Teaching *NeuroImages*: Hypoglossal nerve palsy due to basilar invagination

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A woman in her 50s presented to the emergency room with complaints of gait instability. Her examination was notable for tongue deviation to the left. Imaging demonstrated basilar invagination and compression of the preolivary sulci near the cranial nerve 12 nerve root exit zone (figures 1 and 2). Basilar invagination is a rare craniocervical malformation, which can cause neurologic deficits and instability of the craniocervical junction.^{1,2} Imaging is also notable for platybasia, which is often associated with basilar invagination. The patient underwent a posterior occiput-C3 decompression and fusion without any complications. The patient had a stable neurologic examination on 3-month follow-up.

AUTHOR CONTRIBUTIONS

Joshua Bakhsheshian: drafting/revising the manuscript for content, including medical writing for content, study concept or design, analysis or interpretation of data, accepts responsibility for conduct of research

and final approval. Khodayar Goshtasbi, Jay Acharya, Ian A. Buchanan, Vance Fredrickson: acquisition of data, analysis or interpretation of data, accepts responsibility for conduct of research and final approval. Patrick Reid: acquisition of data, analysis or interpretation of data, accepts responsibility for conduct of research and final approval.

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REFERENCES

1. Chaudhry NS, Ozpinar A, Bi WL, et al. Basilar invagination: case report and literature review. *World Neurosurg* 2015;83:1180.e7–1180.e11.
2. Lee CH, Casey AT, Allibone JB, Chelvarajah R. Trombone tongue: a new clinical sign for significant medullary compression at the craniovertebral junction: case report. *J Neurosurg Spine* 2006;5:550–553.

Figure 1 Three-dimensional reconstruction of CT craniocervical junction

Images demonstrate cranial to caudal (A) and parasagittal views (B, C) highlighting the upward displacement of C2 (dens marked with *) relative to the basion.

Figure 2 CT and MRI of head and cervical spine

Imaging demonstrates basilar invagination (A: CT head; B, C: CT cervical spine), C1-C2 autofusion, and atrophy of the medulla (D: MRI brain T1-weighted; E: MRI cervical spine T2-weighted; F: MRI brain fast imaging employing steady-state acquisition). The dens was noted near the left hypoglossal canal (C) while also compressing the preolivary sulci near the region of the cranial nerve 12 nerve root exit zone (F).

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