A note on Claude Bernard-Horner's syndrome

Claude Bernard (1813–78), born in St Julien in Rhone, reported in 1852 his experiments on cutting the rabbit's cervical sympathetic nerve. He observed that this caused constriction of the ipsilateral pupil, but also flushing and a rise in temperature of the ear. From this he deduced for the first time that sympathetic nerves (vasomotor) controlled flow in blood vessels.

Horner described the triad of ptosis, miosis, and enophthalmos in 1869. Though known by his name, earlier, but sometimes incomplete, accounts exist in the writings of Pourfour du Petit.2 Weir Mitchell3 however, gave the first full account five years before Horner, describing a 24 year old soldier with a gunshot wound of the right side of his neck:

"The pupil of the right eye is very small . . . slight but very distinct ptosis . . . The ball of the right eye looks smaller than that on the left . . . The conjunctiva is somewhat redder . . . and the pupil somewhat deformed, oval rather than round . . . his face became distinctly flushed on the right side only when walking in warm weather . . . a case of injury of the sympathetic nerve, probably the only one recorded."

The soldier's signs recovered in five months and he returned to military duties.

Thirty years earlier Edward Selleck Hare, House Surgeon to Stafford County General Infirmary, had described the physical signs in a letter4 to the Medical Gazette on 11 September 1838. His patient was a Thomas Willetts aged 40 with:

"pain, tingling and numbness along the course of the ulnar nerve of the left arm, . . . and a small tumour in the inferior triangular space on the left side of the neck . . . the pupil of the left eye became contracted, and the levator palpebrae ceased to perform its office." . . . He died within 10 weeks. Postmortal showed extensive infiltration of the brachial plexus, jugular and carotid vessels, anterior mediastinum, vagus and "the sympathetic, with its lower cervical ganglion." Hare could not relate the ocular signs to the structural disease; "they must be regarded as an instance of that remote sympathy which is found to exist between distant parts of the same individual . . ." 

Sadly, Hare died on 28 September 1838 aged 26 of pyphlebitis fever.

Horner's paper5 was translated by Fulton:

"Anna Brändli, aged 40, a healthy looking peasant woman . . . six weeks after her last confinement noticed a slight drooping of her right upper eyelid, which increased very gradually . . . The upper lid covers the right cornea to the upper edge of the pupil; the lid is not loose or wrinkled but somewhat sunken into the orbit and is still capable of movement; it is neither injected nor swollen. The upper corneal vessels are smaller than the lower, and indicate that the frontalis muscle is working as a substitute [for the levator palpebrae superiors].

The pupil of the right eye is considerably more constricted than that of the left, but reacts to light; the globe is not so deeply . . . Dilated slightly; no visible clinical . . . the right side of her face became red and warm; while the left side remained pale and cool. The right side seemed turgid and rounded, the left more sunken and angular; the one perfectly dry, the other moist. The boundary of the redness and warmth was exactly in the midline. The patient thereupon told us that the right side had never perspired . . . Immediately after application, the thermometer on the right recorded 35°C, that on the left, 30°C . . . "

Horner measured temperature behind the ear and in the axilla and groin.

"After application of atropine into each conjunctival sac the right pupil enlarged slowly and irregularly; after twenty minutes it had not reached the size of the left . . . When 24 hours after atropine, equal quantities of calabar * were put into the conjunctival sac of each eye, one noticed after ten minutes a marked constriction on the right, while the left the action of atropine still continued . . ."

Considering the cause of each sign in turn, Horner concluded:

"the vasomotor disturbance involves not only the trigeminal area, but also the fibres of the cervical sympathetic; this experiment with belladonna and calabar speaks for the dual control of the movements of the iris in man . . . we are dealing with right-sided paralysis . . . a paralysis of the musculus palpebrae superioris supplied by the sympathetic nerve (H. Müller, Harling), and the appearance of the upper lid as part and parcel of the whole symptom-complex."

John Horner (1831–86) was born in Zurich. His medical studies were profoundly influenced by the physiologist Karl Ludwig. After graduating in 1854 he visited Munich and Vienna and continued on page 191

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* Calabar is the extract from the seed of a woody vine Physostigma venenosum containing physostigmine, which was used by Argyll Robertson in 1863 for examining the pupils.
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subsequently, may have been examples of CIDP, as nerve biopsy abnormalities were non-specific, and a family history of neurological disease was often absent or at best questionable. Our patient shows definitively that spinal compression syndromes may occur in acquired hypertrophic neuropathies as well as in HMSN and expands the spectrum of the clinical presentation of CIDP.

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acquired a lifelong interest in eye diseases. He worked with von Graefe who became his close friend. In 1862 he was appointed Professor of ophthalmology in his home town. Apart from his studies of cervical sympathetic paralysis, he described a man with red-green colour blindness who had transmitted the disorder to his male grandchildren through an unaffected daughter: establishing sex linked transmission.

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3 Mitchell SW, Morehouse GR, Keen WW. Quoted sounds and other injuries to nerves. Philadelphia: Lippincott, 1864.
4 Hare ES, Tumour involving certain nerves. London Medical Gazette 1830;23:16-8.
5 Horner F. Üeber eine Form von Prostat. Klinische Monatsschr für Augenheilkunde 1869;7:193-8, translated by JF Fulton. 1