

# Severe Dyspnea Caused by a Massive Neck Mass - Report of a Case

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## Abstract

This case report describes a 61-year-old female patient who presented to the emergency room of our hospital with severe dyspnea. The patient reported experiencing breathing difficulties for the past 2 weeks, with daily worsening, as well as swallowing problems persisting for about a year. She denied any comorbidities or history of neck-related injuries or surgeries. Physical examination revealed significant swelling on both sides of her neck. Computed tomography was performed to further investigate her condition. The neck CT showed a massive tumor that completely replaces both lobes of the thyroid gland and extends into the mediastinum. Urgent endotracheal intubation was carried out, followed by angiography to assess the tumor mass's vascularization. The patient was then tracheotomized, and a biopsy of the tumor mass was performed. Histopathological examination revealed insular carcinoma of the thyroid gland. The hospital stay was complicated by respiratory failure and paratracheal tumor bleeding, leading to a fatal outcome.

**Keywords:** dyspnea, neck mass, thyroid cancer

## Teška dispnea izazvana masivnim izraštajem na vratu - prikaz slučaja

### Sažetak

Prikazujemo slučaj 61-nogodišnje pacijentkinje koja je dovezena u hitnu prijemnu ambulantu naše bolnice sa izraženim dispnoičnim tegobama. Pacijentkinja je navela da otežano diše unazad 2 nedelje i da se tegobe svakodnevno pogoršavaju. Navela je i postojanje disfagičnih tegoba u trajanju od godinu dana. Negirala je postojanje komorbiditeta, kao i povreda ili operacija u regiji vrata. Kliničkim pregledom konstatovan je masivni izraštaj u vratu. Učinjena je kompjuterizovana tomografija u cilju dalje dijagnostike. CT vrata je otkrio tumor štitne žlezde koji se širi u medijastinum. Učinjena je hitna endotrahealna intubacija, nakon čega je urađena angiografija kako bi se procenila vaskularizacija tumorske mase. Pacijentkinji je zatim učinjena traheotomija i biopsija tumorskog tkiva. Histopatološka analiza tkiva ukazala je na insularni karcinom štitne žlezde. U daljem toku lečenja dolazi do komplikacija u vidu respiratorne insuficijencije i krvarenja iz tumorske mase paratrahealno, te do letalnog ishoda.

**Ključne reči:** dispnea, izraštaj na vratu, karcinom štitne žlezde

### Introduction

Neck masses can arise from a variety of conditions, and their presence can lead to significant respiratory issues, including severe dyspnea<sup>1</sup>. In the majority of cases, patients presenting to the otolaryngology emergency department with dyspneic symptoms have advanced-stage laryngeal or pharyngeal tumors. Other possible causes include infections of the soft tissues of the neck, such as abscesses or phlegmons, or Ludwig's angina. Massive neck tumors frequently lead to compression or infiltration of the larynx and/or trachea, making airway management of paramount importance in the emergency care of such patients. In a certain number of cases, neck masses causing breathing difficulties originate

from the thyroid gland<sup>2</sup>. Understanding the different types of neck masses that can cause breathing difficulties is crucial for proper diagnosis and management<sup>3</sup>.

### Case presentation

A 61-year-old female patient was brought to the emergency room of our hospital by an ambulance due to severe difficulty in breathing. She was conscious, agitated, with oxygen saturation at 92%, acyanotic and cachectic. The patient stated that she has been experiencing difficulties with breathing for the past 2 weeks, and they have been worsening daily, while she has been having difficulties with swallowing for approximately a year. The patient denied having any comorbidities, as well as injuries or surgeries in the neck region. Upon inspection, a massive swelling was noted on both sides of her neck with hyperextension of the neck. An urgent examination was conducted using computed tomography. The neck CT revealed a massive tumor measuring 150 x 120 x 110 mm that completely replaces both lobes of the thyroid gland, compressing trachea and extends into the mediastinum (Figure 1).



**Figure 1.** Contrast-enhanced computed tomography image of the neck showing a massive tumor that completely replaces both lobes of the thyroid gland and extends into the mediastinum.

Following the radiological diagnostics, oxygen saturation continued to decline, falling below 90%. The patient developed stridorous breathing with the use of accessory muscles of ventilation. Consequently, urgent endotracheal intubation was performed, followed by angiography to assess the vascularization of the tumor mass. CT angiography did not indicate any pathological vascularization of the tumor (Figure 2).

The patient was then tracheotomized, and a biopsy of the tumor mass was taken. Histopathological examination revealed an insular carcinoma of the thyroid gland. The hospital stay was complicated by respiratory failure, complete atelectasis of the left lung due to a rapidly growing tumor mass, and paratracheal tumor bleeding (Figure 3). Sadly, the patient passed away after 2 months of treatment in the intensive care unit.

