An Unusual Case of Cauda Equina Secondary to Spinal Metastasis of Thyroid Cancer
Shabbir Akhtar¹,*Mohammad Adeel¹

Abstract

Introduction:
Cauda equina secondary to metastatic follicular thyroid cancer of the lumbosacral area is a rare entity.

Case Report:
We report an unusual case of a 52-year-old male who presented with backache, lower limb weakness, and perianal numbness. A CT-scan of the lumbosacral area showed an enhancing mass at the L4, L5 and S1 vertebrae. Histopathology after excision revealed a metastatic thyroid cancer. Hence, a CT scan of the neck and chest was performed which showed a nodule in the left lobe of the thyroid and a mass in the left chest wall. A total thyroidectomy and excision of the chest wall lesion was undergone, which was diagnosed as a follicular carcinoma of the thyroid.

Conclusion:
Metastatic workup of spinal metastasis should include evaluation of the thyroid gland.

Keywords:
Differentiated thyroid cancer, Follicular thyroid cancer, Metastasis, Spine, Vertebrae.

Received date: 1 Oct 2014
Accepted date: 13 Aug 2015

¹Department of Otorhinolaryngology, Head and Neck Surgery, Aga Khan University Hospital, Karachi, Pakistan.
*Corresponding Author:
CHC office, Section of otolaryngology, Dept of surgery, Aga Khan University, Karachi, Pakistan
Tel: +923335230990, E-mail: doc.adeel.khan@gmail.com
Introduction
Thyroid cancer is an entity that accounts for approximately 1% of all newly occurring malignant cancers. It accounts for 0.5% of cancers in men and 1.5% in women (1,2). Thyroid cancers are broadly divided into two categories. Differentiated thyroid cancer (DTC) accounts for most malignancies i.e. 90% of all thyroid cancers.
This is further categorized into papillary thyroid cancer (PTC) (70-75%) and follicular thyroid cancer (FTC) (15-20%). Undifferentiated carcinomas, which are anaplastic cancers, account for <5% of thyroid cancers. Medullary carcinoma of the thyroid accounts for 5-10% of thyroid cancers (3,4).
FTC is a slowly growing tumor, which is common in older age groups, with a peak incidence in the fifth decade. Distant metastasis has been reported to occur more commonly in the bones, brain, and lungs (5). The incidence of distant metastasis of FTC has been well documented in literature and is reported to be between 11 and 25% (6,7). However, initial presentation of this cancer as distant metastasis, especially in the spine, has yet to be reported.
We present a case of metastatic FTC, whose initial presentation was cauda equina secondary to compression by a metastatic mass in the lumbar region.

Case Report
A 52-year-old male was presented to the neurosurgery clinic of our hospital with complaints of backache for 3 months, numbness of the legs for 2 months, and weakness of the lower limbs for the last 2 days. Neurological examination revealed a power of 4/5 in both limbs with diminished reflexes, decreased anal tone, and diminished perianal sensation.
All laboratory workups, including prostate specific antigen, were within normal limits. Due to the neurological status, an urgent CT-scan of the lumbosacral spine with contrast was carried out, which showed a soft tissue density enhancing expansile lytic lesion (55x44 mm) involving the spinous process of the L5 vertebra that was causing almost complete erosion of the spinous process and part of the lamina of the L5 vertebra (Fig.1).

Fig 1: A soft tissue density enhancing expansile lytic lesion involving the spinous process of the L5 vertebra

Further workup was carried out, which included an ultrasound of the abdomen that was reported as normal and a chest x-ray that showed a well defined soft tissue density in the pleura of the left upper lung zone with rib erosion. The patient was sent to the operating room on same day as admission and underwent an L4-L5-S1 Laminectomy, excision of the tumor, and pedicle screw fixation.
Intraoperatively, a mass was observed that was soft to firm in consistency, vascular, and was eroding the spinous process of L4 and L5. Final histopathology revealed a metastatic carcinoma most likely of thyroidal origin as the specimen showed thyroid follicles and was positive for the immunohistochemical marker, Thyroid transcription factor 1 (TTF1) (Figs.2,3).
Unusual Thyroid Cancer Metastasis

The patient then underwent total thyroidectomy and left thoracotomy with excision of the mass along with the third rib. Final histopathology revealed a follicular carcinoma in the left thyroid and metastatic follicular carcinoma in the 3rd rib mass (Fig.5).

