Special Feature:

**Horner’s syndrome due to Pancoast tumour**

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A 37-year-old male, a life-long non-smoker, presented to medicine out-patient service with pain in the right shoulder and upper chest radiating to right upper limb for the past one year. He also complained of cough with scanty mucoid sputum for the past two weeks. General physical examination revealed findings suggestive of Horner’s syndrome (Figure 1A). On respiratory system examination, findings suggestive of a right upper lobe mass lesion were evident. Chest radiograph (Figure 1B) showed a right upper lobe mass lesion. Computed tomography (CT) of the chest (Figure 1C) revealed an irregular lobulated soft tissue density mass lesion in the apex of the right lung (Pancoast tumour) and destruction of the first rib. CT-guided tru-cut biopsy from the lesion confirmed the diagnosis of adenocarcinoma of lung (Figure 1D).

Horner’s syndrome results from the interruption of the oculo-sympathetic nerve supply between its origin in the hypothalamus and the eye. The first-order neurons arise from the hypothalamus and synapse at Budge’s centre in spinal cord (C-8 to T-2 level). Second-order neurons exit the spinal cord at the T-1 level and travel close to the apex of the lung and synapse at the superior cervical ganglion. Third-order neurons travel along with the internal carotid artery

**Figure 1(A):** Clinical photograph showing right-sided ptosis, miosis and apparent enophthalmos suggestive of Horner’s syndrome

**Figure 1(B):** Chest radiograph (postero-anterior view) showing a dense opacity in the right upper zone suggestive of a mass lesion with destruction of the anterior and lateral end of first rib (arrow)

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through the cavernous sinus and enter the orbit
with the third cranial nerve.\textsuperscript{1} Horner’s
syndrome is characterized by miosis, partial
ptosis, apparent enophthalmos and anhidrosis.
Less constant features include facial flushing,
arteriolar or venular dilatation, transient
lowering of intraocular pressure, hemi-atrophy
of the face and iris heterochromia (in congenital
Horner’s syndrome).\textsuperscript{2}

Johann Friedrich Horner (1831-1886), a Swiss
ophthalmologist has been credited with the
description of this eponymous syndrome.\textsuperscript{3,4} He
described ptosis, miosis, apparent
enophthalmos, flushing, warmth and anhidrosis
on right side of the face in a 40-year-old woman.
By instilling belladonna (aropine) and calabar
(phystostigmine) drops, he demonstrated

paralysis of the \textit{dialator pupillae}, along with
the paresis of the \textit{levator palpebrae superioris}
and vasomotor paralysis and suggested that the
condition resulted from interruption of the
cervical sympathetic pathway.\textsuperscript{3,4} Edward
Selleck Hare (1812-1838) described a patient
with a tumour in left inferior triangular space
of the neck with miosis and ptosis. However,
he could not relate these signs to the
interruption of the sympathetic nervous
system.\textsuperscript{3} Claude Bernard (1830-1878) observed
that cutting the rabbit’s cervical sympathetic
nerve resulted in constriction of the pupil,
flushing and rise in the temperature of the ear
on that side. Based on these observations he
proposed that sympathetic nerves control the

![Figure 1(C): Non-contrast computed tomography of the chest (mediastinal window) showing a lobulated soft tissue density lesion in the apex of the right lung (asterisk); destruction of the first rib is also evident (arrow head)](image1)

![Figure 1(D): Photomicrograph of CT-guided tru-cut biopsy specimen showing pleomorphic cuboidal to columnar tumour cells arranged in ill-defined glandular pattern (arrows) suggestive of adenocarcinoma (Haematoxylin and eosin, × 400)](image2)

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<thead>
<tr>
<th>Site of the lesion</th>
<th>Common causes</th>
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<tbody>
<tr>
<td>Central</td>
<td>Stroke</td>
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<td>Tumours</td>
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<td></td>
<td>Trauma</td>
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<td>Demyelination</td>
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<tr>
<td>Pre-ganglionic</td>
<td>Apical lung tumours (e.g., Pancoast tumour)</td>
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<td>Subelavian artery aneurysm</td>
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<td>Mediastinal tumours</td>
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<td>Cervical rib</td>
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<td>Iatrogenic (jugular cannulation, chest tube placement)</td>
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<tr>
<td>Post-ganglionic</td>
<td>Internal carotid artery trauma, dissection, arteritis, aneurysm, thrombosis</td>
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<td>Cavernous sinus thrombosis</td>
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<td></td>
<td>Tumours</td>
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\textit{Source: reference 5}
blood circulation.⁴ The common causes of Horner’s syndrome are listed in Table 1.⁵ Pancoast tumour (also called superior sulcus tumour) named after Henry Khunrath Pancoast, a Radiologist from the United States of America (USA), is a frequently encountered cause of Horner’s syndrome.⁶ Identification of Horner’s syndrome on physical examination is crucial as it may sometimes be the only clue to a serious underlying disease.

REFERENCES