

## CASE REPORT

# Timely diagnosis of thyroid carcinoma in a young woman presenting to primary care during COVID-19 pandemic lockdown: from ultrasound to pathology

*Diagnóstico oportuno de carcinoma de tiroides en una mujer joven que acudió a atención primaria durante el confinamiento por la pandemia de COVID-19: de la ecografía a la patología*

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## Abstract

Papillary thyroid carcinomas (PTC) are the most common type of thyroid malignancy that usually presents as a palpable or non-palpable nodule. Some of these nodules may cause hoarseness, swallowing, and breathing problems.

In this paper, we present a case of PTC with fatigue as the leading symptom. The suspicion for thyroid disease was made upon palpation of the thyroid nodule during a periodic preventive care visit by a general practitioner during the peak of the COVID-19 pandemic in April 2020. Further management consisted of fine-needle aspiration, total thyroidectomy, radioactive iodine, and life-long medication of levothyroxine.

Presenting this case, we would like to emphasize the paramount role of periodic preventive care visits even during such a challenging time as the COVID-19 pandemic definitely is.

**Key words:** ultrasonography, endocrinology, coronavirus, tumor, periodic visit.

## Resumen

Los carcinomas papilares de tiroides (CPT) son el tipo más común de neoplasia tiroidea que suele presentarse como un nódulo palpable o no palpable. Algunos de estos nódulos pueden causar ronquera, problemas para tragar y respirar. En este trabajo presentamos un caso de PTC con fatiga como síntoma principal. La sospecha de enfermedad tiroidea se hizo al palpar el nódulo tiroideo durante una visita periódica de atención preventiva realizada por un médico general durante el pico de la pandemia de COVID-19 en abril de 2020. El tratamiento posterior consistió en una aspiración con aguja fina, tiroidectomía total, yodo radiactivo y medicación de por vida con levotiroxina.

Al presentar este caso, nos gustaría enfatizar el papel primordial de las visitas periódicas de atención preventiva, incluso durante una época tan desafiante como es definitivamente la pandemia de COVID-19.

**Palabras clave:** ecografía, endocrinología, coronavirus, tumor, visita periódica.

## Introduction

In March 2020, the coronavirus disease (COVID-19) pandemic appeared 'out of the blue', and the health care system worldwide faced unexpected challenges. This unprecedented strain resulted in prioritization towards the management of COVID-19 cases. Hence, periodic preventive care visits performed by general practitioners, including cancer screening, have plummeted during the COVID-19 pandemic lockdown. Concurrently,

people avoided attending health care facilities because of concerns about being infected with COVID-19. As such, there was a rapid transfer from face-to-face examination to telehealth in primary care since March 2020. On the other hand, our center (as many others) encouraged patients to attend periodic preventive care visits as scheduled.

Herein, we report a case of a young woman who was diagnosed with papillary thyroid carcinoma (PTC) upon a periodic preventive care visit during COVID-19 pandemic lockdown.

### Case report

At the end of April 2020, a 32-yr woman, an office worker of Vietnamese origin living in the Czech Republic, presented to our primary care center for a scheduled periodic preventive care visit. She reported fatigue, which she linked with an increased workload. She denied any other symptoms possibly related to hyper or hypofunction of the thyroid gland. Her medical history included breast augmentation surgery for esthetic reasons. She was otherwise healthy and did not seek any regular medical treatment. She reported no history of radiation exposure or a family history of thyroid disorders. Her current physical examination revealed a palpable, immobile, nonpainful mass in her thyroid gland's right lobe. No cervical nodes were palpable. Upon focused questioning about this region, she admitted an anterior neck discomfort/'foreign-body' sensation in the last month. She denied hoarseness, any swallowing, and breathing problems.

