



A Case of Solitary Brain Metastases of Thyroid Papillary Cancer Mimicking a Cavernous Angioma

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Introduction

Thyroid carcinoma has increased annually. Papillary thyroid carcinoma (PTC) is the most common thyroid malignancy and thought to have favorable prognosis. Distant metastases are common in lungs and bones. However, brain metastases are rare and its prognosis is unfavorable. Here we reported a case of solitary brain metastases of PTC mimicking cavernous angioma in a 76-year-old woman patient.

Case report

Patient information

76-year-old woman

Past History

Diabetes mellitus

Chief complaint

Memory disturbance since 3 months ago

Physical examination

Neurologic exam : unremarkable

No palpable mass in the thyroid gland

5 cm mass without tenderness in the sternum

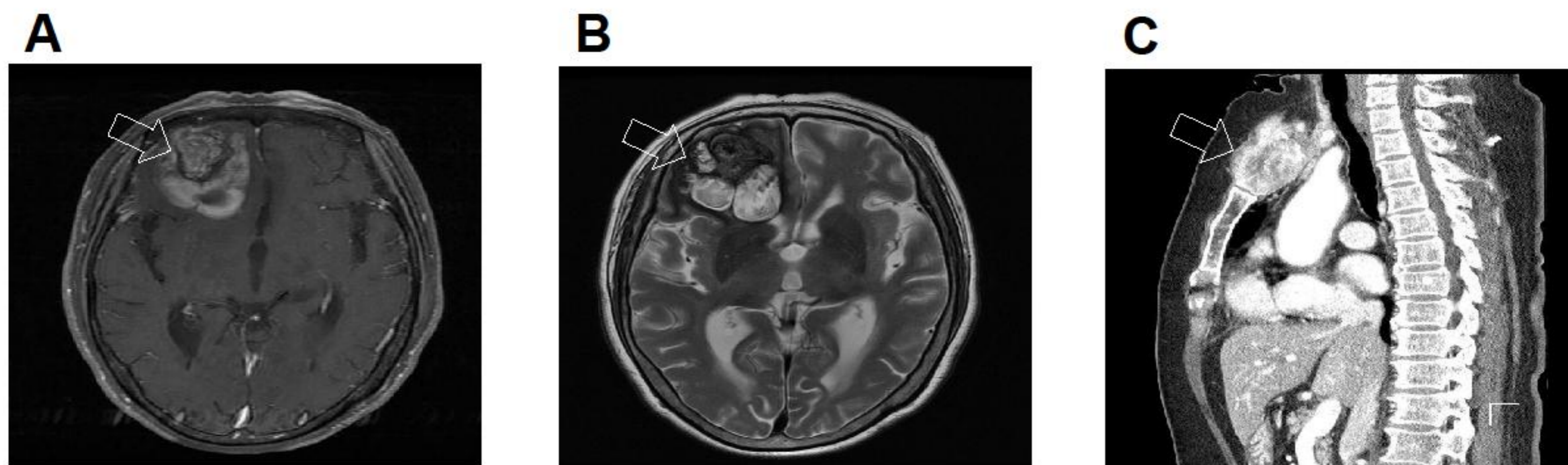
Vital sign

BP 180/65 - PR 88 - RR 20 - BT 36.8°C

Laboratory findings

Serum glucose 510 mg/dL

T3 0.62 ng/mL, Free T4 1.16 ng/dL, TSH 1.55 uIU/mL



<Figure 1> Radiologic findings : Brain MRI (A, B) and Chest CT (C)

Radiologic findings

1. Brain magnetic resonance imaging (MRI)

A lobulated lesion in the right frontal lobe. These MRI features were consistent with those of cavernous angioma with hemorrhage (Figure 1A and B).

2. Chest computerized tomography (CT)

A huge infiltrating tumor mass with necrosis into the manubrium (Figure 1C).

Histologic findings

1. H&E staining

1) Brain mass

- Low-power view : A cystic and solid tumor mass that was infiltrating into the brain parenchyma with hemorrhage (Figure 2A and B).

- High-power view : Predominance of branching papillary structures in the tumor that were composed of columnar cells with increased nuclear stratification (Figure 2C).

2) Sternum mass

- Identical histologic features to those of the brain mass, the presence of complex papillary structures and equivalent cytologic findings (Figure 2D).

