Successful Management of a Post Dural Puncture Headache in a Jehovah's Witness Patient with Cosyntropin

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Introduction

Post dural puncture headache can occur after diagnostic lumbar puncture and after epidural placement. Without treatment, the headache may take seven days or longer to resolve. The headache is positional, and is thought to either be secondary to intracranial hypotension from decreased cerebrospinal fluid (CSF), or dilation of cerebral blood vessels to fill the space left from the loss of CSF. The decrease in cerebrospinal fluid is felt to result in pulling traction on the dura, and is supported by cases where infusions of epidural saline to increase CSF fluid have resulted in relief of pain. The theory that cerebral blood vessels dilate resulting in pain is supported by studies where the use of caffeine resulted in pain relief. Caffeine is thought to cause vasoconstriction in the cerebral blood vessels, relieving the pain from vessel dilation, with effectiveness in 70-75% of cases. Therefore, conservative treatment is the first line therapy, which includes intravenous fluids, caffeine, and pain medications. If conservative treatment is not effective, an epidural blood patch (EBP) is effective in relieving PDPH pain (90% success rate), but is not always an option when there is patient refusal, infection at the site, coagulopathies, and difficulty in placing the needle in the epidural space. Patient refusal is a contraindication, and some Jehovahâ€™s witnesses will not accept an EBP, even when offered an autologous blood injection through a closed circuit, because of religious beliefs. We present the case of an anemic patient who is a Jehovahâ€™s witness, with a PDPH who refused a blood patch, and was treated successfully with cosyntropin.

Case Report

A 51 year old female with a history of mucinous appendiceal adenocarcinoma with peritoneal and bilateral ovarian metastasis presented for cytoreductive surgery, peritoneal tumor debulking, and hyperthermic intraperitoneal chemotherapy (HIPEC). An epidural, using a 17G Touhy, was to be placed for postoperative pain management. The initial attempt at epidural placement was complicated by dural puncture, but was successfully placed on the second attempt. The surgical case was uneventful. POD #1, it was noted that the patient was anemic with a hemoglobin of 6.3 (gm/dl). Due to her religious beliefs, the patient declined transfusion of blood products. In addition to the anemia, the postoperative course was complicated by orthostatic hypotension. The surgical team was unable to give large amounts of fluids to alleviate the hypotension due to the patientâ€™s severe anemia. The Acute Pain service was therefore only able to use the epidural intermittently, due to the orthostatic hypotension. The patient was subsequently placed on an IVPCA to
supplement the epidural. On POD #4, the patient developed a headache that was described as non positional, bifrontal and radiating to the posterior occiput. No diplopia, but the patient did complain of photophobia. It was felt that this headache was either secondary to anemia or dural puncture. On POD #5, the patients Hgb dropped to 4.3 and her headache persisted. She was started on Fioricet tablets every six hours as needed for headache with minimal relief of headache. POD #5, her headache continued and progressed to being positional in nature. The patient refused an epidural blood patch secondary to her religious beliefs. As an alternative to EBP, the patient was given Cosyntropin 1mg in 200cc, infused over two hours. The patient reported significant improvement in her headache three hours after completion of the infusion and continued to improve thereafter.

Discussion

ACTH for the treatment of PDPH was first described by Collier (1), and it was thought that the mechanism of action was to increase cerebrospinal fluid production and thus decreasing traction on the dura. Cosyntropin, an ACTH analog, has subsequently been used, and several case reports have shown benefit. In a prospective double blind trial in adult patients with PDPH, caffeine was not found to be more effective than cosyntropin, as assessed by pain scores on the visual analog scale (VAS) (1). Another study by Hakim showed that cosyntropin 1 mg intravenous could be used effectively for prophylaxis against PDPH after accidental dural puncture. The incidence of PDPH was decreased by half, (from 69% in the placebo group to 33% in the cosyntropin group) and fewer patients in the cosyntropin group versus placebo group required an EBP (11% versus 29%). A study by Hanlin et al. comparing EBP to Cosyntropin found that Cosyntropin was equivalent in relieving PDPH at follow up on 3 and 7 days (4). We recommend considering the use of consyntropin in patients who have a contraindication to an EBP as there is some evidence in clinical trials and case reports that it has some equivalence as standard therapy in relieving PDPH. Further research should be done to investigate the most effective dosing and timing of administration of cosyntropin.

References

(1) Collier


(3) Hakim S. Cosyntropin for prophylaxis against postdural puncture headache after accidental dural puncture. Anesthesiology 2010; 113:413-20.