Papillary Thyroid Carcinoma in Men: A Case Report

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***Abstract*—Papillary thyroid carcinoma (PTC) is the most common type of differentiated thyroid cancer, accounting for approximately 80% of all thyroid malignancies. Although its prevalence is higher in women, men usually present with larger tumors, a higher risk of cervical lymph node metastases, and a greater potential for aggressive behavior. Early recognition, accurate diagnosis, and multidisciplinary management are essential to improve prognosis.**

We report the case of a 65-year-old male patient with papillary thyroid carcinoma associated with bilateral cervical lymph node metastases and post-thyroidectomy fistulization. Clinical follow-up, radiological and cytological investigations, surgical strategy, adjuvant radioactive iodine therapy, and thyroid hormone replacement therapy are detailed.

This case highlights the importance of comprehensive management and rigorous follow-up in male patients with papillary thyroid carcinoma.

***Index Terms*—Papillary thyroid carcinoma, Male, Thyroid nodule, Thyroidectomy, Cervical lymph nodes, Histopathology, Prognosis.**

I. INTRODUCTION

Epidemiology

Papillary thyroid carcinoma (PTC) is the most frequent differentiated carcinoma of the thyroid gland. It accounts for approximately 80% of thyroid cancers, with a steadily increasing worldwide incidence.

According to international statistics, the female-to-male ratio ranges from 2:1 to 3:1, indicating a clear female predominance. However, when PTC occurs in men, it tends to present with larger, more invasive tumors and a higher risk of cervical lymph node metastases and local recurrence.

Risk Factors

Several factors predispose to the development of papillary thyroid carcinoma:

- Exposure to cervical radiation: Radiation exposure during childhood or adolescence (medical treatments or nuclear accidents) significantly increases the risk of PTC.
- Family history: A first-degree relative with thyroid cancer represents an important risk factor.
- Genetic syndromes: Cowden syndrome, familial adenomatous polyposis, and other hereditary cancer syndromes increase the likelihood of PTC.
- Environmental and hormonal factors: Iodine deficiency and exposure to certain pollutants may influence the development of thyroid cancer.

Typical Clinical Presentation

PTC usually has a slow-growing course and may remain asymptomatic for many years. Clinical manifestations include:

- Painless cervical mass: A thyroid nodule is the most common presenting sign.
- Mild dysphagia or cervical discomfort: Gradual onset due to mass effect.
- Dysphonia: Rare, occurring when the recurrent laryngeal nerve is involved.
- Compressive symptoms: Uncommon but possible in large tumors or with tracheal invasion.

In men, tumors are often larger at diagnosis, and cervical lymph node involvement is more frequent, justifying more rigorous screening and evaluation.

Case Report

Patient Presentation

The patient was a 65-year-old man with a history of total thyroidectomy performed three years earlier for a suspicious thyroid nodule. He presented with bilateral lateral cervical masses that had been evolving for several months, associated with purulent discharge on the right side, revealing post-thyroidectomy fistulization (Figure 1).

Physical Examination

Inspection

- Post-thyroidectomy cervical scar: slightly hypertrophic and well healed.
- Right side: inflammatory skin changes, lateral cervical swelling with fistula and purulent discharge.
- Left side: firm superficial mass with intact skin.

Palpation

- Right side: soft, painful, non-pulsatile mass measuring approximately 6 cm in its greatest dimension, with purulent discharge on pressure.
- Left side: firm, fixed, painless mass measuring approximately 4 cm.