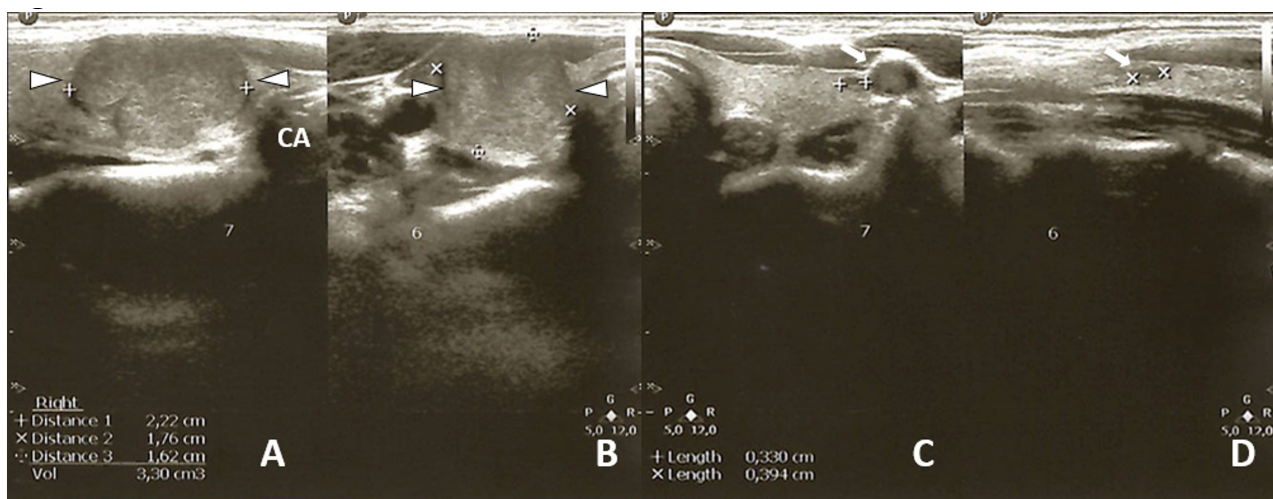
Subsequent laboratory testing (including serum thyrotropin (TSH) and free T4) showed no abnormalities (TSH – 0.24 mIU/L and fT4 – 18.0 pmol/L, respectively). The ultrasound (US) examination revealed an isoechoic, non-homogenous, oval-shaped, well-margined node in the right lobe of the thyroid gland, measuring 22 mm by 18 mm by 16 mm (volume, 35 mm<sup>3</sup>) (Figure 1A,B). Upon power Doppler evaluation, the node showed no hypervascularisation. In the lateral part of the left lobe,

three small cystic structures measuring 3 mm by 3 mm by 5 mm were present (Figure 1C,D). CA: carotid artery

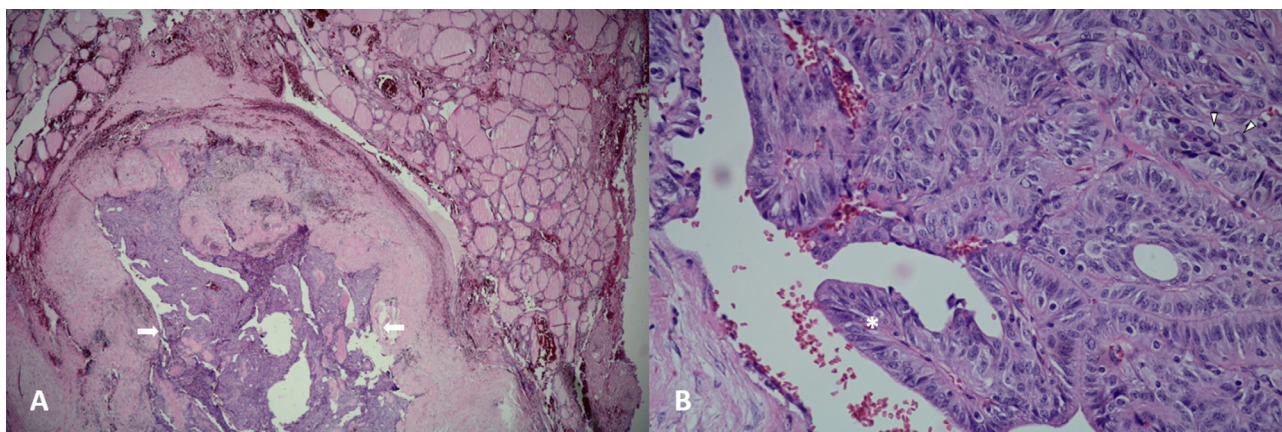
Isthmus of the thyroid did not show any US abnormalities. The thyroid gland was not enlarged, and its morphology was otherwise homogenous. There was no cervical adenopathy in both the central and lateral neck compartments. A US-guided fine-needle aspiration (FNA) with cytologic evaluation was performed from the node, which showed hypercellularity, nuclear enlargement, and a few nuclear pseudoinclusions. The finding was interpreted as consistent with the diagnosis Bethesda VI (97-99 % risk of malignancy)<sup>2</sup>, with predominant characteristics of papillary carcinoma. Considering the cytopathologic and US characteristics of the node, a total thyroidectomy was performed at the end of August 2020. Endotracheal intubation during general anesthesia was difficult, thus requiring videolaryngoscopy assistance. After the surgery, no signs of damage to the recurrent laryngeal nerve or other complications occurred. Grossly, the excision material of the right lobe of the thyroid gland contained an irregular shaped greyish white tumor, measuring 15 mm by 15 mm by 10 mm. Subsequently, microscopic examination showed solid, follicular, and particularly papillary proliferations - consistent with the diagnosis of the follicular variant of PTC pT1b (Figure 2).