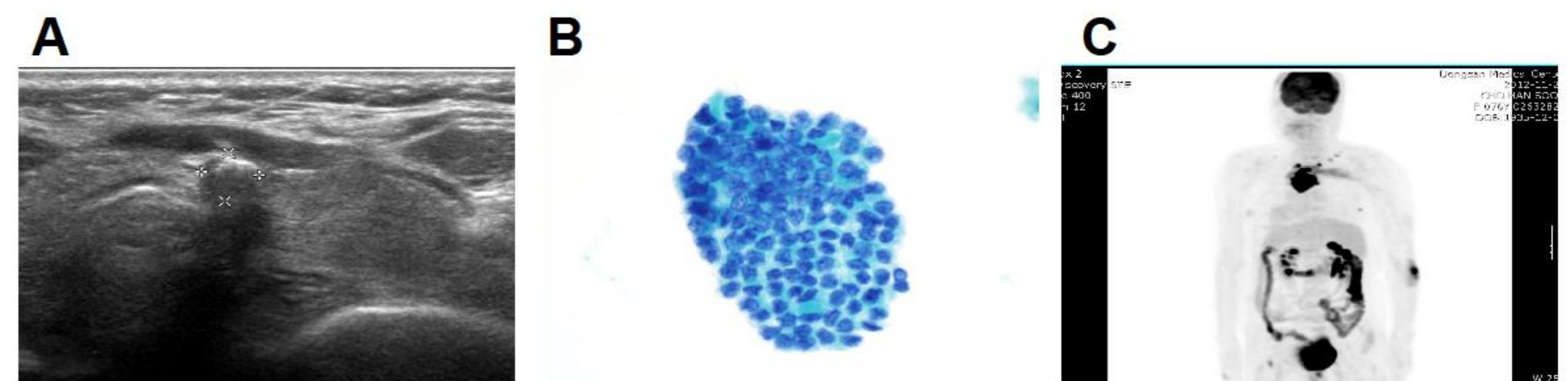
2. Immunohistochemical staining

- The sternal mass was positive for cytokeratin 7 and TTF-1 but negative for Napsin A (Figure 2E, F, and G).

- The sternal mass expressed thyroglobulin strongly (Figure 2H).

3. The final pathological diagnosis

Metastatic columnar cell-variant PTC.



<Figure 3> Thyroid ultrasonography (A), FNA of left thyroid nodule (B), and PET CT (C)

Further evaluation

1. Thyroid ultrasonography

Single hypoechoic nodule with coarse calcification in the isthmus (Figure 3A) and all lymph nodes seemed normal.

2. Fine needle aspiration of the left thyroid nodule

Confirmed PTC (Figure 3B).

3. Positron emission tomography-CT

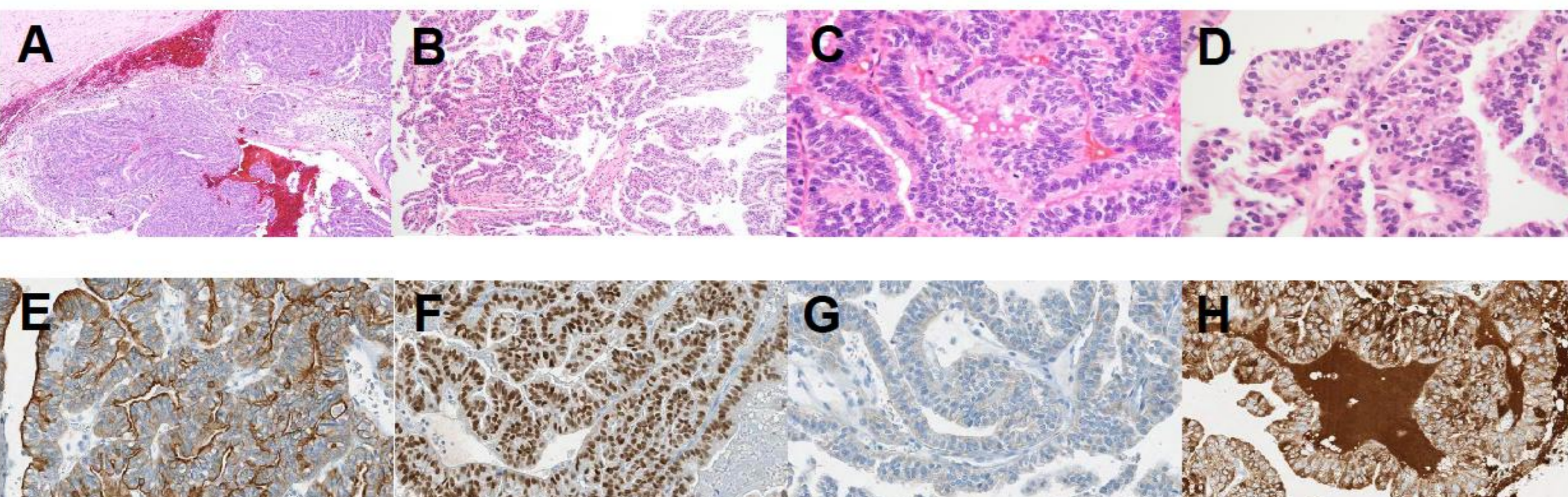
A low density and mild hypermetabolic nodule in the thyroid gland and a large infiltrating intensely hypermetabolic mass in the manubrium and upper sternum body (Figure 3C).

Clinical course

Thyroidectomy and radiotherapy for the brain lesion were recommended, but the patient refused all treatment. After 9 months, the patient expired due to pneumonia and sepsis.

Conclusion

This case was an extremely rare case of brain metastasis from columnar cell variant of PTC in which the brain metastatic lesion mimicked a cavernous angioma. It shows that depending on the PTC variants, even small PTCs should be handled with caution as they can lead to brain metastasis.



<Figure 2> Histologic findings

1. H&E staining (A, B, C, D)

2. Immunohistochemical staining (E, F, G, H)