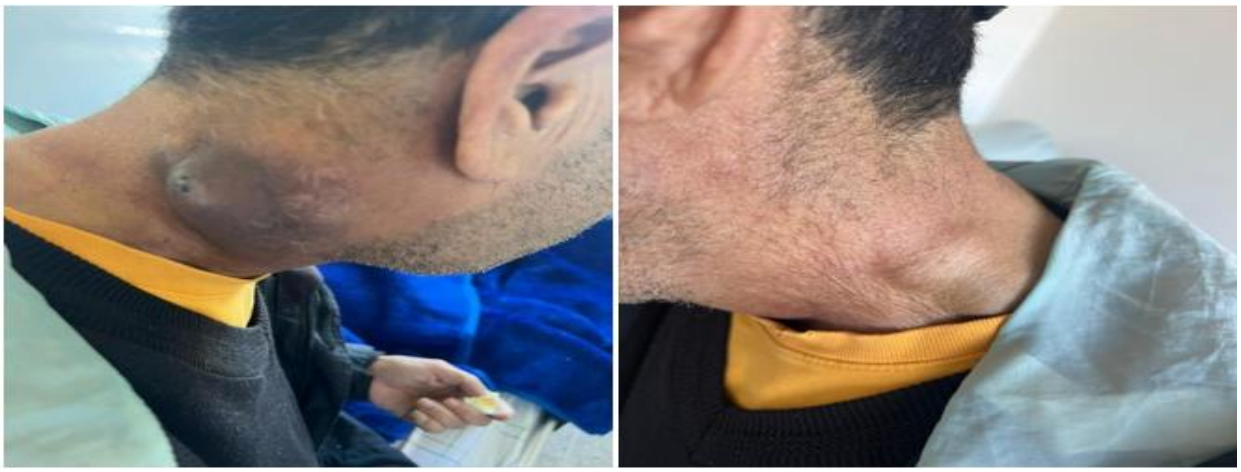

Figure 1: Bilateral cervical masses. Right side: fistulization with purulent discharge; left side: firm, painless mass.

Additional Investigations

Cervical Ultrasound (Figure 2)

- Hypoechoic nodules with microcalcifications.
- Suspicion of bilateral cervical lymph node metastases.
- No vascular invasion or infiltration of adjacent tissues.

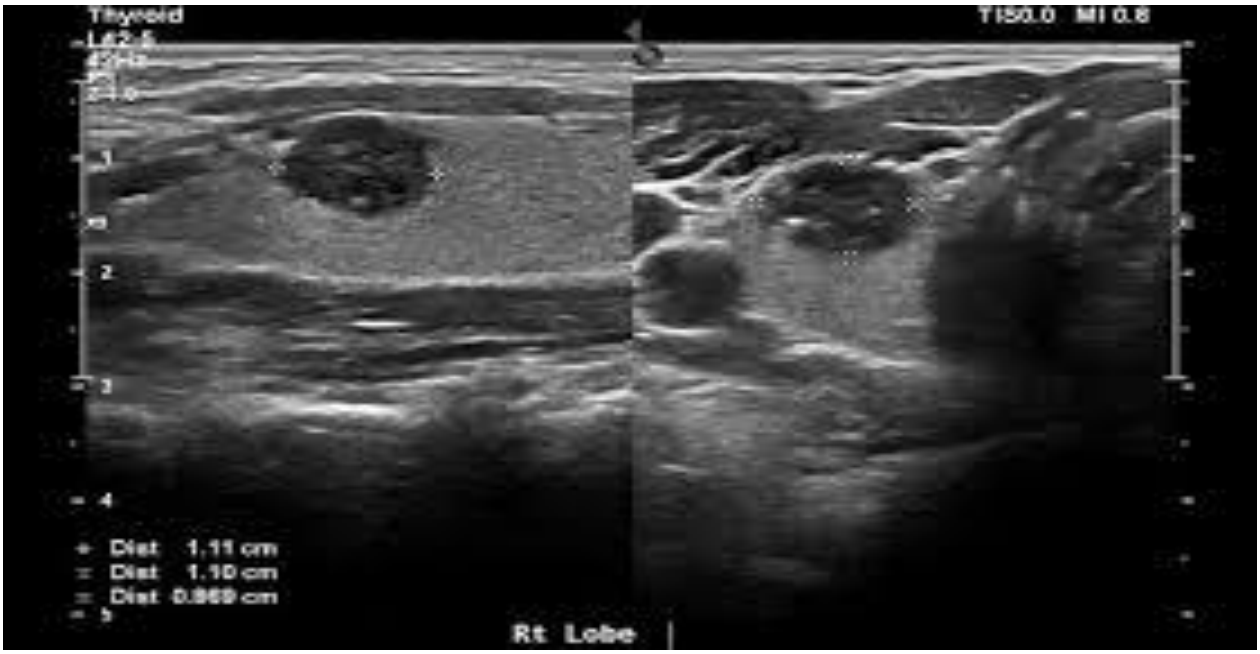

Figure 2: Cervical ultrasound showing hypoechoic nodules with bilateral lymph node microcalcifications.

