Neurosurgical forum  
Letters to the editor

Small cerebellopontine angle cisterns in patients with trigeminal neuralgia

To the Editor: We read with great interest the recent article by Park et al. (Park SH, Hwang SK, Lee SH, et al.: Nerve atrophy and a small cerebellopontine angle cistern in patients with trigeminal neuralgia. Clinical article. J Neurosurg 110:633–637, April, 2009), in which patients with trigeminal neuralgia (TN) were reported to have smaller cerebellopontine angle (CPA) cisterns and shorter cisternal segments of the trigeminal nerve on the affected side.

This manuscript was in line with another MR imaging study of CPA cistern volume performed by Rasche et al., in which it was suggested that a smaller cistern on the affected side, with descending cerebellar tentorium, may lead to a closer nerve–vessel relationship. For years, we have observed that patients with TN often have small CPA cisterns and/or a small posterior fossa during neurovascular decompression. However, in the literature, the association of skull base abnormalities and TN is sporadic, and these conditions are mainly related to other concurrent pathological entities, such as achondroplasty, Chiari malformation, or Paget disease.

To contribute to this topic, we describe here a 49-year-old woman with left-sided TN in the maxillary and mandibular division who experienced no pain control despite receiving high doses (1800 mg/day) of carbamazepine (CBZ). An MR image of the brain showed a very small CPA cistern with a neurovascular conflict with the superior cerebellar artery (SCA) (Fig. 1). The cross-sectional area of the CPA cistern was measured at 8 mm² by using Park’s methods (Fig. 1B). At surgery, we observed that there was a very short cisternal trigeminal nerve compressed by the SCA, which ran parallel to the nerve. There was no space among the nerve, the artery, and the descending cerebellar tentorium. Following the arachnoid dissection, the SCA was freed, and a piece of shredded Teflon felt was placed between the artery and the trigeminal nerve.

The postoperative course was uneventful, and the patient was completely relieved of pain following a slow reduction of medication. One month later, the patient experienced pain recurrence in the mandibular division, which reached preoperative levels 3 months after surgery. High doses of CBZ provided partial pain relief, but with side effects. Radiofrequency rhizotomy of the gasserian ganglion was performed, and following this procedure the patient was pain free without medication.

In this case, the offending artery was dislodged using Teflon interposition, but it could not be maintained far from the trigeminal root entry zone (REZ) because of the narrow CPA cistern. In Park’s article, all of the patients were treated using Gamma Knife surgery, and it is possible that anatomical and morphological variations may influence the outcome and complication rates following use of this technique. Future studies are necessary to define the roles of these anatomical and morphological

Fig. 1. Axial (A and B) and coronal (C) constructive interference in steady-state MR images showing small, bilateral CPA cisterns. The right trigeminal nerve is indicated by arrows. On the left side, the SCA runs parallel to the nerve (arrowheads). Measurements of the cross-sectional areas of the CPA cisterns (white outline) are shown on the same section as the REZ (B).
characteristics in long-term surgical outcomes, which will allow the most appropriate surgical techniques to be selected to treat patients with small CPA cisterns.

Maud Parise, M.D., Ph.D.
Carlos Telles Reis, M.D., M.SC.
Universidade do Estado do Rio de Janeiro
Maurice Vincent, M.D., Ph.D.
Emerson Gasparetto, M.D., Ph.D.
Universidade Federal do Rio de Janeiro
Rio de Janeiro, Brazil

References


RESPONSE: We thank Dr. Parise for her thoughtful comments. The purpose of this article is to provide information and aid in confirmation of the diagnosis of TN by using MR imaging. In our study, presence of atrophy of the trigeminal nerve and a small CPA cistern were relatively common MR imaging findings on the affected side of TN, compared to the unaffected side. As Dr. Parise pointed out, we did not evaluate treatment outcome according to anatomical characteristics (that is, nerve atrophy, smaller cistern, and descending cerebellar tentorium). We agree that to demonstrate long-term treatment outcome and appropriate treatment modality in TN, it will be necessary to define the relationship between anatomical characteristics and clinical results. Prospective, randomized, multiinstitutional studies evaluating anatomical characteristics and treatment outcome are needed to determine the optimal surgical technique for treatment of medically refractory TN. Nevertheless, we hope that this article will make a contribution to our understanding of the pathophysiological causes of TN. (DOI: 10.3171/2009.10.INS091517)

Seong-Hyun Park, M.D.
Sung-Kyoo Hwang, M.D.
Sun-Ho Lee, M.D.
Dong-Hun Kang, M.D.
Jaechan Park, M.D.

To The Editor: With great interest we have read the case report of Sugrue et al. concerning a patient with symptomatic cerebellar tonsillar herniation after intraoperative lumbar drainage (Sugrue PA, Hsieh PC, Getch CC, et al: Acute symptomatic cerebellar tonsillar herniation following intraoperative lumbar drainage. Case report. J Neurosurg 110:800–803, April, 2009). There is a clear lesson to be learned, as stated by the authors, in recognizing the dangers of lumbar drainage, especially in certain patients. A couple of aspects of their case have incited us to expand the discussion. First of all, we wonder about the relation of symptoms of the patient and the cavernoma. Obviously, the focal seizures as reported could be associated with the cavernoma, but probably the left-sided sensory disturbances and headache cannot. Second, we consider drainage of 225 ml of CSF intraoperatively to be quite a lot, considering an average adult has 150 ml of CSF. In our experience, drainage of about 40 ml CSF intraoperatively serves in most cases for brain relaxation. Perhaps the authors had additional reasons to drain a relatively large volume of CSF? Third, the authors do mention a preexisting caudal displacement of the cerebellar tonsils and, at one point, call this an asymptomatic Chiari malformation Type I (CM-I). Had this been noted preoperatively? They do not mention the increased tentorial angle, as seen on the preoperative MR image (the angle between the tentorium and the Twining line is 44° when there is no postprocessing distortion of the image), which has been associated with CM-I. Therefore, we wonder whether the combination of tonsillar displacement, increased tentorial angle, and the presenting symptoms in this patient suggest that the actual problem of this patient might have been a symptomatic CM-I.

Mark Ter Laan, M.D.
Eelco W. Hoving, M.D., Ph.D.
University Medical Center Groningen
Groningen, The Netherlands

References

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