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Case Report

Follicular Thyroid Carcinoma Revealed by Inaugural Atypical Metastasis

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Abstract

Background: Thyroid carcinoma initially presents with clinical symptoms due to metastatic lesions in less than 5% of cases. Spinal cord compression from an epidural metastatic lesion as a first symptom is extremely rare. One would expect such a presentation to occur much later in the course of the disease. ***Case presentation:*** We report an unusual case of a 57-year-old-woman with the complaint of back pain for one year. A process was detected at the corpus of L5-S1 to S3 vertebra, by the sacrococcygeal MRI. ***Conclusion:*** Spinal metastasis as initial finding is very rare in the patients with FTC. However, prognosis is quite well with total tumor resection and adjuvant treatment. This cancer type must be kept in mind for differential diagnosis and must be screened in the patients with spinal tumors.

Keywords: Follicular thyroid carcinoma; Metastasis; Vertebrae.

INTRODUCTION

Follicular thyroid carcinoma (FTC) represents 10-20% of well differentiated thyroid carcinoma (DTCs), it's also the second neoplasm deriving from the epithelial follicular cells [1-3]. Compared with papillary carcinoma, vesicular carcinoma has a greater tendency to metastasizes to distant organs such as the lung and bone. The incidence of vesicular carcinoma in areas of iodine hypo fixation tends to be higher than 40% of all DTCs [4]. according to the WHO classification, vesicular carcinoma is defined by the presence of capsular and/or vascular invasion, and the absence of the nuclear criteria of papillary carcinoma (PTC) [5]. Vesicular carcinoma is more likely to metastasizes to distant organs than to regional lymph nodes, given the frequency of vascular invasion [6]. Its incidence increases after the age of 50, with a female/male sex ratio of 3/1[3-10]. When vesicular thyroid carcinoma is diagnosed, 25% already show extra-thyroidal invasion, and 5-10% show metastases to regional lymph nodes, and 10-20% show distant metastases such as to the lungs and bone [3,7,10].

Distant metastases are relatively common in thyroid carcinomas; a distant metastasis is present at baseline in only 3-15% of patients with thyroid carcinoma [8]. A vertebral metastasis with medullary compression as the only inaugural presentation of a vesicular thyroid carcinoma, without any thyroid sign, is exceptional. Our case illustrates This fact.

PATIENT AND OBSERVATION

The patient was a 57-year-old female with a history of high blood pressure under hydrochlorothiazide and losartan. She was also being followed for type 2 diabetes, under oral antidiabetic drugs. She had surgery ,14 years ago, for anal fissure and cholecystectomy (concomitant surgery). This patient was admitted in the neurosurgery department for inflammatory back pain that had been developing for a year, as fessalgies radiating towards the crook of the groin and the lateral face of the thigh. The evolution was marked by the appearance of oedema of the lower limbs two months ago, then dysuria and constipation one month ago. All this without fever or weight loss. The clinical examination, mainly neurological, found a difficult walk with support. The osteotendinous reflexes were present and symmetrical, and a muscle tone preserved. Examination found intact cranial pairs, and normal upper functions. The examination of the spine does not find any

sign of the bell or Lasegue. the general muscle strength was reduced to the right mingazzini decreases to the right. In total, the clinical examination of this patient found a spinal syndrome associated with disorders of the genitourinary sphincter type of dysuria and constipation. The morphological exploration of the sacral lumbar rachis was performed by MRI [fig1] and showed, at the level L5-S1, the presence of a central lesion process on the right sacroiliac joint extended to the stage L5-S1,of irregular shape, fairly limited ,in intermediate signal T1,heterogeneous signal in T2,hypersignal STIR, containing a central liquid zone, raised in a heterogeneous way after injection, measuring approximately 91x113x88mm with encroachment of the right sacral trunks S1 to S3 and ever the intervertebral space L5-S1 ,encompassing the straight nerve roots L5 to S3 . it pushes forward the internal iliac pedicle with persistence of a fine greasy border of separation. It passes outside the cortical of the iliac bone and extends to the homolateral gluteal muscles. It infiltrates inside the internal obturator muscle and comes into contact with the fascia of the meso-rectum without infiltration of meso-rectal fat with respect to the rectum.