Therefore, serum thyroglobulin marker and thyroid profile were carried out. Only thyroglobulin levels were raised i.e 103 (normal <55ng/ml). A CT-scan of the neck and chest was also carried out, which showed a heterogeneously enhancing nodule in the left lobe of the thyroid. It measured 4.3 X 3 cm and another expansile lytic lesion involving the left third rib posterolaterally was also seen measuring 5 X 4 cm (Fig.4).

The patient was then given 200mci of radioiodine and a post ablative scan was performed that showed minimal uptake in the lumbar region so another dose of 200mci was given. Repeat thyroglobulin showed a decline from 103 to 13.8ng/ml.

The patient slowly regained power in his limbs with aid of physiotherapy and bowel habits returned to normal. At his one year of follow up he showed to be symptom free and to have resumed his job.

Discussion

The most common initial presentation of thyroid malignancies is a thyroid nodule (90%) followed by cervical lymphadenopathy (5%) and the rest in the lung, bone, liver, etc...(2,8). The incidence of bone metastasis in DTC is 2-13%. FTC has a higher incidence of bone metastasis of 7–20% as compared to PTC, which has an incidence of spinal metastasis of 1–7% (9,10). The 10-year survival rate in DTC is
Diagnosis of metastatic tumors of the vertebrae need a thorough work up that should include assessment of the thyroid gland entailing a detailed clinical history and a physical examination. In conclusion, for these kinds of rare cases, early presentation, proper examination, early diagnosis, prompt initiation of treatment and follow-up can possibly prolong the patient’s life and improve quality of life.

References
1. Sherma SI. Thyroid carcinoma. The Lancet 2003; 361(9356):501-11.
2. Muresan M, Olivier P, Leclère J, Sirveaux F, Brunaud L, Klein M, Zarnegar R, Weryha G. Bone metastases from differentiated thyroid carcinoma. Endocrine-related cancer2008;15(1):37-49.
3. Wilson P, Millar B, Brierley J. The management of advanced thyroid cancer. Clinical Oncology 2004; 16(8):561-8.
4. Sciuabba DM, Petteys RJ, Kang S, Than KD, Gokaslan ZL, Gallia GL, Wolinsky J-P. Solitary spinal metastasis of Hürthle cell thyroid carcinoma. Journal of Clinical Neuroscience 2010;17(6):797-801.
5. Rodrigues G, Ghosh A. Synchronous bony and soft tissue metastases from follicular carcinoma of the thyroid. Journal of Korean Medical Science 2003; 18(6):914-6.
6. R Shaha A, P Shah J, R Loree T. Differentiated thyroid cancer presenting initially with distant metastasis. The American journal of surgery 1997; 174(5):474-6.
7. Girelli M, Casara D, Rubello D, Piccolo M, Piotto A, Pelizzo M, Busnardo B. Metastatic thyroid carcinoma of the adrenal gland. Journal of endocrinological investigation1993;16(2):139-141.
8. Hindé E, Zanotti-Fregonara P, Keller I, Duron F, Devaux J-Y, Calzada-Nocaudie M, et al. Bone metastases of differentiated thyroid cancer: impact of early 131I-based detection on outcome. Endocrine-related cancer 2007;14(3):799-807.
9. Wexler JA. Approach to the thyroid cancer patient with bone metastases. Journal of Clinical Endocrinology and Metabolism 2011;96(8):2296-307.
10. Durante C, Haddy N, Baudin E, Leboullieux S, Hartl D, Travagli J, et al. Long-term outcome of 444 patients with distant metastases from papillary and follicular thyroid carcinoma: benefits and limits of radiiodine therapy. Journal of Clinical Endocrinology & Metabolism 2006;91(8):2892-9.
palliative embolization of bone metastases in differentiated thyroid carcinoma. Journal of Clinical Endocrinology & Metabolism 2003; 88(7): 3184-9.

12. Kiml Y-S. Metastatic follicular thyroid carcinoma to the thymus in a 35-year-old woman. Yonsei medical journal 2002;43(5):665-9.

13. McCormack KR. Bone metastases from thyroid carcinoma. Cancer 1966;19(2):181-4.

14. Demura S, Kawahara N, Murakami H, Abdel-Wanis ME, Kato S, Yoshioka K, et al. Total en bloc spondylectomy for spinal metastases in thyroid carcinoma: Clinical article. Journal of Neurosurgery: Spine 2011; 14(2):172-6.

15. Bernier M-O, Leenhardt L, Hoang C, Aurengo A, Mary J-Y, Menegaux F, et al. Survival and therapeutic modalities in patients with bone metastases of differentiated thyroid carcinomas. Journal of Clinical Endocrinology & Metabolism 2001; 86(4):1568-73.