keck School of Medicine, 1520 San Pablo Street, Los Angeles, CA,
90033 United States.

E-mail: sarang.koushik@gmail.com

References

1. Benzon HT, Nemickas R, Molloy RE, Ahmad S, Melen O, Cohen B. Lumbar and thoracic epidural blood injections to treat spontaneous intracranial hypotension. *Anesthesiology* 1996;85:920-2.
2. Rettenmaier LA, Park BJ, Holland MT, Hamade YJ, Garg S, Rastogi R, Reddy CG. Value of targeted epidural blood patch and management of subdural hematoma in spontaneous intracranial hypotension: Case report and review of the literature. *World Neurosurg* 2017;97:27-38.
3. Harrington BE, Schmitt AM. Meningeal (postdural) puncture headache, unintentional dural puncture, and the epidural blood patch: A national survey of United States practice. *Reg Anesth Pain Med* 2009;34:430-7.
4. Gordon N. Spontaneous intracranial hypotension. *Dev Med Child Neurol* 2009;51:932-5.
5. Peng PW. Intracranial hypotension with severe neurological symptoms resolved by epidural blood patch. *Can J Neurol Sci* 2004;31:569-71.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

Access this article online	
Quick Response Code:	Website: www.joacp.org
	DOI: 10.4103/joacp.JOACP_412_19

How to cite this article: Koushik S, Schultz T, Shaparin N, Kaufman A. Epidural blood patch to treat impending tonsillar herniation. *J Anaesthesiol Clin Pharmacol* 2021;37:485-6.

Submitted: 05-Dec-2019 **Revised:** 19-Jun-2020

Accepted: 04-Jan-2021 **Published:** 12-Oct-2021

© 2021 Journal of Anaesthesiology Clinical Pharmacology | Published by Wolters Kluwer - Medknow