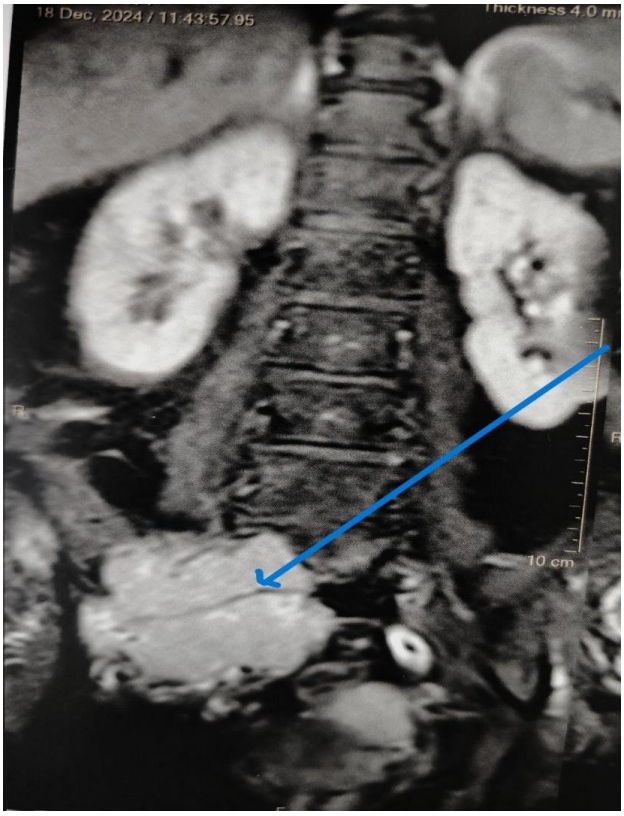

Figure 1: Sacro coccygeal MRI showing a compressive process of the sacroiliac junction (arrow head) measuring 91mm of great axis

In front of this clinical picture, a pelvic MRI was performed [figure1] and revealed a central lesion process on the right sacroiliac joint extended to the stage L5-S1, irregular shape, fairly well bordered, in intermediate signal T1, heterogeneous signal in T2, in STIR hypersignal, containing a central liquid zone, raised in a heterogeneous way after injection, measuring approximately 91x113x88mm.this process is related to:

- Back; it invades the right sacral holes S1 to S3 as well as the intervertebral space L5-S1 encompassing the straight nerve roots of L5-S3
- Forward; it represses the internal iliac pedicle with persistence of a fine greasy border of separation.
- Outside; it crosses the cortical of the iliac bone and extends to the homolateral muscles.
- In; it infiltrates the internal obturator muscle and comes into contact with the mesorectum without infiltration of mesorectal fat with respect to the rectum.

considering these clinical symptoms, of spinal compression, and radiological aspect, a decompressive laminectomy was performed the sample sent to the pathology lab.

Pathology:

After fixation in 10% buffered formalin and inclusion in paraffin, the sample was cut to the microtome in a section of thickness of 3 micrometers, then colored with hematein-eosin, then goes up between slide and slide and examined with microscope.

Histological examination found a proliferation of follicular architecture vaguely reminiscent of a thyroid parenchyma.it was made of vesicles of varying sizes mostly small size bordered of very atypical follicular cells, but without papillary aspects [figure 2].

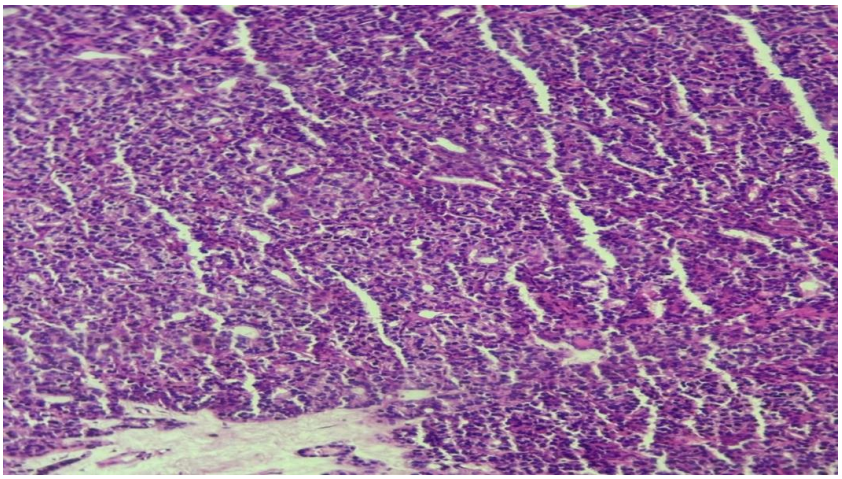

Figure 2: Sacrococcygeal sample [HEX20] showing proliferation of follicular pattern, made of small size follicles bordered by atypical follicular cells

In response to this unexpected lesion and morphological aspect, immunohistochemistry was carried out to consolidate the diagnosis using the following antibodies: cytokeratin 7 CK7, thyroglobulin, TTF1, and PAX8.The tumor cells expressed strongly these antibodies [Figure 3]. In summary, this morphological aspect associated with this immunohistochemical profile allowed the definitive diagnosis of a sacrococcygeal metastatic localization of a vesicular carcinoma of the thyroid.

