Mediastinal Goiter Presenting with Ventricular Tachycardia

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ABSTRACT

An unusual case of a mediastinal goiter that was completely intrathoracic presenting with ventricular tachycardia as the sole clinical manifestation is reported here. The patient did not have any of the typical features of a mediastinal goiter such as neck swelling, dysphagia or respiratory difficulty, but instead had spontaneous onset of wide-complex tachycardia requiring emergency treatment. This atypical presentation led to initial misinterpretation of imaging studies and delayed diagnosis.

The large, completely intrathoracic mass abutted cardiac muscle, and required a combined transcervical and median sternotomy approach for removal. The arrhythmia resolved postoperatively. This report demonstrates that although unusual, ventricular tachycardia can be the only feature of a mediastinal goiter, and should prompt appropriate management.

INTRODUCTION

Substernal extension occurs in 15-30% of all goiters that are removed surgically1,2. Symptoms in such patients typically include visible and/or palpable enlargement of the thyroid gland, choking or tightness in the throat, hoarseness, dysphagia, respiratory difficulty and engorgement of veins in the neck. Some remain completely asymptomatic3. We report an unusual case of mediastinal goiter that presented with ventricular tachycardia as the only symptom.

CASE REPORT

A 64-year old male presented to the emergency department with sudden onset epigastric discomfort and slight shortness of breath. An electrocardiogram revealed a wide-complex tachycardia. He remained hemodynamically stable and was given intravenous amiodarone which converted him to normal sinus rhythm with some ventricular ectopy. A chest x-ray showed a large intrathoracic lesion that was interpreted as a lung mass. Follow-up chest computed tomogram revealed the mass to be in the mediastinum. Echoangiogram and cardiac catheterization showed normal results. Finally, a CT-guided core biopsy of the mediastinal mass was performed, and this revealed the presence of thyroid follicular cells. Meanwhile, the patient remained in normal sinus rhythm after conversion with amiodarone, which was then substituted with carvedilol. He was subsequently referred to the otolaryngology service for further management.

He was otherwise in good health and worked on his farm without any limit to physical activity, although of late he had noticed mild dyspnea on exertion. He denied any respiratory distress at rest, dysphagia, or tightness in the throat, although he noticed some hoarseness since the CT-guided biopsy. On examination his neck was normal with no visible or palpable mass. Flexible laryngoscopy showed a normally mobile right vocal cord and sluggish movement of the left vocal cord.

On CT scan, the cervical thyroid gland was unremarkable except for multinodular features in the left lobe. The mediastinal mass was contiguous with the inferior pole of the left thyroid lobe but was completely intrathoracic. It showed central necrosis, calcification, and multinodular features and displaced the trachea, aortic arch, and esophagus. It abutted cardiac muscle on its antero-inferior aspect. The left internal jugular vein had evidence of thrombosis. No abnormal lymph nodes were seen in the neck.

RESULTS

The initial surgical approach was through a horizontal incision across the lower neck. The goitrous portion began at the lower pole of the left thyroid lobe for which removal through the transcervical exposure was not possible because it completely occluded the thoracic inlet. Therefore a median sternotomy was performed at the same sitting in conjunction with a cardiothoracic surgeon. This facilitated removal of the mass and the left thyroid lobe as one en-bloc specimen after careful dissection to preserve the recurrent laryngeal nerve and all vital neurovascular structures. The mass measured 14 x 11 x 7 cm, weighed 568 grams, and was diagnosed as a benign multinodular goiter on pathology. The patient had an uneventful postoperative recovery. Continuous cardiac monitoring for 4 weeks following discharge from the hospital confirmed no further episodes of ventricular tachycardia.

DISCUSSION

Mediastinal goiters are well recognized to cause symptoms such as dysphagia, stridor, and venous congestion due to pressure on nearby structures in the thoracic inlet. Some, as they follow the path of least resistance into the upper mediastinum, are also recognized to cause no symptoms3. To our knowledge, the current report is the first to describe a cardiac arrhythmia as the sole presenting feature of a mediastinal goiter. Such a highly unusual presentation may have been responsible for the initial misinterpretation of radiological features and delay in diagnosis. The patient was subjected to invasive and potentially harmful diagnostic procedures that, in retrospect, were unwarranted.

Lipomas and other neoplasms that are intrinsic or extrinsic to the cardiac muscle have been documented to cause ventricular tachycardia, possibly by direct mechanical pressure or irritation or inflammation due to thyroiditis may have been the primary trigger.

Once diagnosed, mediastinal goiters typically require surgical removal in order to relieve symptoms, prevent continued growth, and rule out foci of malignancy. It is generally held that the majority of substernal goiters can be removed via a transcervical approach4. However a median sternotomy may occasionally be required, particularly in instances where the mass extends below the aortic arch.

CONCLUSIONS

This case report illustrates that mediastinal goiters can present with ventricular tachycardia as the only feature. Awareness of such a highly atypical presentation is essential for prompt diagnosis and appropriate management.

REFERENCES


Artist’s rendering of the mass in situ

FIGURE 1. Coronal CT image shows unremarkable thyroid gland in the neck but with large mass at thoracic inlet, displacing the trachea.

Axial view at the level of the aortic arch shows tumor in mediastinum, displacing mainstem bronchi.

Axial view shows mass (M) abutting cardiac muscle (*)

FIGURE 2. Specimen after complete excision.