

An unexpected cause of chest pain

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A 69-year-old man presented to the emergency unit due to stabbing chest pain. The pain radiated from the sternum to the lumbar region and the upper part of the abdomen. It occurred usually 3 times per week and lasted 2 to 6 hours. Computed tomography (CT) angiography excluded pulmonary thromboembolism. A lesion sized 70 × 45 × 90 mm was found in the posterior mediastinum, adjacent to the enlarged left thyroid lobe. It compressed both the trachea and esophagus. On echocardiography, the ejection fraction was 65%, without segmental systolic dysfunction.

The patient was subsequently referred to the endocrinology department. He did not complain of dyspnea or dysphagia. His medical history included hypertension, cigarette smoking (45 pack-years), and lumbar spine degeneration. On thyroid ultrasonography, both lobes were enlarged and extending below the sternum. Fine-needle aspiration biopsy of lesions with a mixed cystic-solid composition in the right (20 × 18 × 20 mm) and left thyroid lobes (50 × 35 × >60 mm) was performed. The first lesion was nondiagnostic, while the examination of the second one showed colloid

nodule. Whole-body scintigraphy with iodine and single-photon emission computed tomography were performed. Laboratory tests revealed subclinical hyperthyroidism. Antithyroidal antibody, calcitonin, and carcinoembryonic antigen levels were within the reference ranges. The level of thyroglobulin was elevated to 290 ng/ml (reference range, 3.5–77 ng/ml). The erythrocyte sedimentation rate was increased (30 mm/h; reference range, <15 mm/h), while lactate dehydrogenase levels and complete blood cell count were within reference ranges. Thiamazole was introduced to perform contrast-enhanced chest CT. It revealed a substernal multinodular goiter (FIGURE 1A–1F).

The mass was removed in the thoracic surgery unit. Both the cervical approach and partial sternotomy were applied (FIGURE 1G and 1H). Treatment with l-thyroxine was introduced. The patient experienced partial transient left recurrent laryngeal nerve palsy, which resolved within a few weeks.

Differential diagnosis of a mediastinal mass encompasses a wide spectrum of diseases.¹ In adults, the most common ones are primary thymic neoplasms, thyroid masses, and lymphomas.²

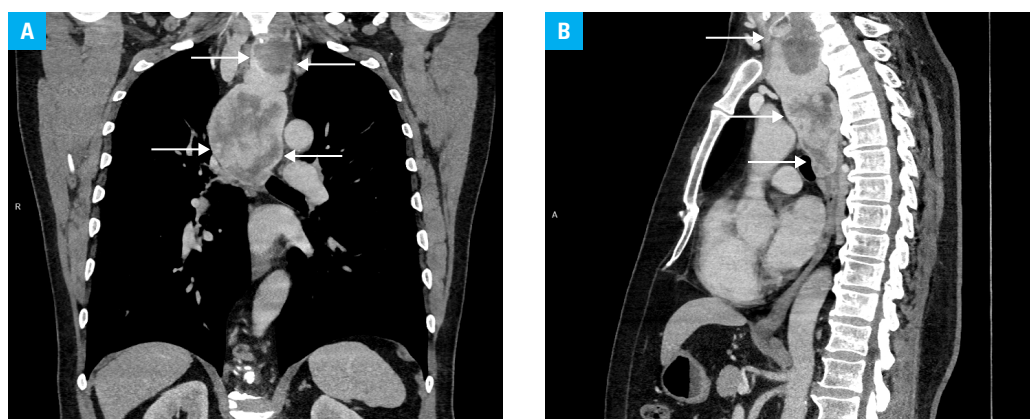


FIGURE 1 A, B – computed tomography (CT) scans after intravenous contrast injection in coronal (A) and sagittal (B) planes showing a large multinodular goiter (arrows) involving the mediastinum, with the inferior margin of the tumor localized below the level of the tracheal bifurcation

