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Case report

A rare case of follicular thyroid carcinoma metastasis to the sacral region: A case report with literature review

Berrada Omar *, Hammouda Yassir, Oukessou Youssef, Rouadi Sami, Abada Redalah Larbi, Roubal Mohamed, Mahtar Mohamed

ENT Head and Neck Surgery Department, Ibn Rochd University Hospital, Faculty of Medicine and Pharmacy, Hassan II University, Casablanca, Morocco

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ABSTRACT

Introduction: Follicular thyroid carcinoma (FTC) is the second most common thyroid cancer subtype after papillary thyroid cancer (PTC), and it accounts for approximately 10% of all thyroid cancers, the incidence of distant metastasis in FTC has been reported to be 6–20%, bones and lungs are the most frequent sites of distant metastases. Most occult thyroid carcinomas are papillary carcinoma.

Case presentation: We describe an extremely rare case of a 74-year-old woman who had a history of right thyroid lobectomy 20 years ago, was referred to our hospital for metastatic thyroid follicular carcinoma to the sacral region confirmed by the biopsy of the sacral mass. The patient was treated by analgesic radiotherapy, surgical totalisation of thyroidectomy, and Radioactive Iodine, with thyroid replacement by levothyroxine. In the follow up we noticed a significant symptom reduction leading to a much better quality of life.

Conclusion: Increasing importance should be given to rare metastases in DTP patients. Early detection will help in the early diagnosis and treatment of the disease, thereby improving the patient's survival rate and quality of life.

1. Introduction

Follicular thyroid carcinoma (FTC) is the second most common thyroid cancer subtype after papillary thyroid cancer (PTC), and it accounts for approximately 10% of all thyroid cancers [1]. The average prognosis of FTC is worse than that of PTC [2]. Follicular thyroid cancer is known to metastasize hematogenously, which could explain its more common distant spread compared with papillary thyroid cancer. The incidence of distant metastasis in FTC has been reported to be 6–20% [3]. The bones and lungs are the most frequent sites of distant metastases. Sacral region metastasis is very rare.

Occult carcinoma is a primary microcarcinoma in which metastatic lesions are detected previously. Most occult thyroid carcinomas are papillary carcinoma, and the route of metastasis is usually lymphomatous [2].

In this case report, we describe an extremely rare case of occult thyroid follicular carcinoma diagnosed as hematogenous metastasis to the sacral region managed in our institution (Ibn Rochd University Hospital). This work is reported by following the surgical case report (SCARE) guidelines [4].

2. Case report

A 74-year-old woman was referred to our hospital and admitted for a detailed examination of a metastatic thyroid follicular carcinoma.

Medical history revealed a right thyroid lobectomy 20 years ago (no records found), non-drug allergies, no psychosocial issues including medications, smoking, and no familial genetic diseases.

The patient felt an abnormal coxadinia that lasted for almost 2 years, a lumbar computed tomography (CT) was done, followed by a sacral biopsy, bone scintigraphy, and finally a decompressive surgery.

The results of physical examinations were as follows: OMS classification: 2, body temperature, 36.8 °C; pulse rate, 80/min; blood pressure, 120/80 mmHg; and oxygen saturation, 97% in room air. Her breathing sounds were normal, as were the results of cardiac and abdominal examinations. No peripheral lymphadenopathy was observed in the cervical regions.

In the sacral region: scar of 10 cm, pre-sacral and left iliac fin pain

- Lumbar CT scan (Fig. 1): tumor process of the left sacral fin with the beginning of extension to the surrounding soft parts and small vertebral lesions of secondary appearance.

* Corresponding author.
E-mail address: om.berrr.7@gmail.com (B. Omar).