Postsurgically, the patient was prescribed life-long medication of levothyroxine. She recently finished an adjuvant treatment with radioactive iodine (<sup>131</sup>I). On follow-up in our primary care center in the middle of December 2020, the patient was free of symptoms, with no functional limitations. The timeline of this case management is shown in figure 3.

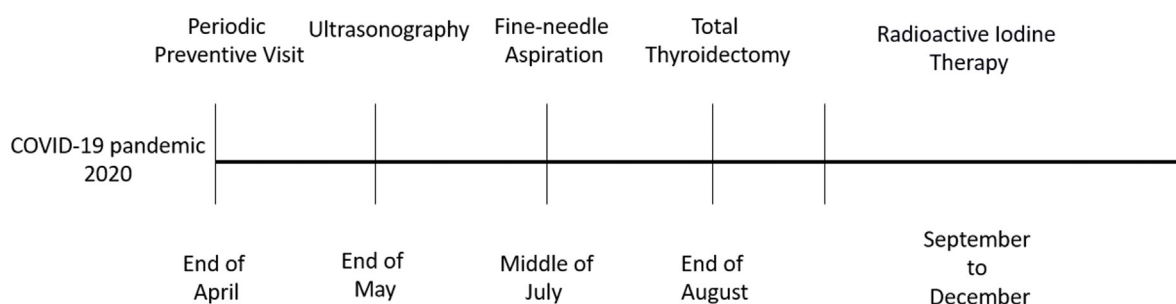
**Figure 1:** The horizontal (A) and vertical (B) ultrasound (US) images of the thyroid gland show an isoechoic, non-homogenous, oval-shaped, well-margined node (white arrowheads) in the right lobe, measuring 22 mm by 18 mm by 16 mm (volume, 35 mm<sup>3</sup>). In the lateral part of the left lobe, three small cystic structures (white arrow) measuring 3 mm by 3 mm by 5 mm were apparent in the horizontal (C) and vertical planes (D).



**Figure 2:** Histopathological evaluations were performed from formalin-fixed, paraffin-embedded tissue blocks stained with hematoxylin-eosin. Microscopic examination of the excision material from the right lobe of the thyroid gland showed a malignant proliferation (white arrow) with fibrous tissue areas (magnification 40x) (A). A magnification 400x showed solid, follicular, and typical papillary proliferations (asterisk) surrounded by ground-glass nuclei (white arrowheads) - consistent with the diagnosis of the follicular variant of PTC with areas of fibrous tissue (B).