Computed Tomography (CT) Scan (Figure 3)

- Bilateral cervical lymphadenopathy with homogeneous tissue density compatible with metastases.
- No mediastinal extension.
- Useful for surgical planning of lymph node dissection.

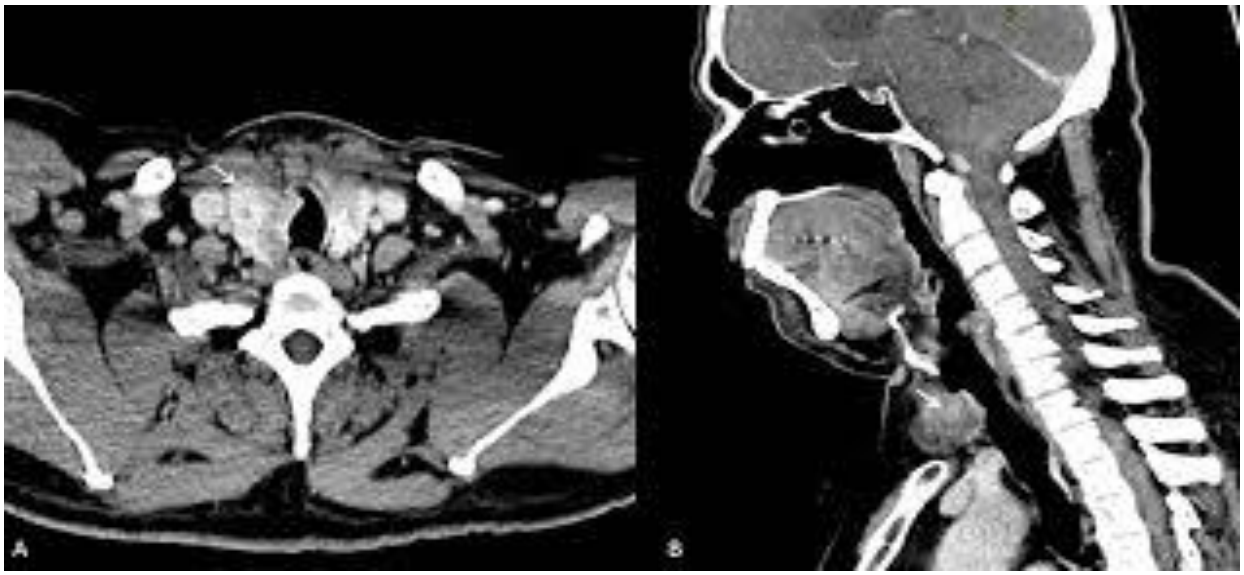

Figure 3: Axial and sagittal CT scans of the neck showing bilateral lymphadenopathy.

Magnetic Resonance Imaging (MRI) (Figure 4)

- Confirmation of bilateral lymph node involvement.
- No evidence of extension to deep tissues or the mediastinum.

