

Case Report,

Unusual metastases of papillary thyroid carcinoma: a case report and review of literature

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Abstract:

Papillary thyroid carcinoma comprise approximately 80 % of all thyroid cancers. It has generally a good prognosis, and distant spread is rare. Common sites of distant metastasis include lung and bone. Whatever the pleural and breast metastasis are exceedingly rare. Their presence portends a dismal prognosis and a shorter median survival.

We recently experienced a case of 60 -year-old women with pleural and breast metastasis of papillary thyroid carcinoma. We report this case with a review of the literature.

Keywords: papillary thyroid carcinoma, pleural metastasis, breast metastasis, prognosis

Introduction:-

Papillary thyroid carcinomas (PTC) are the most common type of thyroid cancer. The first manifestation of PTC is ordinary a thyroid nodule or a neck mass and less frequently metastases in regional lymph nodes. Distant metastases are rare and often occur in advanced stages of the disease, especially in lungs, bones, and thoracic lymph nodes (1) . Metastases of papillary thyroid carcinoma to the pleura and breast are exceptional.

The pleurisy still an unusual discovery mode of PTC. Nevertheless the pleura effusion cytology has an importance to confirm the diagnosis. There are only 4 reports of PTC with metastases in the breast, to our best knowledge.

It is worth to highlight that the metastasis of PTC to the pleura is worsening the prognosis

In the present article, we report a case of metastatic pleurisy revealing a papillary thyroid carcinoma with an ultimate breast metastasis. It's about an unusual DISCOVERY MODE and two exceedingly metastasis sites of PTC.

Clinical presentation:-

A 60 years old female patient with no medical history was presented to our pneumology department for 4 months' history of a progressive right side chest pain, exertional dyspnea, and dry cough with night sweats and deterioration of general status. The clinical examination had found a patient PS=1, with a good respiratory and hemodynamic status and right sided pleural effusion syndrome. The pleural puncture has revealed an exudative lymphocytic serohematic pleural effusion. The first pleural biopsy puncture results were inconclusive thus there were suspicious cells at the cytodiagnosis. So the patient had undergone a second pleural biopsy puncture revealing the presence of a pleural metastasis of adenocarcinoma with unknown primary site with pleural drainage of 1L200ml of liquids. According to the NCCN guidelines 3.2023, the patient had undergone a chest abdomen pelvis scan showing a great abundance pleural effusion without any other suspicious lesions. The flexible bronchoscopy had disclosed an external compression on the whole right side bronchial airways. For tumor markers,

the CA 125 = 52 UI/ml and CA 19.9 = 807 UI/ml levels were elevated however the level of CA 15-3 and alpha fetoprotein were normal. The breast ultrasound was without any abnormalities. After the multidisciplinary meeting, the PET scan had unveiled a massive pleural effusion with pleural hyper metabolism in addition to a hyper metabolic left thyroid nodule (SUV max 6, 34 reference 3, 3). Under general anesthesia, the patient had undergone a surgical thoracoscopy with multiple biopsies and talc pleurectomy. The pathology examination confirmed the primary site of thyroid gland with immunohistochemistry showing positivity of cytokeratin 7, TTF-1 ++, thyroglobulin, and PAX 8. There was a left thyroid nodule classified EU tirads 5 on the neck ultrasound. The patient had undergone a total

thyroidectomy. It was a papillary microcarcinoma (0.7 cm) with vesicular architecture and capsular rupture. So the diagnosis was a pleural metastasis of a thyroid papillary microcarcinoma. After surgery and first session of iodine 131 iratherapy, there were a clinical and radiological (chest X ray) improvement. A post-therapeutic efficacy evaluation had showed a mild hyper fixation in the thyroidectomy lodge in addition to a pleural hyper fixation on scintigraphy, also thyroglobulin, AC antithyroglobulin and TSH levels were normal. A second session of iratherapy was indicated. Three months post operatively; the patient had developed an abscessed mass of the right nipple fistulized to the skin with pus measuring approximately 3 cm (figure 1).



Figure 1: an abscessed mass of the right nipple fistulized to the skin with pus above of the thoracoscopy's scar

The patient had a depressed state with general status deterioration (PS=2). The blood test had found a neutrophilic leukocytosis with an elevated CRP (133 mg/l). the pus sample of the fistulized mass had revealed the presence of pseudomonas Putida. The patient was placed on intravenous

antibiotics with a psychiatric consultation. The ultrasound-mammography had disclosed a mass of the external quadrant measuring 2*4 cm (figure 2: a, b, c) with a fistula tract extending anteriorly to the skin and posteriorly to the pleura associated to an axillary lymph node.

