


# Starch–iodine test: a diagnostic tool for Horner syndrome

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## DESCRIPTION

We present the case of a 62-year-old woman that reported right hemibody excessive sweating, which slowly progressed over 15 years, and which caused great social embarrassment. On examination, right hemibody hyperhidrosis was observed. A very slight anisocoria was also present (ambient light: right 3 mm; left 2 mm; light stimulation: right 2 mm, left 1.5 mm; dark: right: 5 mm; left 2.5 mm). The patient previously underwent bilateral blepharoplasty for excess palpebral skin, complicating evaluation of ptosis; however, a slight left ptosis was apparent. A Harlequin sign was not reported by the patient, nor noticed after exercise.

A starch–iodine test was performed, revealing left hemibody anhidrosis. To perform the starch–iodine test, we first thoroughly dried the patient's skin with a 70% alcohol solution, then applied an iodine solution and allowed the skin to dry completely. Next, we dusted the skin with a thin film of starch (corn flour) ([figure 1](#)). Finally, we encouraged sweating (hot room and exercise) and after 25 min we evaluated the results. The patient's right hemibody readily turned a dark blue shade when in contact with sweat, while the left side remained unchanged ([figure 2](#)).

An apraclonidine test was performed, causing left pupil dilatation. Cervico–thoracoabdominal–pelvic CT scan, neuraxis MRI, carotid doppler ultrasound and extensive laboratorial study were unremarkable. Based on these results, the diagnosis of idiopathic Horner syndrome was made. The patient was then administered oxybutynin (an anticholinergic drug) to reduce the excessive sweating on



**Figure 2** Encourage sweating (hot room, exercise): an unforgettable dark blue coloration develops on the normal hemibody, strictly respecting the midline, and thus demonstrating contralateral anhidrosis.

the contralateral hemibody, resulting in a greatly improved quality of life.

Currently, the starch–iodine test is rarely used in clinical practice. However, it is simple, inexpensive



**Figure 1** Thoroughly dry the skin with an alcohol solution. Then, apply an iodine solution and let it dry completely. Dust with a thin film of starch.

## Learning points

- ▶ Horner syndrome is clinically diagnosed when the patient presents decreased pupil size aggravated in scotopic conditions, ipsilateral drooping eyelid and decreased sweating on the affected side of the body.
- ▶ The starch–iodine test is a simple but powerful tool for the diagnosis of Horner syndrome. It is readily available, inexpensive and devoid of side effects.
- ▶ When positive, the normal hemibody acquires a dark blue or purple coloration, while the affected hemibody remains unchanged, thus confirming a lack of sweating on the affected side.



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and does not produce the common side effects associated with other tests used in this context (such as the cocaine or apraclonidine tests, quantitative sudomotor axon reflex and thermoregulatory sweat tests). Moreover, the starch–iodine test is readily available and easy to interpret, even for patients, provided they are told what to expect.<sup>1 2</sup> In this case, the test demonstrated to the patient that the problem was in fact contralateral lack of sweating with compensatory excessive sweating on the right. Overall, the test aided immensely in clarifying the diagnosis.

For all of these reasons, we believe that the starch–iodine bedside test can be a very effective alternative for hospitals with few technical resources and/or where more specialised diagnostic testing is difficult to obtain in a timely manner (an increasingly important consideration given the current pressures exerted on global health systems by the COVID-19 pandemic).

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