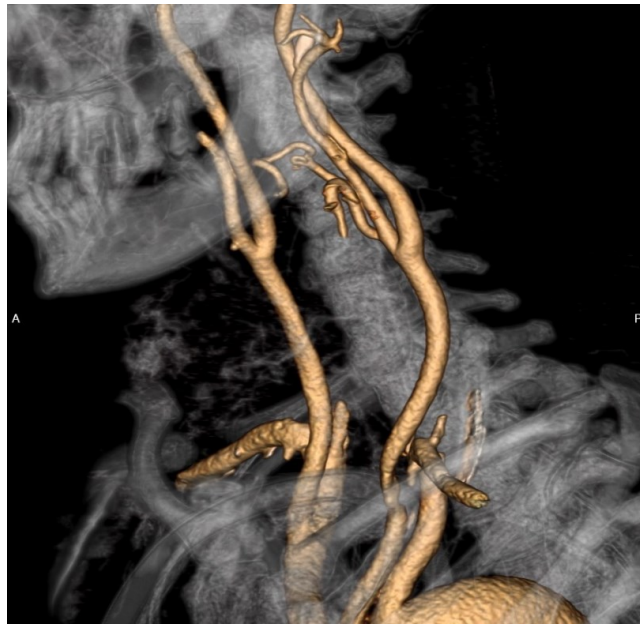


Figure 2. Computed tomography angiography of the neck depicting the absence of abnormal tumor vascularization.

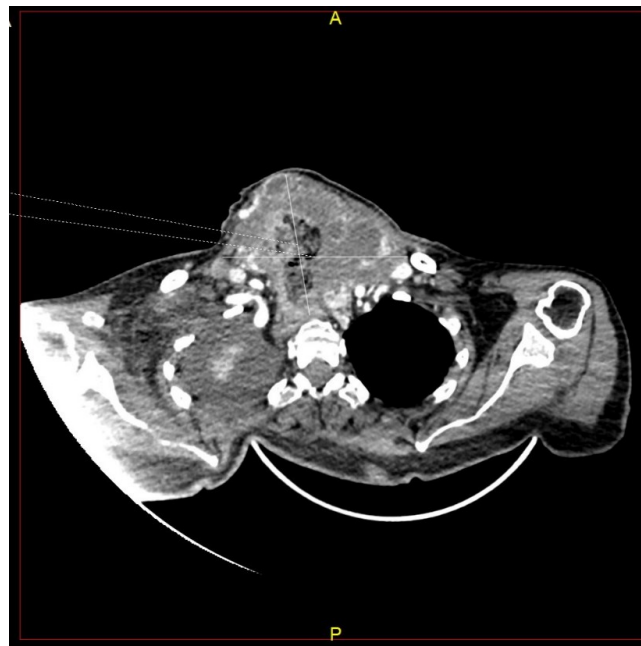


Figure 3. Contrast-enhanced computed tomography image of the neck and thorax revealing a necrotic tumor mass in the neck and atelectasis of the left lung.

## Discussion

The differential diagnosis for an enlarging thyroid mass encompasses goiter, abscess, infection, hemorrhage into a benign nodule, thyroiditis, anaplastic carcinoma, metastatic cancer, or thyroid lymphoma<sup>4</sup>. Insular thyroid carcinoma is an uncommon variant of papillary carcinoma, a subset within the spectrum of cancers originating from thyroid follicular epithelial cells. It has both morphological and biological characteristics that position it intermediate between well-differentiated thyroid carcinomas (such as papillary and follicular) and anaplastic thyroid carcinomas<sup>5</sup>. This tumor concerns predominantly women aged between 44 and 66 years. Despite its infrequent occurrence, ranging from 0.4% to 6.2% it stands out as the primary contributor to mortality among thyroid malignancies<sup>6</sup>. The growth and progression of the tumor depends on its aggressiveness, but in this case we received information from our patient that the

neck tumor mass has been present for years. During the period from when she first noticed the enlargement of the thyroid gland, the patient did not consult a general practitioner or an endocrinologist, and there was never any radiological diagnostics or thyroid hormone monitoring performed. She had no history of a prior irradiation or iodine deficiency. For the past few years, the patient has been covering the growth on her neck with a scarf or shawl, hoping that the growth would not continue to enlarge. Treatment of insular papillary carcinoma often involves thyroidectomy along with lymph node resection in most instances, emphasizing the importance of early diagnosis and intervention for improved patient outcomes<sup>7</sup>. The prognosis is notably unfavorable, particularly when distant metastases are identified at the time of diagnosis<sup>8</sup>.

Dysphagia and dyspnea are common in patients with large lesions. A history of long-standing goiter is often noted in patients with insular carcinoma. However, massive growths that acutely threaten the airway are not highly common<sup>9</sup>. These conditions require immediate airway management, sometimes even before radiological diagnosis. The size of the growth on the neck, vascularization of the thyroid gland, as well as the potential involvement of the trachea or larynx by the tumor mass, represent extremely challenging conditions for securing the airway, either through endotracheal intubation or surgical tracheotomy. As a result, cases like these, involving advanced thyroid cancer, are considered urgent situations and are exceptionally demanding to manage. An adult patient with a neck mass who experiences a delayed diagnosis of thyroid cancer may face disease progression, leading to higher mortality rates and worse functional outcomes<sup>10</sup>. It is extremely important to emphasize the necessity of promptly consulting a doctor when any minor growths appear on the neck.

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