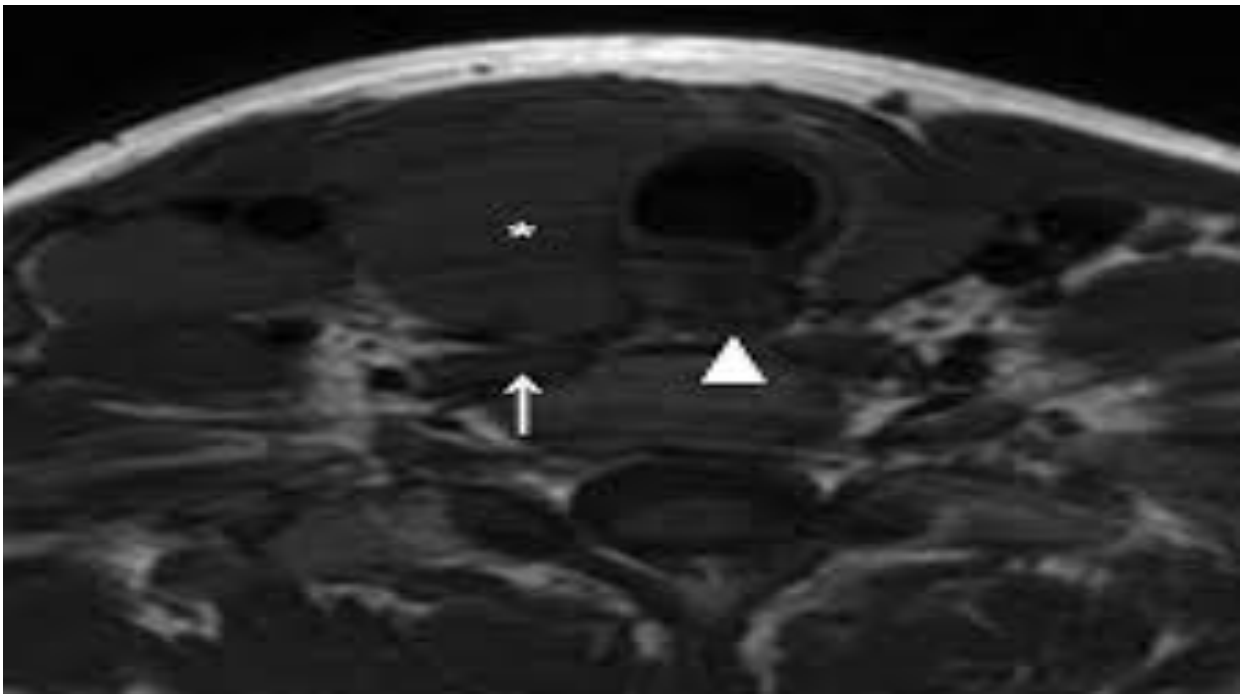

Figure 4: Neck MRI demonstrating bilateral cervical lymph node involvement without deep tissue or mediastinal extension.

Fine-Needle Aspiration Cytology (FNAC)
FNAC confirmed metastatic papillary thyroid carcinoma, showing typical nuclear features:
- Enlarged nuclei
- Nuclear overlapping
- Nuclear grooves
- Intranuclear inclusions

Histopathology
- Cervical nodal metastases of papillary thyroid carcinoma.
- Ground-glass nuclei, nuclear grooves, intranuclear inclusions.
- No anaplastic transformation.

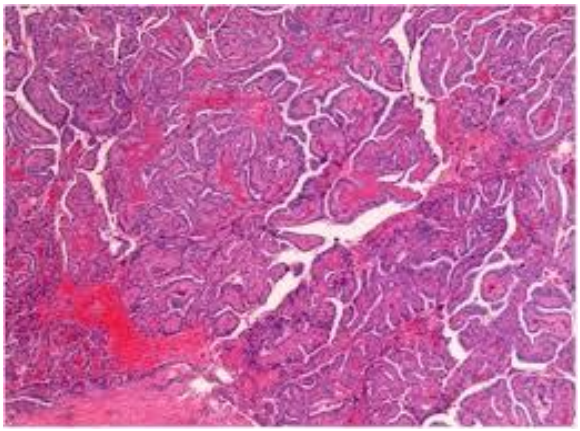

Figure 5: Histopathological examination showing metastatic papillary thyroid carcinoma in cervical lymph nodes with characteristic nuclear features.

Laboratory Findings
- Thyroid hormones: within normal range.
- Elevated serum thyroglobulin: suggesting residual or metastatic disease.
- Serum calcium: monitored to prevent postoperative hypoparathyroidism.

II. THERAPEUTIC STRATEGY

Management of papillary thyroid carcinoma must be individualized according to several parameters: patient age and sex, tumor size and location, lymph node extension, surgical history, comorbidities, and genetic or molecular factors. In men, as in the present case, tumors often show more aggressive behavior, requiring a rigorous multidisciplinary approach.

1. Preoperative Planning
- Comprehensive clinical evaluation of the neck and vocal cord mobility.
- Multimodal imaging: ultrasound, CT scan, and MRI.
- FNAC for cytological confirmation. This step allows accurate risk stratification and optimal surgical planning while minimizing complications.

2. Surgical Treatment
a. Thyroidectomy
- Total thyroidectomy is recommended for tumors >1 cm, bilateral disease, or confirmed lymph node metastases.

Objectives: complete removal of thyroid tissue, facilitation of radioactive iodine ablation, reduction of recurrence risk, and reliable thyroglobulin monitoring. Surgical precautions include preservation of the recurrent laryngeal nerves and parathyroid glands.

b. Cervical Lymph Node Dissection
- Indicated when lymph node metastases are confirmed.
- Includes central (level VI) and lateral (levels II–V) neck dissection.
- In this patient, bilateral lymph node involvement required complete bilateral dissection.

c. Management of Complications
- In cases of fistula or post-thyroidectomy infection, meticulous debridement is necessary.
- Drainage of purulent collections is essential before adjuvant therapy.