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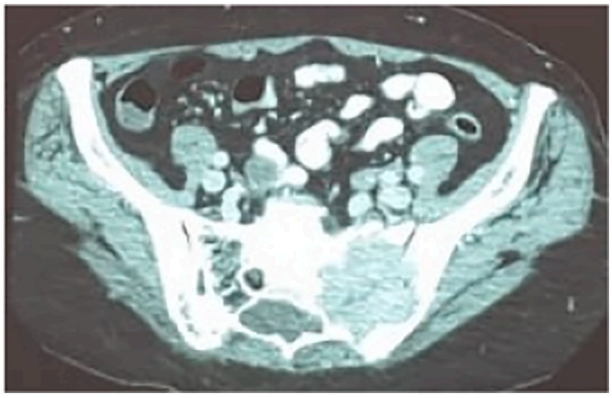

Fig. 1. Axial lumbar CT scan showed a tumor process of the left sacral fin with extension to the surrounding soft parts.

- MRI (Fig. 2) showed an osteolytic mass measured 6 cm in large dimension, invading the left sacral region S2 and S3 vertebrae with paravertebral soft tissue invasion.

- Biopsy of the sacral mass indicated a tubular glandular carcinoma or pseudo follicular carcinoma.
- Immunohistochemical analysis of the sacral mass concluded metastases of follicular thyroid neoplasm.
- The Thyroglobulin levels were high: 1450 ng.ml.
- Scintigraphic imaging shows very suspicious bone lesions of the lumbosacroiliac pelvis and costal lesion, in favor of a secondary process of mixed type.
- Cervical, Chest, abdominal and pelvic CT scans shows no sign of thyroid tumor recurrence, absence of notable lesion at the level of the different floors except for the bone skeleton which presents geodic lesions of varying sizes involving a few dorsolumbar vertebrae as well as a large metastatic osteolytic lesion of the left sacroiliac.
- Anatomopathological result of partial resection of a sacral mass (29/04/2020): aspect in favor of a sacral metastasis of a differentiated adenocarcinoma of vesicular architecture. The primary focus is rather a thyroid.
- Cervical ultrasound shows a Left thyroid lobe diminished, heterogeneous, with 3 small cysts within it. With the absence of right thyroid lobe.

The patient was treated by analgesic radiotherapy, surgical totalisation of thyroidectomy performed by ENT teacher, and Radioactive Iodine, the decision was made in a multidisciplinary team.

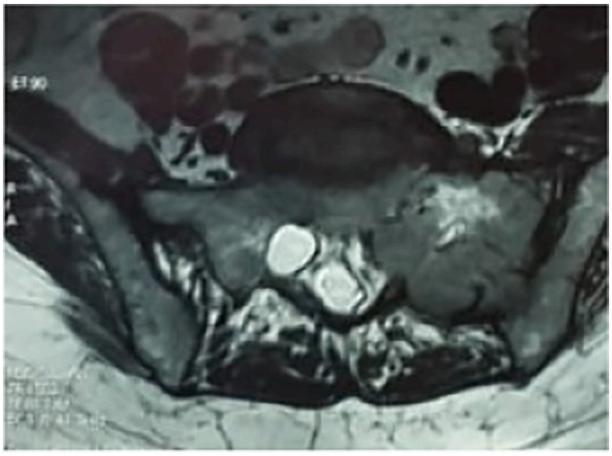

Fig. 2. Axial lumbar MRI showing an osteolytic mass invading the left sacral regions S2 and S3 vertebrae.

The patient adhered well to the treatment received with good tolerance to the surgery and post-operative care.

Postoperatively, the patient presented no complications, in particular no dysphonia, dyspnea, or hypercalcemia.

The patient has been on levothyroxine for 1 year with a significant reduction in symptoms leading to a much better quality of life.

3. Discussion

There are very few cases reports in the literature of FTC metastasizing to the sacrum and vertebrae as a solitary site of metastases with osteolytic lesion and neurological symptoms [5].

A review of 389 cases of FTC with bone metastases by Sreedharan et al. described only one case of metastases to the sacral region [1].

It is believed that 1%–3% of thyroid cancer can develop distant metastasis. Occult clinical presentation delays the diagnosis and management of metastasis.