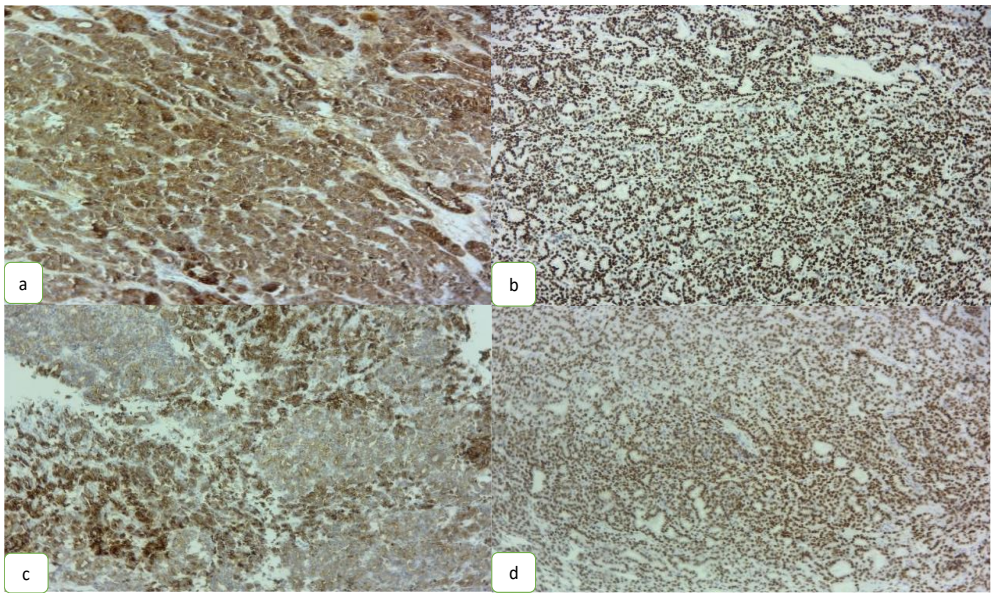

Figure 3: Immunohistochemistry [magnification powerx20] showing; a. high cytoplasmic expression of thyroglobulin antibody by tumoral cells. b. tense and diffuse nuclear expression of TTF1 antibody. positive diffuse membranous expression of CK7. d. nuclear tense diffuse expression of PAX8. combination of those antibody's is highly specific of thyroid differentiation

Following this result, a cervical ultrasound been performed, and showed a thyroid gland increased in volume, Siege of multiple nodules, the most characteristic:

- A right posterior superior N1 lobar nodule, oval, well bound with irregular contours, has discontinuous calcified wall, moderately hypoechoic tissue echo structure measuring 23x30x22mm, taking color doppler, and EU-TIRADS4 class.
- Two nodules N2 and N3, mid lobar and upper right, measuring respectively 13x11x7mm and 9x12x7mm of iso-echogenic tissue echo structure and both EU-TIRADS3 classes.

Following this examination, and the result of the histological analysis of the vertebral lesion process, a total thyroidectomy was performed and the anatomical sample sent to our laboratory. Macroscopically, the thyroid parenchyma was home to multiple nodules of heterogeneous appearance, the largest of which was more at least fleshy and more at least suspect. The histological study of the dominant nodule showed a fairly limited tumor proliferation, follicular architecture, mainly made of small size vesicles. These are lined with very atypical epithelial cells equipped with anisocytosis, with marked mitotic activity [figure 4].

