RESIDENT & FELLOW SECTION

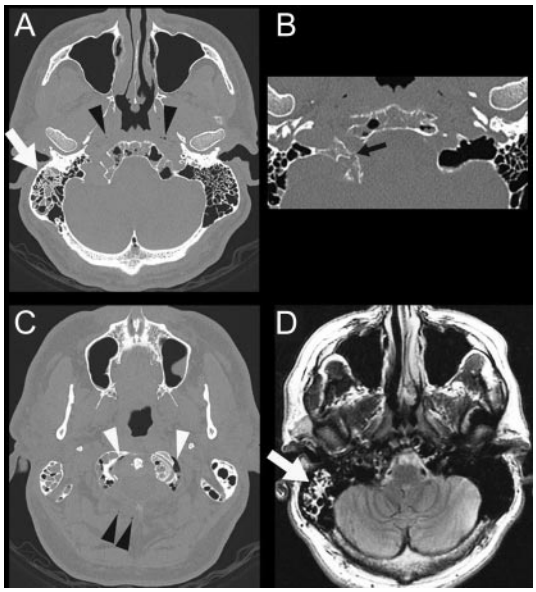
Section Editor
Mitchell S.V. Elkind, MD, MS

Mystery Case: Hypoglossal nerve palsy in occipito-temporal pneumatization

Dimitri Renard, MD
Cornelia Freitag, MD
Giovanni Castelnovo, MD

Correspondence & reprint requests to Dr. Renard: dimitrirenard@hotmail.com

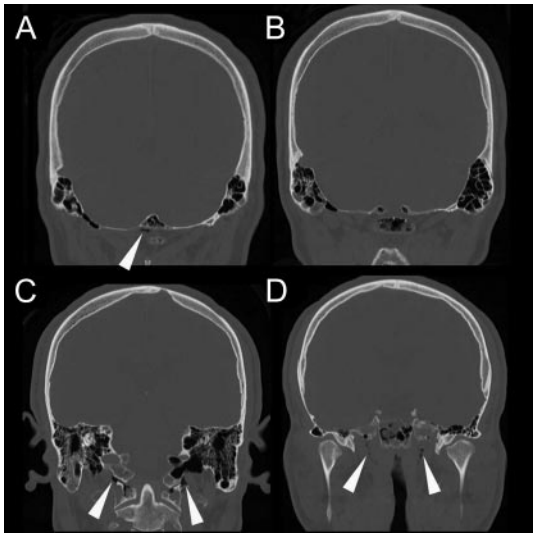
Figure 1 CT and MRI fluid-attenuated inversion recovery (FLAIR) sequences



CT (A to C, axial views) shows occipito-temporal and atlas pneumatization, a right-sided hypoglossal canal fracture (B, black arrow), gas around atlanto-occipital joints (C, white arrowheads) and in surrounding soft tissue (A and C, black arrowheads). There is a right-sided partial opacification of mastoid air cells by a fluid collection, on CT (A, white arrow) and MRI FLAIR sequences (D, white arrow).

A 47-year-old man, with a 25-year history of frequent scuba diving, presented with a right-sided hypoglossal palsy 2 days after occipital head trauma. CT showed excessive occipito-temporal and atlas pneumatization, soft tissue emphysema, right-sided opacification of mastoid air cells, and a right-sided hypoglossal canal fracture (figures 1 and 2). Hypoglossal palsy resolved spontaneously 10 days later. Four months later, mastoid fluid collection disappeared on CT, and other abnormalities were stable. Repetitive positive pressure phenomena (e.g., Valsalva maneuver) are often associated with cranial bone pneumatization.[1,2] The preexisting cranial bone pneumatization probably placed the patient at risk for cranial bone fracture of the thinned bone in the setting of minor head trauma.

Figure 2 CT



CT (A to D, coronal views) showing occipital, temporal, and atlas pneumatisation, gas around atlanto-occipital joints (A and C, arrowheads), and soft tissue emphysema (D, arrowheads).

AUTHOR CONTRIBUTIONS

Dimitri Renard: drafting/revising the manuscript, study concept or design, analysis or interpretation of data. Cornelia Freitag: study concept or design, analysis or interpretation of data. Giovanni Castelnovo: study concept or design, analysis or interpretation of data.

REFERENCES

1. Moss M, Biggs M, Fagan P, Forer M, Davis M, Roche J. Complications of occipital bone pneumatization. Australas Radiol 2004;48:259–263.
2. Sadler DJ, Doyle GJ, Hall K, Crawford PJ. Craniocervical bone pneumatisation. Neuroradiology 1996;38:330–332.

MYSTERY CASE RESPONSES

The Mystery Case series was initiated by the *Neurology*® Resident & Fellow Section to develop the clinical reasoning skills of trainees. Residency programs, medical student preceptors, and individuals were invited to use

From the Departments of Neurology (D.R., G.C.) and Radiology (C.F.), CHU Nîmes, Hôpital Caremeau, Nîmes, France.
The authors report no disclosures relevant to the manuscript. Go to Neurology.org for full disclosures.

this Mystery Case as an education tool. Responses were solicited through a group e-mail sent to the American Academy of Neurology Consortium of Neurology Residents and Fellows and through social media.

All the answers that we received came from individual residents rather than groups, and they were all well-reasoned and thoughtful. Many respondents considered an injury of the hypoglossal nerve (CN12) in the hypoglossal canal as the putative pathophysiologic mechanism for this clinical presentation. Dr. Sweta Singla has provided the most complete answer, indicating that "severe pneumatization of the mastoid cells" led to "hypoglossal nerve injury at the level of the hypoglossal canal."

This case illustrates an uncommon skull fracture of the hypoglossal canal associated with bone pneumatization secondary to chronic repetitive exposure to positive ventilatory pressures.

Dragos A. Nita, MD, PhD
The Hospital for Sick Children, University of Toronto, Toronto, Canada

Mystery Case: Hypoglossal nerve palsy in occipito-temporal pneumatization

Dimitri Renard, Cornelia Freitag and Giovanni Castelnovo

Neurology 2012;79;e109-e110
DOI 10.1212/WNL.0b013e31826c1b41