Letters

Enlarged CSF Spaces in Pseudotumor Cerebri

We read with interest the article by Bialer et al. [1], "Meningoceles in Idiopathic Intracranial Hypertension," in the March 2014 issue of *AJR*. The authors report the presence of petrous apex meningoceles and enlarged CSF spaces in the Meckel cave in patients with idiopathic intracranial hypertension (hereafter referred to as pseudotumor cerebri [PTC]). They suggest that petrous apex meningoceles and enlarged CSF spaces in the Meckel cave may represent an additional imaging sign indicating elevated intracranial pressure.

On the basis of our own practice, we agree with the findings of Bialer et al. [1]. We also frequently encounter enlarged CSF spaces in the Meckel cave and more rarely petrous apex meningoceles in patients with documented PTC. We describe additional imaging findings related to PTC, which also are likely to be specific for chronically elevated CSF pressure.

In three cases of proven PTC, we observed bilateral and asymmetric enlargement of the CSF spaces around the oculomotor nerves as they coursed within the lateral wall of the laterosellar space. In all cases, this segment of the oculomotor nerve was surrounded by CSF, consistent with dilatation of the oculomotor nerve sheath. Dilatation of the oculomotor nerve sheath was visible on 3D T2-weighted space images, although it could equally be seen on 3D T1-weighted spoiled gradient-recalled echo gadolinium-enhanced and thin-slice reconstructions of unenhanced or contrast-enhanced CT (Figs. 1A–1C). The maximum diameter in the coronal plane was 6.9 mm. All cases had an enlarged empty sella and dilated CSF spaces in the Meckel cave, with variable degrees of secondary erosion of the petrous apex. In addition, two of these patients showed enlarged CSF spaces around the abducens nerve bilaterally as it entered the Dorello canal (Fig. 1D). Transverse sinus stenosis was documented in all cases. Interestingly, none of these patients had florid optic nerve manifestations of increased CSF pressure on MRI, and objective visual disturbances were lacking. Two of the three patients did complain of recurrent episodes of diplopia.

Diagnosis of PTC on CT or MRI is based on recognizing dilated intracranial extraaxial CSF spaces that result from chronic elevations of CSF pressure. The most frequent findings of PTC are an enlarged empty sella and optic nerve abnormalities, including dilatation of the optic nerve sheath. In our experience, however, PTC without ophthalmologic deficits and imaging abnormalities of the optic nerves is not rare. In such cases, especially if no venous sinus stenosis is documented, an enlarged empty sella loses its specificity for PTC, particularly in elderly asymptomatic patients. As suggested by Bialer et al. [1], enlarged CSF spaces around the trigeminal ganglion may consequently be an important additional imaging finding raising suspicion for PTC. Aside from the findings described by Bialer et al., dilatation of the oculomotor nerve sheath and the CSF spaces in the Dorello canal (around the abducens nerve) may represent additional stigmata of PTC and be of diagnostic value in cases of PTC without the classic clinical and radiologic ophthalmologic manifestations.

Diego San Millán
Romain Kohler
Hôpital de Sion, Valais, Switzerland

DOI:10.2214/AJR.14.12787
WEB—This is a web exclusive article.

Reference

1. Bialer OY, Rueda MP, Bruce BB, Newman NJ, Biousse V, Saindane AM. Meningoceles in idiopathic intracranial hypertension. *AJR* 2014; 202:608–613