**Figure 3:** The timeline illustrates the management of the patient diagnosed with papillary thyroid carcinoma during COVID-19 pandemic lockdown.



## Discussion

PubMed, Web of Science, and Scopus databases were searched for COVID-19 pandemic and thyroid cancer relevant articles to December 2020. We restricted our search only to articles written in English. We have used the following keywords for the literature search: Thyroid Gland, Thyroid Nodule, Thyroid Cancer, Thyroid Neoplasms, COVID-19, General Practice, Thyroid Ultrasound.

Differentiated thyroid tumors (DTT) arising from follicular cells are classified as papillary (comprising 80% of all cases) and follicular (10-20% of all cases); and those that grow up from parafollicular cells are neuroendocrine medullary thyroid tumors (6-8% of all cases). Some cases of DTT can dedifferentiate into aggressive anaplastic thyroid cancer<sup>3</sup>.

In this case report, we describe a timely diagnosis and further management of PTC in a young woman during the peak of the COVID-19 pandemic. Since March 2020, telemedicine was considered the mainstay of some primary care centers<sup>1</sup>. However, as Tsang and coworkers state in their recent review, assessment for thyroid

nodules is inappropriate without physical examination and ultrasound. Furthermore, the availability of FNA for thyroid nodules was reported to be limited during the COVID-19 pandemic<sup>4</sup>. As documented by Williams and colleagues, COVID-19-related health care restrictions resulted in delayed diagnosis in 16% of patients<sup>5</sup>. As such, the delay of diagnosis and surgery in patients with cancer might increase the likelihood of disease progression with a concomitant long-term survival decrease<sup>6</sup>.

Our approach was in contrast with the published clinical practice expert consensus by Vrachimis and colleagues, who recommended postponement of different aspects of thyroid disease management (e.g., scheduled US evaluations of thyroid nodules, biochemical examinations, diagnostic appointments for all patients with un-/newly diagnosed thyroid cancer, non-urgent surgery, even those with cytologically confirmed differentiated thyroid cancer)<sup>7</sup>.

A PTC is the most common endocrine malignancy<sup>8</sup>, and when timely and appropriately treated, a good prognosis with ten years of survival in more than 90%

of patients is likely<sup>9</sup>. A leading symptom in the case we present here in this report was fatigue. As this symptom is nonspecific, and the sensitivity of palpation in detecting thyroid nodules is generally low<sup>10</sup>, a timely diagnosis of malignant thyroid disease with nodules can be challenging in some cases. Fortunately, clinicians increasingly use US examination in their routine practice (i.e., as an extension of physical examination), and they can efficiently catch thyroid nodules. US can provide preliminary evaluation regarding their cancerous US features (e.g., nodules  $\geq 1$  cm, blurred margins, nonrounded shape, microcalcifications, echogenicity, vascularity)<sup>11,12</sup>, and is also a convenient tool for image-guided FNA<sup>13,14</sup>. In addition, cervical lymphadenopathy should also be ruled out by using US<sup>12</sup>. To this end, high-resolution US imaging can significantly facilitate the diagnostic and therapeutic algorithms in patients with suspected thyroid disease. Of note, US imaging is inexpensive, noninvasive, repeatable, well accepted by both patients and physicians, and does not expose patients to ionizing radiation. It also allows immediate correlation between imaging, laboratory, and clinical findings. Yet, the US probe is becoming the 'stethoscope' or 6th finger of clinicians across different specialties<sup>15</sup>.

## Conclusion

Presenting this otherwise trivial case of malignant thyroid tumor, we would like to emphasize the paramount role of periodic preventive care visits even during such a challenging time as the COVID-19 pandemic definitely is. In this case of a timely diagnosis of PTC in a young woman, we want to illustrate how the primary health care system is essential to avoid a negative impact on oncologic patients' long-term survival. In other words, by this positive example, we stress that avoiding periodic preventive care visits for different reasons (e.g., for concern about catching infectious disease) might also have the other side of the coin.

The patient consented to be presented in this case report.

## Competing interests

None.

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