Most metastatic tumors occur in the 5th–7th decades of life, and the most common manifestations of bone metastases from DTC: pain, fractures, and spinal cord compression are associated with lesions in the axial skeleton.

Pain often presents as the principal symptom of metastatic bone involvement and progressively becomes more severe and resistant to commonly used non-opioid analgesics. [6]

Tumor invasion occurs by extension into blood vessels, and early spread via the hematogenous route, numerous processes have been implicated in fostering metastasis, including epithelial-mesenchymal plasticity, cancer stem cells, noncoding RNAs, cytokines, and receptor tyrosine kinase (RTK) pathways [7].

The bone itself is also sometimes specifically permissive of metastasis, but the effects of the tumor on bone are variable. The bone microenvironment contains stroma as well as osteoclasts and osteoblasts that can be coopted or “reprogrammed” by metastatic tumor cells to promote osseous metastases. [8] Bone metastases are broadly defined as lytic, sclerotic, or mixed; many DTC metastases are predominantly osteolytic.

The imaging techniques for detecting metastatic lesions in bone include plain radiography, CT, MRI, isotope bone scans, positron emission tomography (PET), radioiodine uptake, and others [9] MRI is the preferred imaging modality for obtaining more detailed information regarding the extent of tumor invasion and for making an accurate diagnosis [10].

Conversely, serum thyroglobulin is useful in detecting thyroid cancers. Thyroglobulin is expressed by both normal thyroid tissue and 95% of differentiated thyroid carcinomas [11,12].

This patient was found to have a sacral mass which was diagnosed as an invasive tumor of thyroid origin. This was proven via the characteristic of the tumor with bone invasion follicles filled with colloid, and positive thyroglobulin and CK7+/CK20−. This current histopathology finding could be presented in papillary thyroid carcinoma, follicular thyroid carcinoma.

Diagnosis is established by correlating clinical suspicion with imaging and histopathological result.

Patients with oligometastases can be cured by local therapeutic measures (surgery or radiofrequency/cryoablation); in other cases, systemic treatment may be postponed this way.

In metastatic DTC, the extent of RAI uptake plays a crucial role in the prognosis [2]. It is variable, depending on the histological subtype (papillary, follicular or poorly differentiated thyroid cancer). RAI therapy is, without doubt, the most effective treatment in metastasized DTC, with limited side effects.

If tumor deposits take up RAI, this treatment is possibly curative.

If the metastases can be completely cured by RAI therapy, the overall 10-year survival is 92% compared to 29% in patients with residual

disease.

Also, TSH suppressive therapy (TSH < 0,1 mU/L) is known to delay or slow down progression in metastasized TC, resulting in improved overall survival as compared to patients without TSH suppression [13].

A 5-year survival rate of around 47% for patients with metastatic disease from follicular thyroid carcinomas was reported by Brennan et al. [3].

Increasing importance should be given to rare metastases in DTC patients. This case highlights the need for an awareness of the possibility of unique metastatic deposits of DTC at unexpected sites.

Not all bone metastases can be managed surgically depending on the location and the postoperative outcome. Alternative treatment should be considered to improve patient morbidity.

Early detection will aid in the early diagnosis and treatment of the disease, hence improving patient's survival rate and quality of life.

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Ethical approval

I certify that this kind of manuscript does not require ethical approval by the Ethical Committee of our institution.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author contribution

Omar Berrada: conception and design of the study.
Hammouda Yassir: conception and design of the study.
Oukessou Youssef: conception and design of the study.
Rouadi Sami: drafting the article.
Abada Redalah Larbi: revising the article.
Roubal Mohamed: revising the article.
Mahtar Mohamed: revising the article.

Registration of research studies

This is a case report that does not require a research registry.

Guarantor

Omar Berrada.

Provenance and peer review

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Declaration of competing interest

The authors declare that they have no competing interests.

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