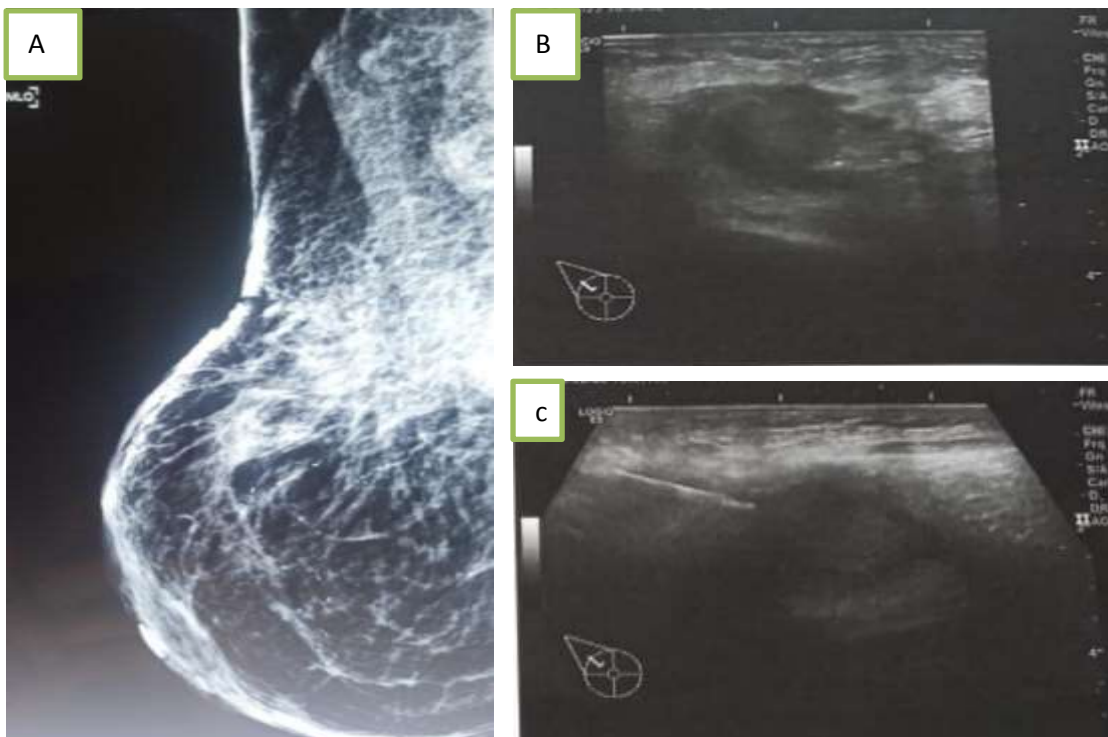


Figure 2: The mammography (a) and the ultrasound (b, c) showed a mass of the external quadrant, containing some liquefaction zones with fistulous path directed anteriorly towards the subcutaneous tissue and continued posteriorly by a hypoechoic band towards the pleura with and axillary adenopathy

