

Spinal Metastasis revealing Thyroid Carcinoma: A Case Report and Literature Review

Cheikh Sidi1, Ahmedou Ahmed Brahim, Dahi Mohamed Elmoctar, Ladour Abdel Vatah

Department of Otolaryngology Head Neck Surgery, Cheikh Zayed Hospital, Nouakchott

Introduction

Papillary Thyroid Cancer (PTC), the most common thyroid malignancy, is associated with an excellent prognosis. It is a well differentiated malignant tumor, which accounts for 1% of all malignant tumors. Metastatic thyroid carcinoma usually appears in the local lymph nodes. Indeed, distant metastases of papillary thyroid carcinoma are uncommon, and the most common site of metastasis is lung followed by bone [1,2].

Bone metastasis occurs through hematogenous route of certain osteophilic tumors: thyroid, lungs, breast, prostate and kidneys. Therefore, it may reveal the disease or complicate its course since its discovery worsens the prognosis [3]. The incidence of bone metastasis in differentiated thyroid carcinomas represents only 2 to 13% of cases. Bone metastasis in follicular carcinoma is three times more frequent (7 to 28%) compared to papillary carcinoma (1 to 7%) [4]. In our study, we report,

Case

A 69-year-old man, without important pathological antecedents, referred to our center in the ENT department of Head and Neck Surgery, presented for 6 months a painful backache without sphincter disorders and a remarkable weight loss.

MRI of the spine showed hypointense vertebral lesions -T1 and T2-at the lumbar level as well as on the right iliac bone, enhanced after Gadolinium injection (Figure 1).

A biopsy of the spinous process of the second lumbar vertebrae (L2) was carried out.

Histopathological examination revealed papillary cell carcinoma (Figure 2).

Figure 3: Papillary thyroid carcinoma configuration on histological examination.

Immunohistochemical study revealed a follicular variant of papillary thyroid carcinoma, expressing TTF1 and Thymoglobulin.

The patient underwent a total thyroidectomy (Figure 3) with Histopathological examination reveal confirmed papillary cell carcinoma. Followed by Iodine radiation therapy and scintigraphy, showing a fixation on spinal L2, with no other metastasis. The follow-up was done 3-6 months and then one year later. At 1-year Follow-up, we did not reveal any local recurrence on cervical imaging and the thymoglobulin rate was undetectable.

Discussion

Papillary Thyroid Carcinoma (PTC) derives from the thyroid follicular epithelial cells. It's the most common malignant thyroid neoplasm in countries with sufficient iodine diets and comprises up to 80% of all thyroid malignancies [5]. This malignant tumor remains latent and does not or very slowly grow and is associated with a low mortality rate.

While lymph node metastases are often present at diagnosis (average about 50%, can be as high as 85-90% in some series), hematogenous spread is rather a rare and late event [6]. In contrast, distant metastases are very frequently found in children and adolescents [7].

isolated bone metastases constitute 24% of cases, [8]. DTC accounts for the vast majority (85-98%) of thyroid malignancies and bone metastasis incidence in its case is low 2-13% [9]. It accounts for 77% of DTC and has a low incidence of spinal metastasis (SM) 1.7% of cases, while follicular thyroid cancer (FTC) which accounts for 15% of all DTC, has an incidence of bone metastasis of 7-20% of cases secondary to the hematogenous diffusion [10]. Conversely, a large series made by Tickoo and al. showed that the majority of bone metastases are related to papillary carcinoma. [11]. Bone metastases most often occur in old age people: the average age is 65 years [12], predominantly in females [12]. Bone metastasis may be revealed by multiple symptoms such as pain, swelling and pathologic fracture. Distant metastases can involve all segments of the skeleton, electively localized at the level of the axial skeleton, pelvis, shoulder blades and ribs, sternum, femur, and skull base [13]. Bone metastasis related to Papillary Thyroid Carcinoma remains latent and does not or grow very slowly; it is associated with a low mortality rate with a relative survival at 5 years that varied from 93% to 100% in stages I, II and III. While lymph node metastases are often present at the time of diagnosis (average of 50%, may reach 85-90% in some series), hematogenous spread is rather a rare and late event [14]. They indicate an advanced stage of disease and are usually associated with a poor prognosis and reduced response to treatment [9]. Classic clinical symptoms appear with the progression of metastatic disease of the spine and are the consequence of infiltration and / or compression of par vertebral, bone and neural tissues. Magnetic resonance imaging (MRI) is the gold-standard imaging modality in spinal metastasis diagnosis. It is an extremely detailed multilane imaging, allowing the visualization of metastatic infiltration and/or compression of par vertebral, bone and neural tissues [15-16]. Computed tomography (CT) imaging is an excellent way to assess the spine and all bone structures. With high degree of accuracy (90% sensitivity, 100% specificity), it can identify metastatic lesions, and vertebral destruction [17]. Bone scintigraphy is used to screen bone metastasis. Despite its high sensitivity (62-89%), it should be noted that bone scintigraphy measures abnormalities in bone metabolism, therefore, does not have a high specificity in identifying spinal metastases [18]. Treatment modalities may be palliative or curative, using Iodine ablation therapy, selective remobilization therapy (SET), bisphosphonates, surgery as well as small molecular therapy is being discussed [19]. Iodine radiation therapy is the mainstay of thyroid cancer management. Curiously, Van Tolland al. demonstrated that radioiodine ablation reduces pain on analogue scale for pain [20]. The absorption of radioactive iodine is a prognostic factor for metastatic disease. Tumors which do not function represent an entity further down the path of malignant transformation and are resistant to the dose of radiation delivered by radioactive iodine sequestration [21].