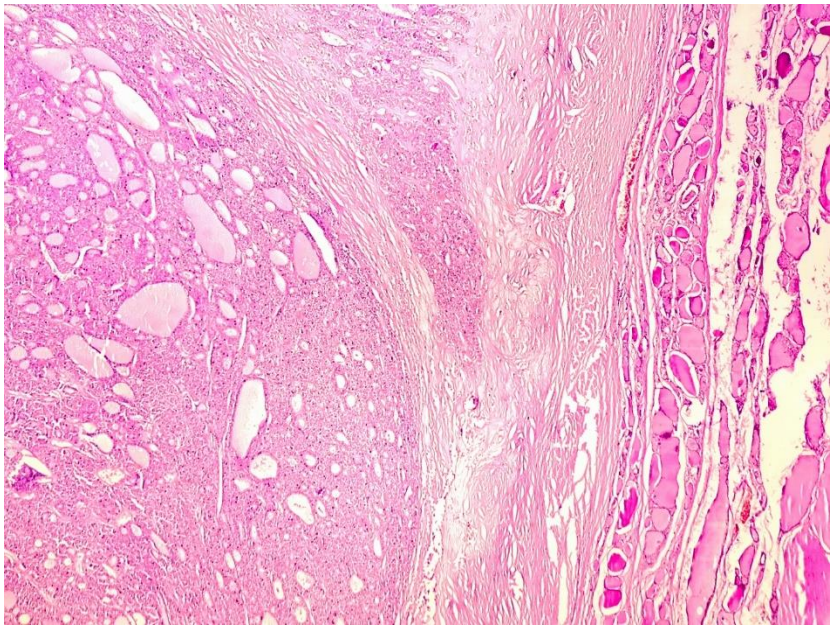

Figure 4: [HEX20] sampling of the dominant thyroid nodule found the same malignant follicular proliferation, well limited, and pushing the adjacent normal thyroid parenchyma. No vascular invasion was observed, neither real capsula invasion

Careful examination does not objective nor obvious vascular embolism, neither open capsular break-in. But the presence of a distant sacrococcygeal metastasis has allowed final diagnosis of vesicular carcinoma.

In total, our case is a rare manifestation of follicular carcinoma of the thyroid gland, and is added to the few cases reported in the literature.

DISCUSSION

Thyroid carcinoma is rare and accounts only for roughly 1% of new malignant disease. Thyroid carcinoma initially presents with clinical symptoms due to metastatic lesions in les than 5% of cases. Spinal cord compression from an epidural metastatic lesion as first symptom is extremely rare. thyroid follicular carcinoma is found more often in areas of endemic goiters, and iodine deficiency has been reported as an independent risk factor [1,3,5].

Follicular carcinoma metastasizes to the bone in 2=13%of the patients. Studies found a mutation of an oncogene in thyroid follicular carcinoma: there is mutation of (RAS) in over 80% of follicular carcinoma [4]. The follicular carcinoma affects usually middle-aged women. The follicular carcinoma tends to metastasize through hematogenic circulation; The metastatic spread is achieved either through Batson plexus, direct spread from local invasion, or less commonly through cerebrospinal fluid pathways, giving distant metastasis, most commonly to the bone, the lungs and the lymph nodes [5]. But a distant metastasis, is first manifestation of follicular thyroid carcinoma, in only 5%. Bone metastases are reported to be 2-13% of the patients. The clinical symptoms are explained by pathological vertebral body collapse or instability, and often manifest as back pain. Radicular pain may also be a clinical manifestation. The extension of a vertebral-body-tumor into the spinal canal, can lead to spinal compression [6]. Mostly encountered spinal metastases of thyroid carcinoma, usually presents with a more insidious onset, leading late to neurological symptoms. Only few cases have been reported [3-5,7-12].

The case we reported here is exceptional as the first clinical manifestation was spinal cord compression leading to neurological symptoms. The FTC usually presents as thyroid nodules. Presentation with distant metastases is quite rare, and it was reported in 1.9% to 11% of the cases with FTC [11,13,14]. Presentation with spinal cord compression due to spinal metastases is extremely rare. Pomorski and Bartos [11,15,16] reported only one case out of 309 FTC cases. We could only find 26 cases in literature and we added our case. In the series reported by Marcocci et al. [17], there were 18 patients

whose presenting symptoms were related to bony metastases; however, it was not mentioned that how much of them were spinal metastases.

The treatment algorithm for primary thyroid carcinomas includes nearly total or total thyroidectomy, followed by oral administration of 131I and TSH suppression [18]. Compared to other spinal metastatic malignancies, thyroid carcinoma with spinal metastases has a better prognosis. Following surgery and radioactive iodine ablation, a patient with pulmonary metastatic follicular thyroid cancer has a 90% chance of surviving for 10 years, with 35–40% of cases being cured. Due to the lower concentration of radioactive iodine and the need for higher dosages, bone metastases have a worse prognosis than lung ones. Patients with bone metastases have a 12% 10-year survival rate and an 8% 20-year survival rate [3,17,18].

CONCLUSION

In conclusion, every patient with new-onset spinal cord compression should have metastatic thyroid cancer taken into account in the differential diagnosis. The best recovery and life expectancy are achieved with early detection and timely treatment of symptomatic spinal metastatic thyroid cancer. Optimal management entails obtaining the proper radiographic studies, such as a contrasted MRI, as well as prompt surgical treatment when necessary. Thyroidectomy with radioactive iodine ablation increases the 10-year survival in patients with metastatic disease.

Declaration of Competing Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Data Availability

The original contributions presented in this study are included in this article/supplementary material, further inquiries can be directed to the corresponding authors.

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