3. Adjuvant Treatment
a. Radioactive Iodine Ablation (I-131)
Objectives: elimination of residual thyroid tissue and microscopic metastases.
Preparation includes TSH stimulation and a low-iodine diet.
Post-ablation scintigraphy confirms treatment efficacy.

b. Thyroid Hormone Replacement Therapy
- L-thyroxine administered to maintain low TSH levels (0.1–0.5 mIU/L depending on risk).
Regular monitoring of TSH, free T4, and thyroglobulin.

4. Targeted Therapy and Complementary Treatments
- Tyrosine kinase inhibitors (sorafenib, lenvatinib) for advanced or radioiodine-refractory disease.
- External beam radiotherapy is rarely indicated.
- Multidisciplinary discussion is essential for optimal management.

5. Post-Therapeutic Surveillance
- Cervical ultrasound every 6–12 months.
- Serum thyroglobulin as a marker of recurrence.
- CT or MRI if deep recurrence or mediastinal extension is suspected.
-Follow-up must be stricter in men due to higher recurrence risk.

6. Personalized Approach
Treatment must consider tumor characteristics, molecular profile (BRAF, RAS mutations), comorbidities, and anesthetic tolerance to optimize outcomes and reduce long-term complications.

7. Clinical Significance
Comprehensive surgical planning combined with appropriate adjuvant therapy and strict surveillance significantly reduces recurrence, metastatic spread, and postoperative complications, especially in male patients with bilateral or metastatic PTC.

III. DISCUSSION

Papillary thyroid carcinoma (PTC) is generally considered a differentiated thyroid malignancy with an excellent prognosis; however, its behavior in male patients has consistently been reported as more aggressive compared to females. This difference is reflected in tumor size at diagnosis, frequency and extent of cervical lymph node metastases, recurrence rates, and overall disease persistence. The present case illustrates several of these unfavorable characteristics and provides an opportunity to discuss the particularities of PTC in men, diagnostic challenges, therapeutic strategies, and prognostic implications.

1. Gender-related differences in papillary thyroid carcinoma
Epidemiological studies consistently demonstrate a female predominance in PTC, with a female-to-male ratio ranging from 2:1 to 3:1. Despite this lower incidence, male patients often present with more advanced disease at diagnosis. Several hypotheses have been proposed to explain this discrepancy, including hormonal influences, differences in health-seeking behavior, and biological tumor aggressiveness.
Men are more likely to be diagnosed with larger tumors, multifocal disease, and extrathyroidal extension. These features are associated with a higher probability of cervical lymph node metastases and a greater risk of recurrence. In the present case, the patient was diagnosed with bilateral cervical lymphadenopathy several years after initial thyroidectomy, highlighting the aggressive and persistent nature of PTC in men.

2. Tumor size, aggressiveness, and local extension
Tumor size is a well-established prognostic factor in PTC. Lesions larger than 2–4 cm are associated with increased rates of lymph node metastasis and local invasion. Male patients frequently present with tumors exceeding these dimensions, often due to delayed diagnosis or rapid tumor growth.
The aggressive behavior of PTC in men may be explained by a higher prevalence of unfavorable histopathological and molecular features, such as tall-cell variants and BRAF V600E mutations. Although no anaplastic transformation was observed in our patient, the presence of extensive bilateral nodal disease and fistulization reflects locally advanced pathology and chronic tumor persistence.

3. Cervical lymph node metastases and prognostic impact
Cervical lymph node metastases are common in PTC, occurring in up to 30–80% of cases depending on the series. Their incidence is significantly higher in male patients. Lymph node involvement, particularly when bilateral or involving lateral neck compartments (levels II–V), is associated with increased rates of locoregional recurrence.
In this case, bilateral cervical lymph node metastases were confirmed by imaging and cytology. Bilaterality represents an important adverse prognostic factor and often necessitates extensive surgical intervention. Moreover, the presence of post-thyroidectomy fistulization complicated the clinical course, increased infectious risk, and potentially delayed adjuvant radioactive iodine therapy.

4. Diagnostic approach and role of multimodal imaging

Accurate preoperative evaluation is essential for optimal management of PTC, especially in male patients who are at higher risk of advanced disease. Cervical ultrasound remains the first-line imaging modality, offering high sensitivity for detecting suspicious lymph nodes based on hypoechogenicity, microcalcifications, cystic changes, and loss of the fatty hilum.