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Received: May 8, 2021.
Revision accepted: June 14, 2021.
Published online: June 18, 2021.
Pol Arch Intern Med. 2021;
131 (9): 867–869
doi:10.20452/pamw.16036
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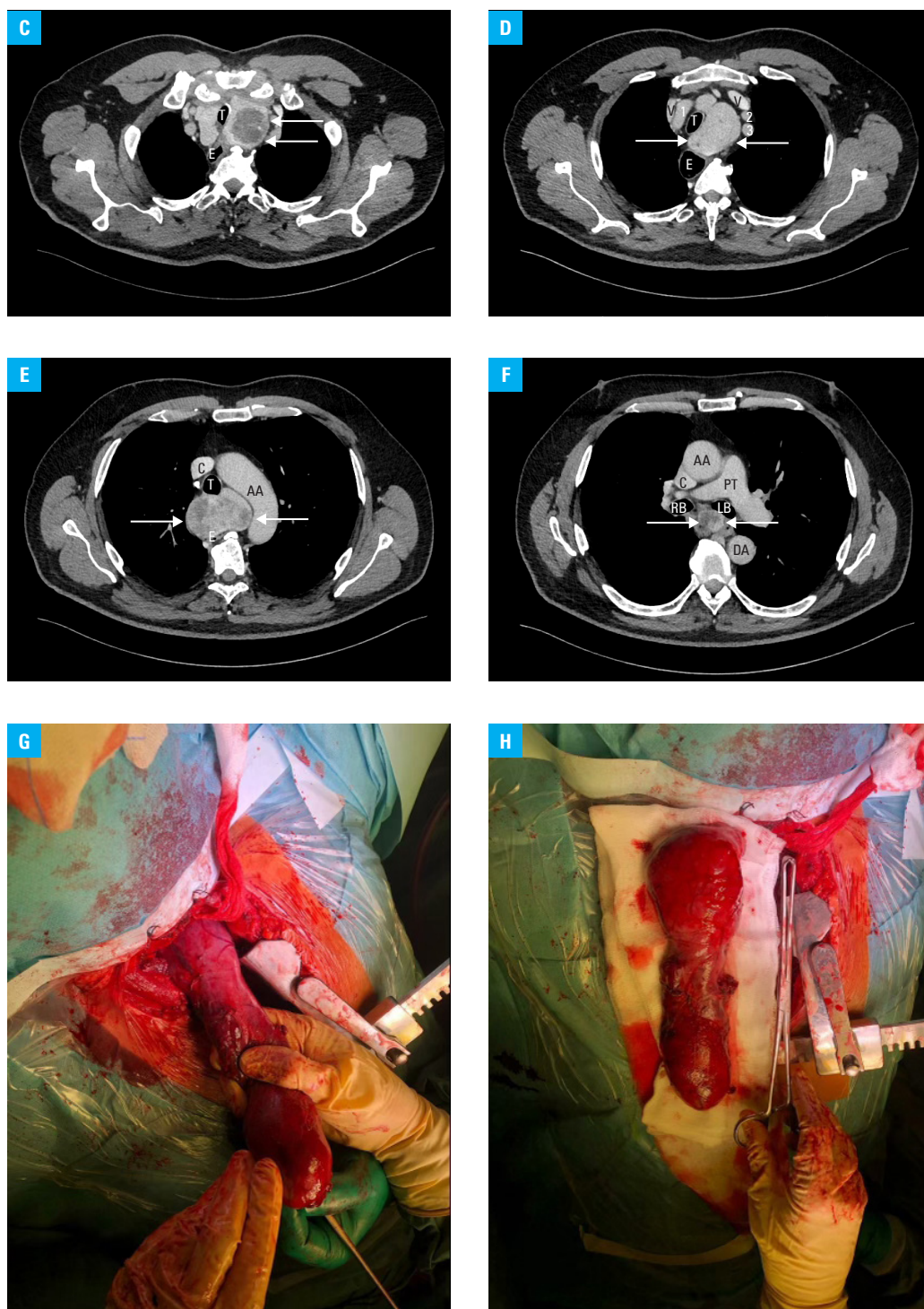


FIGURE 1 **C, D** – CT scans after intravenous contrast injection in axial plane visualizing the goiter (arrows) localized mainly on the left side, causing a mass effect and shifting the mediastinum to the right, with compression of the trachea and esophagus. Widening of the esophageal lumen above the level of obstruction is visible. In the mediastinum, the mass (arrows) is located between the great vessels (brachiocephalic vein, aortic arch, brachiocephalic trunk, left common carotid artery, and left subclavian artery). **E, F** – CT scans after intravenous contrast injection in axial plane. In the lower parts of the mediastinum, the goiter (arrows) lies in between the aortic arch, trachea, and inferior vena cava. The esophageal lumen below the level of compression is narrow. The inferior border of the goiter (arrow) goes below the tracheal bifurcation, between the right and left main bronchi, at the level of the aortic arch, pulmonary trunk, inferior vena cava, and descending aorta. **G, H** – total thyroidectomy and resected goiter, perioperative view
Abbreviations: 1, brachiocephalic trunk; 2, left common carotid artery; 3, left subclavian artery; AA, aortic arch; C, inferior vena cava; DA, descending aorta; E, esophagus; LB, left main bronchus; PT, pulmonary trunk; RB, right main bronchus; T, trachea; V, brachiocephalic vein

In the presented case, the most probable diagnosis was thyroid enlargement. Patients with a long-standing goiter, especially substernal one, may become symptomatic because of progressive compression of the trachea or sudden increase in the thyroid volume due to bleeding into the nodule.³ Our patient complained about pain, but not dyspnea or dysphagia. Atypical symptoms together with the ongoing COVID-19 pandemic contributed to the delay in the diagnostic process leading to the development of a large substernal goiter. The first-line treatment for obstructive thyroid goiter is surgery; however, radioiodine therapy may be an alternative for patients unwilling or unable to undergo thyroidectomy. In asymptomatic cases with normal results of the flow-volume loop test close surveillance may be an option.⁴ As our patient experienced intense pain and his treatment preference was thyroidectomy, he underwent the surgery. Substernal thyroidectomy is associated with higher complication rates compared with the cervical procedure;⁵ the presented case was complicated by transient nerve palsy. Histological examination confirmed favorable diagnosis of multinodular goiter. The stabbing chest pain that the patient had been feeling before the operation resolved.

To sum up, the decision concerning the treatment of substernal goiter should be based on several factors. Symptoms, general health status of the patient, and his/her preferences should be taken into consideration. The assessment of both the degree of tracheal obstruction and thyroid function are vital in the decision-making process.

ARTICLE INFORMATION

CONFLICT OF INTEREST None declared.

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HOW TO CITE Bromińska B, Szczepanek-Parulska E, Kasprzyk M, et al. An unexpected cause of chest pain. *Pol Arch Intern Med.* 2021; 131: 867-869. doi:10.20452/pamw.16036

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