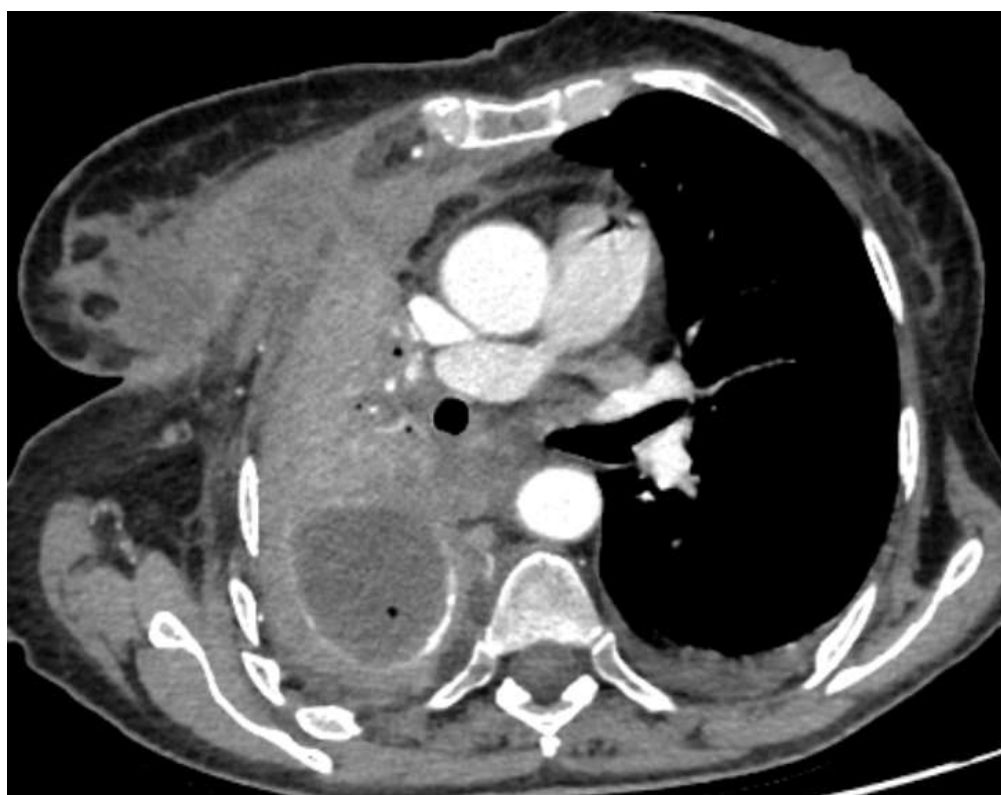


Figure 3: The chest CT scan showed a fistula tract from a right pleural residual collection extending to the skin with a right lung collapse.

The chest CT scan had showed a fistula tract from a right pleural residual collection extending to the skin with a right lung collapse (figure 3).

The thoracic surgeons had suggested to perform a thoracoscopy under general anesthesia but the patient had refused due to her general status and her psychiatric state. A breast biopsy had revealed a breast metastasis of the papillary microcarcinoma, while the cytologic assessment had showed a reactive lymphadenitis. The patient had been under palliative care and antidepressants treatment until she died after four months.

Discussion:-

Papillary thyroid carcinoma is considered a low-grade malignant tumor whose clinical symptoms are due to the presence of a thyroid nodule or to metastases in the cervical lymph nodes. Distant metastases are infrequent and usually occur in lungs(67%), bones(25%) (2), but other sites such as the breast and pleura are exceedingly rare Even if every malignant tumor might, at least theoretically, reach secondarily the pleura, the lung and breast cancer still the most recognized respectively 39.5 % and 24% according to a perspective multicentric study(3). The exact incidence of metastatic papillary thyroid cancer to the pleura is not well known. A retrospective search of the QMC pathology database from January 2002 to December 2012 about a total of 4,046 pleural fluids revealed only 3 patients with metastatic PTC to the pleura, comprising only 0.1% of all pleural fluid exams and 0.5% of all malignancies(2). Also in a large case series over a period of 26 years the percentage was 0.67% (4). The female sex, advanced age, the papillary type are the common characteristics of patients with malignant pleural effusion from thyroid carcinoma (5)

We diagnosed unusual metastases cytology and/or histology and imaging using 18FDG PET/CT scan. Fine Needle Aspiration or biopsy for newly detected UMs are not mandatory in patients with already widespread multiple metastases, however, pathological diagnosis is helpful to exclude other diseases in some cases (6).

The diagnosis of the pleural effusion in our patient was with pleural immunocytochemical findings. However, it may be difficult because of the rarity of pleural dissemination from thyroid cancer and the similarity of the symptoms and signs to other

chronic pulmonary diseases such as tuberculous pleurisy.

Generally, the diagnosis of papillary thyroid cancer is consistent with a near-normal life span in most patients, especially in women under 40 years. The development of malignant pleural effusion in a patient with papillary thyroid cancer might occurs many years after this cancer but rarely revealing it. It is an extremely adverse prognosis indicator. The survival time become very short in all cases, after the appearance of malignant pleural effusion, varies between 1 to 20 months (median 11 months) (7) (8) (9) (10) (11) (12).

Breast metastases of PTC are extremely rare. The most common metastases in the breast are from carcinomas arising in the contralateral breast, malignant melanoma, lymphomas, lung cancer, ovarian carcinoma, soft tissue sarcoma, and gastrointestinal and genitourinary carcinomas (13) . To our knowledge, there are only 4 previous reports of metastatic PTC in the breast (14).

Two particularities that make our case unique and interesting. The first, is the appearance time wich is short after the diagnosis. The second, the migration of the tumoral cells of PTC from the pleura to breast, which didn't exist before in clinical radiological and PET CT scan with CA 125 that was normal

Conclusion:-

Papillary thyroid carcinoma is the most common thyroid malignancy and usually has a good prognosis. PTC may develop early neck metastases, while distant metastases are rare. The presence of a malignant pleural effusion portends a dismal prognosis, with a reported median survival of 11 months.

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