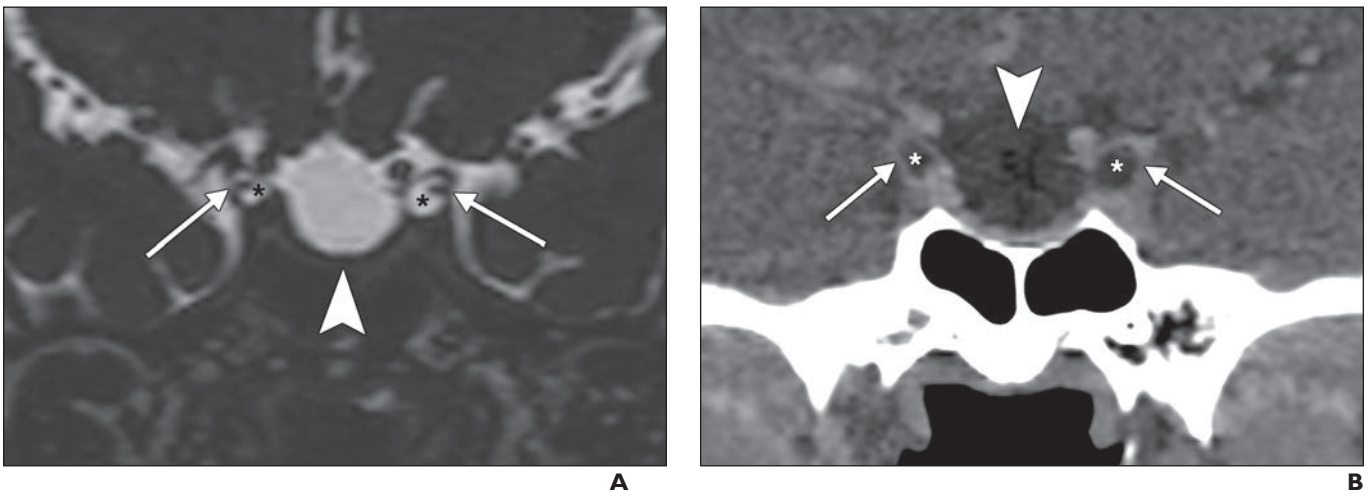
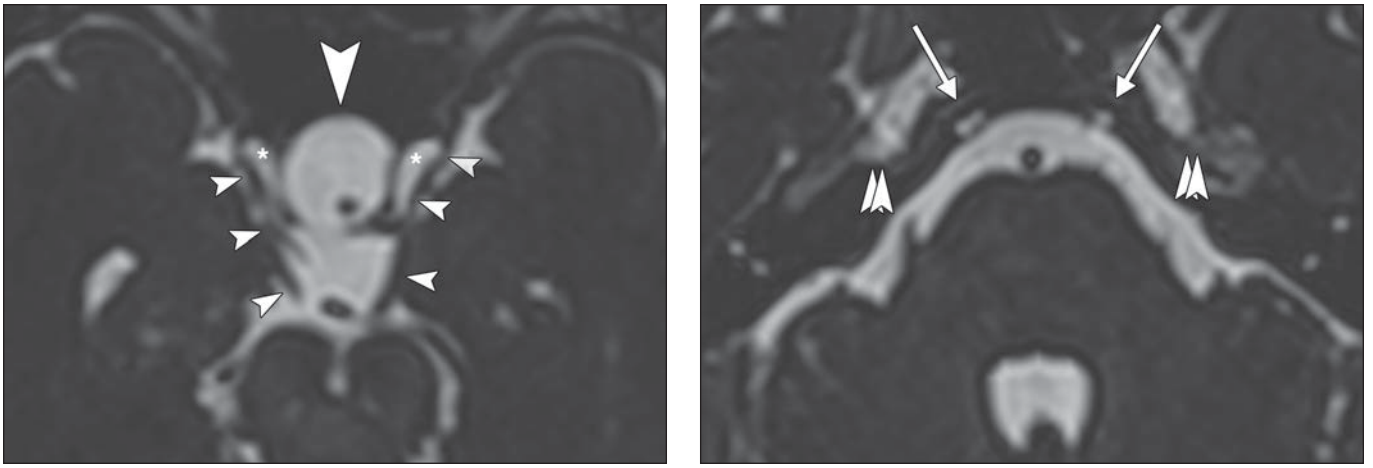


Fig 1—35-year-old woman with documented idiopathic intracranial hypertension (pseudotumor cerebri) manifested mainly through headaches and pulsatile tinnitus. **A** and **B**, Three-dimensional T2-weighted multiplanar reconstruction (MPR) images (**A**). **A** and **B** show oculomotor nerve (*arrows*) within dilated nerve sheath (*asterisks*) in lateral wall of laterosellar space. Note enlarged empty sella (arrowhead).

(Fig. 1 continues on next page)

AJR 2014; 203:W457 0361–803X/14/2034–W457



C D

Fig. 1 (continued)—35-year-old woman with documented idiopathic intracranial hypertension (pseudotumor cerebri) manifested mainly through headaches and pulsatile tinnitus.
C and **D**, Three-dimensional T2-weighted multiplanar reconstruction (MPR) images (**C** and **D**) and coronal contrast-enhanced MPR reconstruction image (**C**). **C** shows oculomotor nerve (*small arrowheads*) within dilated nerve sheath (asterisks) bilaterally, and enlarged empty sella (large arrowhead). **D** shows dilated CSF spaces in Dorello canal around abducens nerve (arrows) and dilated CSF spaces in Meckel cave (*double arrowheads*).