LETTERS

Pneumosinus Dilatans and Arachnoid Cyst

We read with interest the article by Dross et al, "Pneumosinus Dilatans and Arachnoid Cyst: A Unique Association" (1). We would like to report similar findings in a patient whom we recently had the opportunity to examine, as well as some additional observations, and comments regarding the existing literature on this association.

A 58-year-old woman was referred for noncontrast cranial computed tomography (CT) and magnetic resonance (MR) as part of evaluation of persistent vertigo following minor head trauma and a possible transient ischemic attack. A large collection having the attenuation of cerebrospinal fluid (CSF) was noted on CT in the anterior aspect of the right middle cranial fossa, producing mass effect upon the temporal lobe (Fig. 1A). In addition, enlargement of the ethmoid air cells was observed, extending laterally as pneumatization of the lesser wing of the sphenoid. Moreover, there was asymmetric pneumatization of the right petrous ridge, with a small air cell extending anteriorly toward the fluid collection, and pneumatization of the tuberculum and dorsum sellae. There was also thinning of the squamosal portion of the right temporal bone, and mild hyperostosis of the inferolateral aspect of the petrous portion (Fig. 1B). On MR, the collection had signal intensities identical to those of CSF, and the abnormal pneumatization was again noted (Fig. 1C). No other lesions were found to explain the patient’s symptoms.

Although the patient has not undergone surgery for the middle fossa lesion, its appearance is virtually pathognomonic for an arachnoid cyst. The associated pneumosinus dilatans and other bony changes prompted a literature search, which revealed a report by Seur and Kooman of similar findings on skull radiography in two patients with arachnoid cysts (2). In their paper, they also refer to an article 27 years earlier by Noetzel, describing the same association discovered at autopsy (3). More recently, pneumatization of the lesser sphenoid wing led Munk et al to suspect the presence of an arachnoid cyst that was initially obscured on CT by a subdural hematoma (4).

As have previous authors (1, 2), we find the bony changes associated with arachnoid cysts to be puzzling. On the one hand, expansion of paranasal sinuses seems to be an ex vacuo phenomenon. On the other hand, thinning and hyperostosis are reactive changes often seen near slowly growing masses, such as meningiomas. The explanation may lie in a change in the behavior of arachnoid cysts, and in how the timing of this change relates to paranasal sinus development.

It is interesting that cross-sectional imaging of the association of arachnoid cyst and pneumosinus dilatans has gone unreported until recently, given that both entities are more likely to be identified using these current imaging techniques. Perhaps, like so many other things, this association is more common than we think, and we have only to look for it to see it.

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References

2. Seur NH, Kooman A. Arachnoid cyst of the middle fossa with paradoxical changes of the bony structures. Neuroradiology 1976;

Reply

We appreciate the insightful comments of Strottman and Williams. We, too, examined another patient with findings of both pneumosinus dilatans (sphenoid sinus) and a middle fossa arachnoid cyst (Fig. 1). It seems very likely, as they predicated, that this unique association is more common than has been reported. Other cases reported in the literature, such as those of Seur and Kooman (1) support a frequent union of these disorders.

Strottman and Williams, we believe, agree with our hypothesis as to the etiology of the paradoxical bond changes seen with arachnoid cysts. The overexpansion of the sinus likely occurs before the constant CSF pulsating effects have expanded the arachnoid cyst and remodeled the adjacent calvarium. Perhaps the interest in these allied conditions will stimulate further reports.

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References


Fig. 1. CT image showing pneumosinus dilatans and a middle fossa arachnoid cyst.