

Ultrasound-Guided Bilateral Greater Occipital Nerve Block for the Treatment of Postdural Puncture Headache

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Abstract

Management of postdural puncture headaches involves oral or intravenous (IV) fluid or caffeine-containing analgesics, micro-catheterization of spinal space, epidural administration of autologous blood or epidural blood patch and fiberoptic imaging-guided epidural interventional techniques. Epidural blood patch has been most effective treatment among all, but it is an invasive procedure that may result in serious complications. In this case report, effect of the ultrasound-guided bilateral greater occipital nerve block on post dural puncture headache is being discussed.

Keywords: Occipital nerve, post dural puncture headache, ultrasound

Introduction

Post-dural puncture (PDPH) headache is a common complication for patients with neuroaxial anesthesia¹ The International Headache Society defines PDPH as pain that may be bilateral and starts within 7 days and ends within 14 days, developing following a lumbar puncture and has postural variation.² PDPH develops due to a loss of cerebrospinal fluid (CSF) from the location of the dural rupture towards the epidural area. The sudden decrease in CSF causes the development of an inflammatory reaction in sensitive structures such as the dura mater, cerebral arteries and venous sinus, leading to PDPH.³ The classical symptoms of PDPH are photophobia, nausea, vomiting, neck stiffness, tinnitus, double vision, dizziness and severe, throbbing headache. The headache begins at the occipital lobe and spreads to the frontal regions, eventually reaching the neck and shoulders, and intensifies with standing.^{4,5} The greater occipital nerve penetrates the semispinalis capitis and trapezius muscles to innervate the skin along the posterior portion of the scalp to the vertex of the skull and the scalp over the ear and parotid glands^{6,7} It takes sensorial tendons from the C2 and C3 segments of the spinalis. It separates from the dorsal ramus of the C2 segment, takes a fine branch from the C3 segment

and innerves the posterior medial of the scalp to the anterior of the vertex. A greater occipital nerve block prevents the sense of pain in this region.⁸

Case Report

Spinal anesthesia was planned for a 22 year old moderately built female patient with no comorbidities diagnosed with hemorrhoids posted for hemorrhoidectomy. On the first post-operative day, the patients had post-dural puncture headache which was throbbing type limited to occipital region and had postural variation, received conservative medical treatment for three days which was ineffective.

Patient received ultrasound-guided bilateral greater occipital nerve blocks (Figure 1, Figure 2) on 4th day with 5ml of 0.5% bupivacaine on each side with technique described by Vanderhoek et al⁷ and 80mg of dexamethasone⁹.

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Figure 1. Probe and patient position for ultrasound guided bilateral occipital nerve block

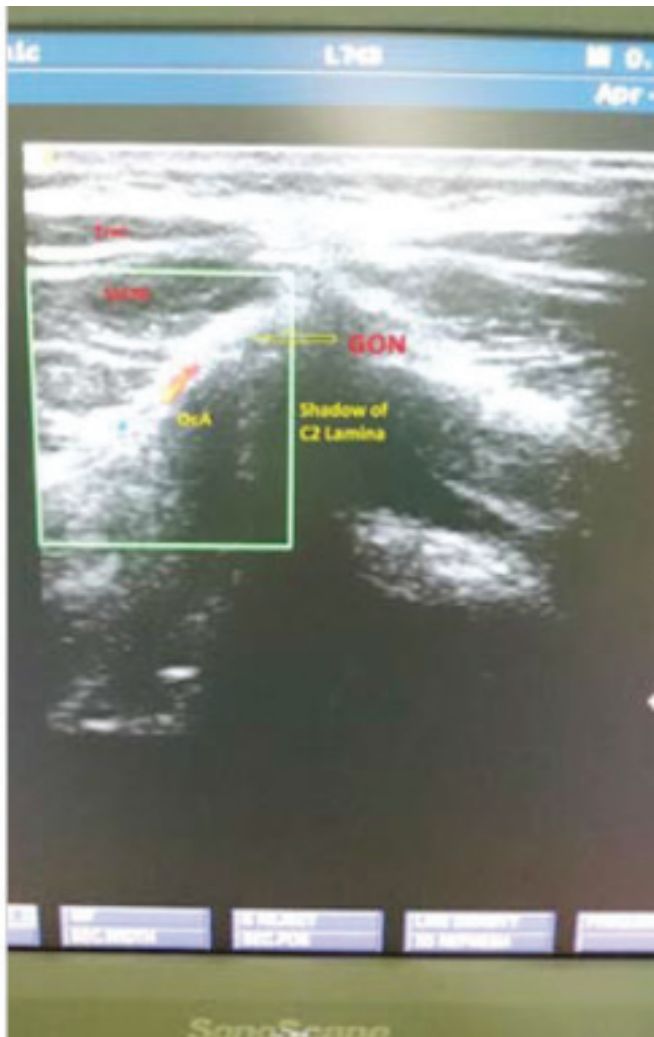


Figure 2. Sonographic picture of occipital artery and greater occipital nerve

Patient had immediate pain relief, visual analogue scale (VAS) score dropped from 7 to 1 within 20 minutes, and was discharged on day 6.

Discussion

The incidence of PDPH is higher in younger patients, women, subjects with multiple dural punctures when quincke needles are used¹⁰. In the literature, the incidence of PDPH after the use of a 25 G quincke needle is reported to be 3-25% and the use of a 25G whitacre is 0-14.5%^{11,12}. In our patient 25G quincke needle was used and anaesthesia was administered with a single attempt. Management of postdural puncture headaches involves oral or intravenous fluids and analgesics with caffeine, micro-catheter application to the spinal gap, epidural blood patch and fiber optical imaging mediated epidural interventional techniques¹³. The greater occipital nerve is located in the medial of the occipital artery at the superior nuchal level. The blockage of this nerve is possible by determining the occipital artery with ultrasonic Doppler.¹⁴

Conclusion: Ultrasound-guided bilateral greater occipital nerve blockade with low risk of complication can be safely performed after conservative medical treatments for PDPH instead of invasive treatment methods that have various complications.

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