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Cerebral Aneurysms in a Patient with Osteogenesis Imperfecta and Exon 28 Polymorphism of *COL1A2*

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Cerebral Aneurysms in a Patient with Osteogenesis Imperfecta and Exon 28 Polymorphism of *COL1A2*

Petruzzellis et al[1] present an interesting case of a patient with osteogenesis imperfecta and a ruptured aneurysm at the fenestrated basilar artery. However, they misidentify the fenestration as a vertebral fenestration and, as such, do not seem to relate the fenestration to the basilar aneurysm. Figures 1*A* and 2*A* beautifully show well-known features of the basilar fenestration just above the vertebral junction[2,3]: the joining of both vertebral arteries, subsequent division of the basilar artery into 2 arms, effective widening of the distance between the lateral walls of both arms compared with the basilar diameter beyond, and rejoining of the fenestrated arms into 1 artery.

The relationship of aneurysms of the proximal basilar trunk and basilar fenestrations is well known.[2,3] A substantial series by Campos et al[2] of 59 aneurysms of the basilar trunk found 35.5% in association with definite fenestrations, all but 1 at the proximal end of the fenestration. It is possible that other fenestrations were there but were not discerned because the aneurysms were superimposed over the basilar fenestrations, with the result of a higher incidence. With easy-to-do maximum intensity projections or multiplanar reformations with high resolution on CTA or MRA,[4] viewed with a high index of suspicion, we can now readily show fenestrations. With sectioning of image datasets, aneurysms will less likely superimpose fenestrations.

In the case report by Petruzzellis et al,[1] the discussion of osteogenesis imperfecta is interesting and educational for that entity. However, by not paying attention to the details of their own images, they missed the real point of this case. The important entity of aneurysm at the basilar fenestration is considered to develop as a result of hemodynamic forces on the "crotch" of the fenestration, leading to aneurysms in patients without osteogenesis imperfecta. In this patient with osteogenesis imperfecta and a fenestration aneurysm, the question raised is whether osteogenesis imperfecta is an innocent coincidental bystander.

The authors claim that the aneurysm seen 4 months after coiling is new, with angiograms showing a difference between the right posterior oblique views in Fig 1 and left posterior oblique, lateral, and Towne views in Fig 2. Again, the lack of attention to detail of these images leads the authors to claim that a new aneurysm developed in 4 months. This conveniently shows the neck of the so-called "new aneurysm" in the same spot as the treated aneurysm, just at the left side of the proximal split of the basilar fenestration. We can compare Fig 1*A* with Fig 2*C* for the closest possible orientation, and this comparison gives strong suggestion of the same aneurysm with a refilled neck after coiling, a common enough finding. It seems, then, that this aneurysm is not a rare, newly developed one but another occurrence of lack of attention to the details of the case.

Many reports describing coiling of aneurysms at the basilar fenestration are in the literature.[5] Perhaps this is the first reported case in a patient with osteogenesis imperfecta, but the discussion in this case avoids this main theme through oversight of important findings and claims others that are dubious. The *American Journal of Neuroradiology* has an educational responsibility to show readers exemplary neuroimaging cases and interpretations, in addition to rigorous scientific reports and interesting musings of authors in discussion.

References

1. Petruzzellis M, De Blasi R, Lucivero V, et al. **Cerebral aneurysms in a patient with osteogenesis imperfecta and exon 28 polymorphism of *COL1A2*.** *AJNR Am J Neuroradiol* 2007;28:397–98
2. Campos J, Fox AJ, Viñuela F, et al. **Saccular aneurysms in basilar artery fenestration.** *AJNR Am J Neuroradiol* 1987;8:233–36
3. Uda K, Murayama Y, Gobin YP, et al. **Endovascular treatment of basilar artery trunk aneurysms with Guglielmi detachable coils: clinical experience with 41 aneurysms in 39 patients.** *J Neurosurg* 2001;95:624–32
4. Bharatha A, Fox AJ, Aviv RI, et al. **CT angiographic depiction of a supraclinoid ICA fenestration mimicking aneurysm, confirmed with catheter angiography.** *Surg Radiol Anat* 2007;29:317–21
5. Saatci I, Cekirge HS, Karcaaltincaba M, et al. **Endovascular treatment of kissing aneurysms at the fenestrated basilar artery. Case report with literature review.** *Surg Neurol* 2002;58:54–58; discussion 58

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