Fine-needle aspiration cytology (FNAC) plays a pivotal role in confirming metastatic disease, with characteristic nuclear features such as ground-glass nuclei, nuclear grooves, and intranuclear inclusions. Cross-sectional imaging, including CT and MRI, complements ultrasound by identifying deep lymph node involvement, evaluating relationships with vital structures, and facilitating surgical planning. In our patient, the concordance of ultrasound, FNAC, CT, and MRI findings enabled precise mapping of bilateral nodal disease.

5. Surgical management and complexity in male patients

Surgery remains the cornerstone of PTC treatment. Total thyroidectomy is recommended for tumors larger than 1 cm, multifocal disease, or lymph node metastases. In male patients, a more aggressive surgical approach is often justified due to higher recurrence risk.

Cervical lymph node dissection should be therapeutic rather than prophylactic and guided by cytological or radiological evidence. Bilateral neck dissection, as performed in this case, is indicated when metastases are present on both sides. However, extensive surgery increases the risk of complications, including recurrent laryngeal nerve injury, hypoparathyroidism, and postoperative infections.

The occurrence of fistulization in this patient underscores the importance of meticulous surgical technique, early detection of complications, and appropriate management, including debridement and drainage before initiating adjuvant therapy.

6. Role of radioactive iodine and hormonal suppression therapy

Radioactive iodine (RAI) ablation is a key component of adjuvant therapy in PTC, particularly in high-risk patients. Its objectives include elimination of residual thyroid tissue, treatment of microscopic metastatic disease, and reduction of recurrence risk. Male patients, especially those with nodal involvement, benefit significantly from RAI therapy.

Thyroid hormone replacement with L-thyroxine aims to suppress TSH levels, thereby minimizing stimulation of residual tumor cells. Strict biochemical monitoring is essential to balance oncologic efficacy and cardiovascular or skeletal side effects. In men, prolonged TSH suppression is often required due to higher rates of disease persistence.

7. Molecular and prognostic factors

Advances in molecular biology have identified several genetic alterations associated with aggressive PTC behavior. The BRAF V600E mutation, frequently reported in male patients, is linked to extrathyroidal extension, lymph node metastases, and reduced sensitivity to radioactive iodine.

Other prognostic factors include age over 45 years, tumor size greater than 4 cm, multifocality, and bilateral nodal disease all of which were present or partially represented in our patient. These factors justify intensified treatment and long-term surveillance.

8. Follow-up and long-term surveillance

Long-term follow-up is crucial in male patients with PTC due to the risk of late recurrence, which may occur even after a decade. Surveillance strategies include periodic clinical examination, cervical ultrasound, and serum thyroglobulin measurement. Cross-sectional imaging should be reserved for suspected deep recurrence or distant metastases.

The elevated thyroglobulin level observed in this patient was a valuable marker of persistent disease and guided further management. Strict and prolonged follow-up is essential to detect recurrence at an early and treatable stage.

9. Clinical implications and future perspectives

This case highlights the importance of recognizing male sex as an independent risk factor in PTC. Early diagnosis, aggressive initial treatment, and multidisciplinary management are essential to improve outcomes. Personalized therapeutic strategies based on clinical, pathological, and molecular features represent the future of PTC management.

Further research is needed to better understand the biological mechanisms underlying the aggressive behavior of PTC in men and to optimize risk stratification and treatment protocols.

IV. CONCLUSION

Papillary thyroid carcinoma in men is characterized by a more aggressive clinical profile, with larger tumors, higher rates of bilateral lymph node involvement, and increased postoperative complications. This case emphasizes:

- The importance of early and accurate diagnosis using multimodal imaging and cytology.
- The need for complete surgical management, including total thyroidectomy and appropriate lymph node dissection.
- The essential role of adjuvant radioactive iodine therapy and TSH suppression.
- The necessity of rigorous long-term follow-up with imaging and thyroglobulin monitoring.
- The value of a multidisciplinary and personalized approach to optimize prognosis.

In conclusion, although papillary thyroid carcinoma generally has an excellent prognosis, its occurrence in men requires heightened vigilance, aggressive management, and prolonged follow-up to ensure favorable outcomes and early detection of recurrence.

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