The combination of SET with radiation therapy may confer synergistic benefit [22,23]. The role of surgery in bone metastasis of DTC is questionable. Quan and al. suggest that surgery is indicated for patients with intractable pain, cord compression, neurological deficit or cervical instability [22].

The prognosis of patients with distant thyroid cancer metastases is generally poor, with an average 4-year survival rate after diagnosis of metastasis of 40% and an overall 10-year survival rate of 27% for bone metastases of DTC [23]. Despite the low survival rate, DTC with bone metastases compared to other malignant tumors with bone metastases, still maintains a better prognosis and therefore justifies aggressive treatment [24].

CONCLUSION

DTCs are among some head and neck cancers with excellent prognosis with 10-year survival rates of up to 95%. Survival rate drops by half if metastases occur.

DTC has a low incidence of spinal metastasis. Multimodal treatment includes surgery, iodine radiation therapy, and sometimes radiotherapy provides good disease control and improved survival rate.



Figure 1: MRI of the spine showed hypointense vertebral lesions

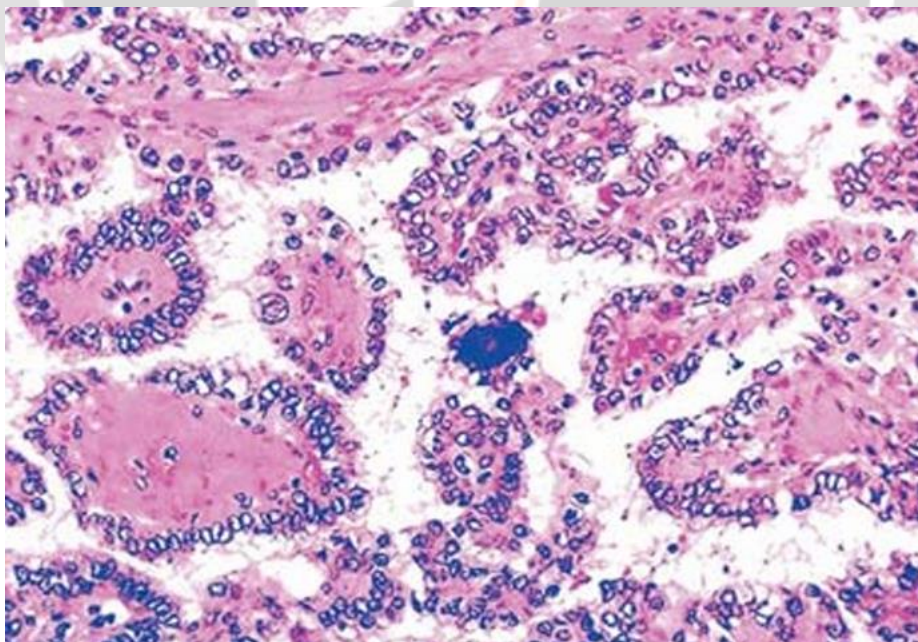


Figure 2 Papillary cell carcinoma



Figure 3: total thyroidectomy

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