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Basilar Invagination or Impression: Steeping at the Angle of Craniovertebral Junction

Baziler İnvaginasyon/İmpresyon: Kraniyovertebral Kavşak Açısının Dikleşmesi

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Dear Editor,

A 40-year-old male patient with walking difficulties was referred to our clinic with a preliminary diagnosis of amyotrophic lateral sclerosis (ALS). Abnormalities in the skull base and craniovertebral junction (CVJ) play a crucial role in the differential diagnosis of ALS (1). The CVJ consists of condyles of the occipital bone, atlas, and axis of the spine and their joints (2). CVJ abnormalities may be hereditary, developmental or present due to malformation secondary to any acquired disease process (3). Any course that could lead to a defect of these structures can lead to CVJ abnormalities.

A congenital or acquired abnormality in the odontoid process, which is above the foramen magnum, is called invagination or impression (Figure 1, 2). Basilar invagination and impression are often incorrectly used synonymously; however, they refer to different meanings and should not be used interchangeably. Basilar invagination is congenital and is a condition in which vertebrae components are displaced upwards from the foramen magnum in normal bone. By contrast, the same action of the dens due to a defect of bones in the skull base is defined as a basilar impression (4). Stenosis of the foramen magnum may lead to compression of the bulbus and cause neurologic symptoms similar to those of ALS (5).

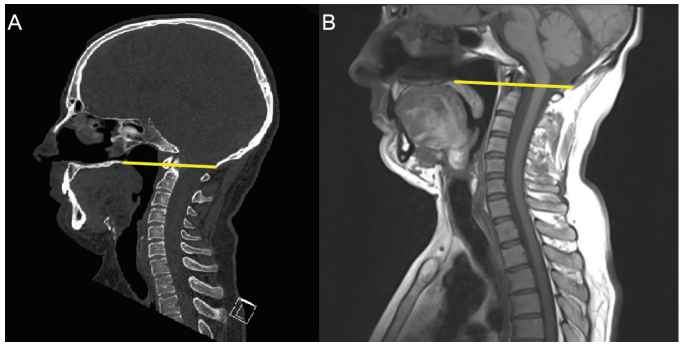

Figure 1. Patient's (A) cranio-cervical CT and (B) cranio-cervical MRI T1 weighted sagittal section. It can easily be seen that the top of C1 is about 0.6 cm above Chamberlain's line (yellow line)

CT: Computed tomography, MRI: Magnetic resonance imaging

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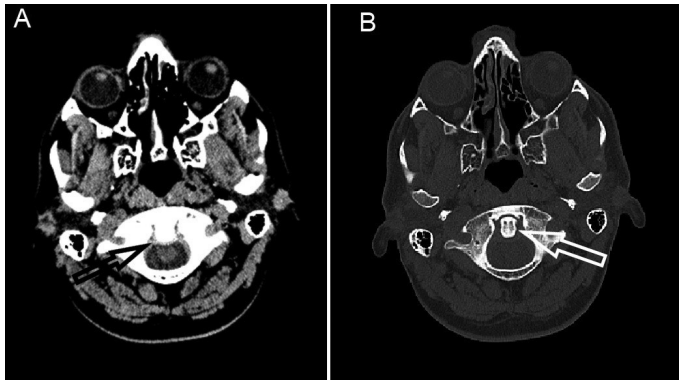

Figure 2. Cranial computed tomography images show (A) reduction of the anterior subarachnoid space with no compression of the medulla spinalis (black arrow) and (B) dens protrusion into the infratentorial region with compression (white arrow)

Ethics

Informed Consent: Written informed consent was obtained.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: M.G.Ş., Ş.I., Concept: Ş.I., Design: M.G.Ş., Data Collection or Processing: Ş.I., Analysis or Interpretation: M.G.Ş., Literature Search: M.G.Ş., Ş.I., Writing: M.G.Ş.

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