

## CASE IMAGE

# Physical findings of crowned dens syndrome

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**Abstract**

If meningitis is suspected, head computed tomography is performed before cerebrospinal fluid collection. Crown dens syndrome can be diagnosed using simultaneous CT scans of the head and neck. Thus, unnecessary CSF tap test can be avoided.

**KEYWORDS**

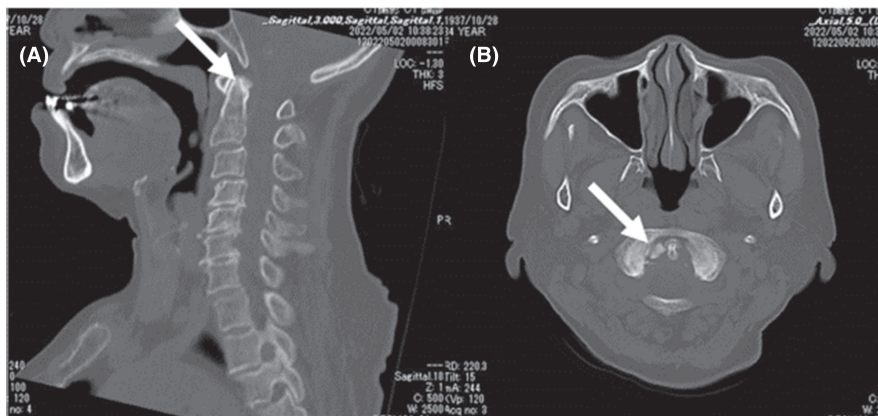
crowned dens syndrome, head computed tomography, neck pain

## 1 | CLINICAL PICTURE

An 84-year-old woman presented to the emergency department with headache and neck pain for 1 week. Meningitis was suspected because of the jolt accentuation sign and a stiff neck. In addition, rotating the neck passively to the right induced right-dominant neck pain. Head and cervical computed tomography (CT) were performed before performing a cerebrospinal fluid (CSF) tap test. Cervical

CT showed calcification on the right side of the dens (Figure 1A,B). Imaging findings and symptoms were consistent with crowned dens syndrome (CDS). We did not perform a CSF tap test, prescribed her with painkillers, and then discharged the patient. Her symptoms improved with painkillers. CDS causes back neck pain and headache.<sup>1</sup> It has an acute course and presents the same findings as meningitis, such as a jolt accentuation sign and a stiff neck.<sup>2</sup> Meningeal irritation is highly specific but

**FIGURE 1** Sagittal and axial computed tomography (CT) scan. (A) Sagittal computed tomography (CT) scan of the cervical spine indicating calcifications behind the dens. (B) Axial CT scan of the cervical spine indicating calcifications on the right side of the dens



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less sensitive for the diagnosis of CDS. Therefore, when meningeal irritation is observed, the CSF tap test should be performed in consideration of meningitis. However, if cervical pain is passively induced by cervical rotation or compression, the possibility of CDS and tumors of the posterior pharyngeal space should be considered.<sup>3</sup> The CSF tap test is often performed because its findings are similar to meningeal irritation. When it is performed, the presence/absence of a condition in which intracranial pressure increases should be confirmed. Therefore, many clinicians perform head CT before the CSF tap test. However, simultaneous head and neck CT may yield the diagnosis of CDS when passive neck rotation and tenderness are noted. Consequently, unnecessary CSF tap tests can be avoided.

#### AUTHOR CONTRIBUTIONS

**Daiki Sakai:** Writing – review and editing. **Ruiko Ono:** Writing – review and editing. **Ryo Ichibayashi:** Methodology; project administration; supervision; writing – original draft.

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#### CONFLICT OF INTEREST

The authors have no conflict of interest to disclose.

#### DATA AVAILABILITY STATEMENT

The data presented in this study are available upon request from the corresponding author. The data are not publicly available due to privacy and ethical considerations.

#### CONSENT

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

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