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Irreversible airway obstruction due to innominate artery compression of the trachea

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A 12-year-old girl presented with occasional cough and minor exercise intolerance. Peak expiratory flow (PEF) follow-up suggested asthma and irreversible expiratory obstruction was demonstrated by spirometry. Treatment with inhaled corticosteroids alleviated the symptoms, but a slight obstruction in spirometry persisted (figure 1A). Three years later, a CT of the thorax was performed due to the unusual shape of the flow/volume curve. The innominate artery (figure 1B, white arrow) was detected to compress the trachea and cause a 30% reduction in tracheal diameter

(figure 1C, black arrow). This finding was consistent with the characteristic change in the flow/volume curve: a sudden and temporary drop in expiratory flow immediately after PEF (figure 1A). Minor compression of the trachea did not cause the asthmatic symptoms but mislead physicians to treat irreversible obstruction as asthma. The asthma medication was discontinued and the girl remained symptom free.

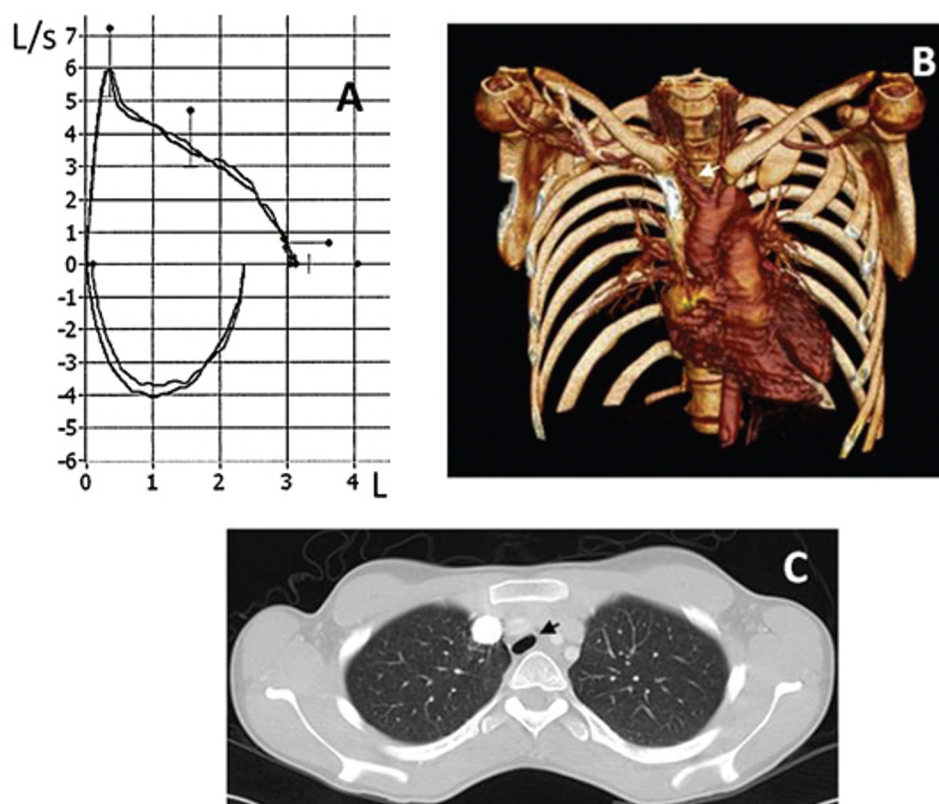
Competing interests None.**Patient consent** Obtained.

Figure 1 (A) Spirometry curves before and after bronchodilation with inhaled salbutamol (0.4 mg). The curves demonstrate a sudden and temporary drop in expiratory flow immediately after peak expiratory flow, indicating a slight intrathoracic obstruction of the large airways. (B) Three-dimensional reconstruction of the patient's main thoracic arteries. The innominate artery (white arrow) arises normally. (C) The trachea is positioned slightly to the right of the midline. Thus, the innominate artery crosses over the trachea and causes a 30% reduction in tracheal diameter (black arrow).

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