



## Internal Medicine Flashcard

## Two classical neurological syndromes following a stab wound

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## 1. Case presentation

A previously healthy 28-year-old man presented to the trauma department after being stabbed in the head, neck, and torso by multiple assailants. He was able to speak and breathe independently. Neurological examination revealed partial ptosis and miosis involving the left eye. There was left hemiplegia with impaired left-sided proprioception and vibratory sense. Babinski reflex was elicited on the left. A spinal level was noted on the right, with diminished sensation to pain and temperature from the C7 dermatome inferiorly.

T2-weighted MRI of the cervical spine revealed a wound perpendicular to the vertebral column at the level of C5, transecting the ligamentum flavum, the interspinous and nuchal ligaments (Fig. 1A), and injuring the entire left half of the spinal cord (SC) (Fig. 1B).

## 2. What is the diagnosis?

The patient had coexistence of Brown-Séquard (BSS) and Horner (HS) syndromes secondary to complete traumatic hemisection of the left half of the SC at the level of C5.

Dr. Charles-Édouard Brown-Séquard first described the now eponymous syndrome in 1846, after performing a series of animal experiments while researching sensory pathways in the SC [1]. Classical BSS results from disruption of the corticospinal tract, dorsal columns, and spinothalamic tract. Various causes of BSS have been described, including blunt and penetrating trauma, syringomyelia, spinal epidural hematoma, disc herniation, spinal neoplasm, demyelinating disease,

infectious myelitis, and SC infarction [2,3].

BSS accounts for ~1–4% of all SC injuries [3]. The classical triad of ipsilateral hemiparesis, disturbed ipsilateral proprioception, and contralateral hypalgesia is rarely seen in clinical practice as it only occurs with complete, rather than partial, SC hemisection. In certain cases, ipsilateral HS (partial ptosis and miosis of the eye, and hemifacial anhydrosis) can occur secondary to hypothalamospinal tract injury.

Management of BSS typically involves rehabilitation. Surgery is reserved for patients with SC compression or instability of the vertebral column. Prognosis of BSS is generally favourable for individuals who participate in rehabilitation [2,3]. Many are nearly able to attain their pre-injury level of functionality [2,3]. Outcomes are usually better in patients with blunt as opposed to penetrating trauma injuries [3].

## Author contributions

Matthew R. McCann: case concept and design, acquisition of data, interpretation of data, manuscript writing.

Mauricio F. Villamar: case concept and design, interpretation of data, critical revision of manuscript for intellectual content.

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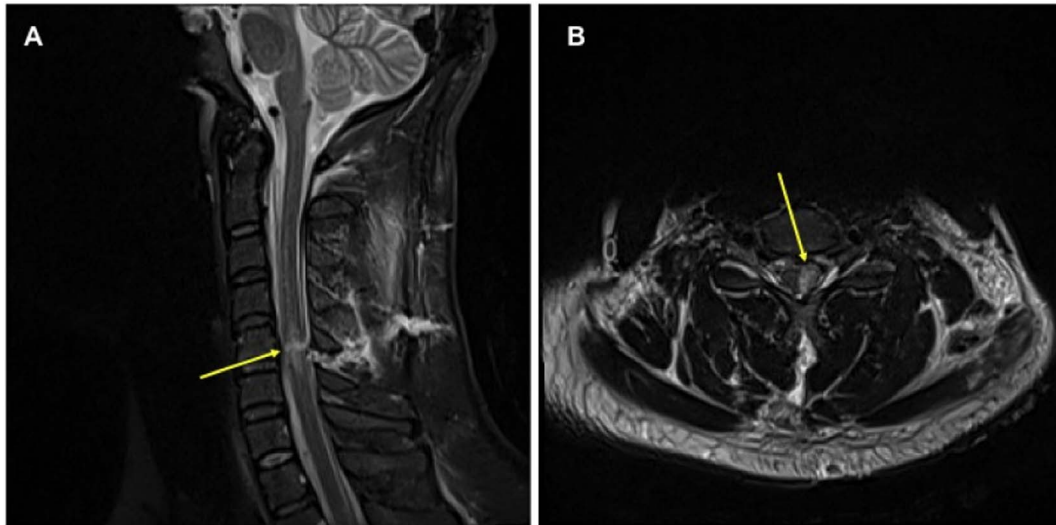
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**Fig. 1.** T2-weighted MRI of the cervical spine. T2-weighted MRI of the cervical spine revealed a wound perpendicular to the vertebral column at the level of C5, transecting the ligamentum flavum, the interspinous and nuchal ligaments (Fig. 1A, arrow), and injuring the entire left half of the spinal cord (Fig. 1B, arrow).

### Acknowledgements

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