

갑상선 유두암의 슬개골 전이

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A Case of Patella Metastasis of Papillary Thyroid Carcinoma

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A 73-year-old man presented with a chief complaint of progressive left knee pain for two months. He had a history of total thyroidectomy and central lymph node dissection due to papillary thyroid carcinoma three months ago. MRI images revealed a solid mass in the left patella. A solid mass demonstrated low signal on T1 weighed image, and high signal on T2 weighed image. And whole body bone scan showed focal photon defect in same lesion of left patella. The histologic result of left knee lesion was adenocarcinoma, consistent with metastatic papillary thyroid carcinoma. Although patellar metastasis of papillary thyroid carcinoma is very rare, when knee pain and radiologic abnormality are noted, differential diagnosis of metastasis is necessary. (Nucl Med Mol Imaging 2009;43(1):79-82)

Key Words: Papillary thyroid carcinoma, bone metastasis

Introduction

Papillary thyroid carcinoma is one of the few malignancies known to have a good prognosis with 10 years survival rate exceeding 90%. But, some patients can develop local recurrence or distant metastasis and may die at last. In papillary thyroid carcinoma, the incidence of bone metastasis is low.^{1,2)} The most common sites of bone metastasis are found in vertebrae, pelvis, ribs, and femur.³⁻⁷⁾ Solitary patellar metastasis without other bone metastasis in thyroid carcinoma is rare finding.⁸⁾ We present a case of papillary thyroid carcinoma with patellar metastasis.

Case Report

A 73-year-old man was hospitalized for gradually increasing pain in his left knee for the past two months. There was no traumatic history. He had a history of total thyroidectomy and central lymph node dissection due to papillary thyroid carcinoma three months ago. In plain radiograph of left knee (Fig. 1A), there was a 1.4±2.2±2.4 cm ovoid osteolytic lesion in lateral facet of patella without cortical break or any internal calcifications. Left knee MRI showed an ovoid well-defined mass in the left patella lateral facet. Mass was clearly defined as low signal on T1 weighted image (Fig. 1B), relatively homogeneous increased signal on T2 weighted image (Fig. 1C) with diffuse enhancement after contrast infusion (Fig. 1D). Adjacent patella showed mild enhancement of the marrow and regional soft tissue edema. But there was no evidence of any cortical destruction. In the pinhole image of left knee and whole body bone scan image (Fig. 2), an ovoid photon deficient area was noted in left portion of left patella. Left patella except this lesion showed diffusely increased activity. Curettage and cementation was performed on the left patella. The

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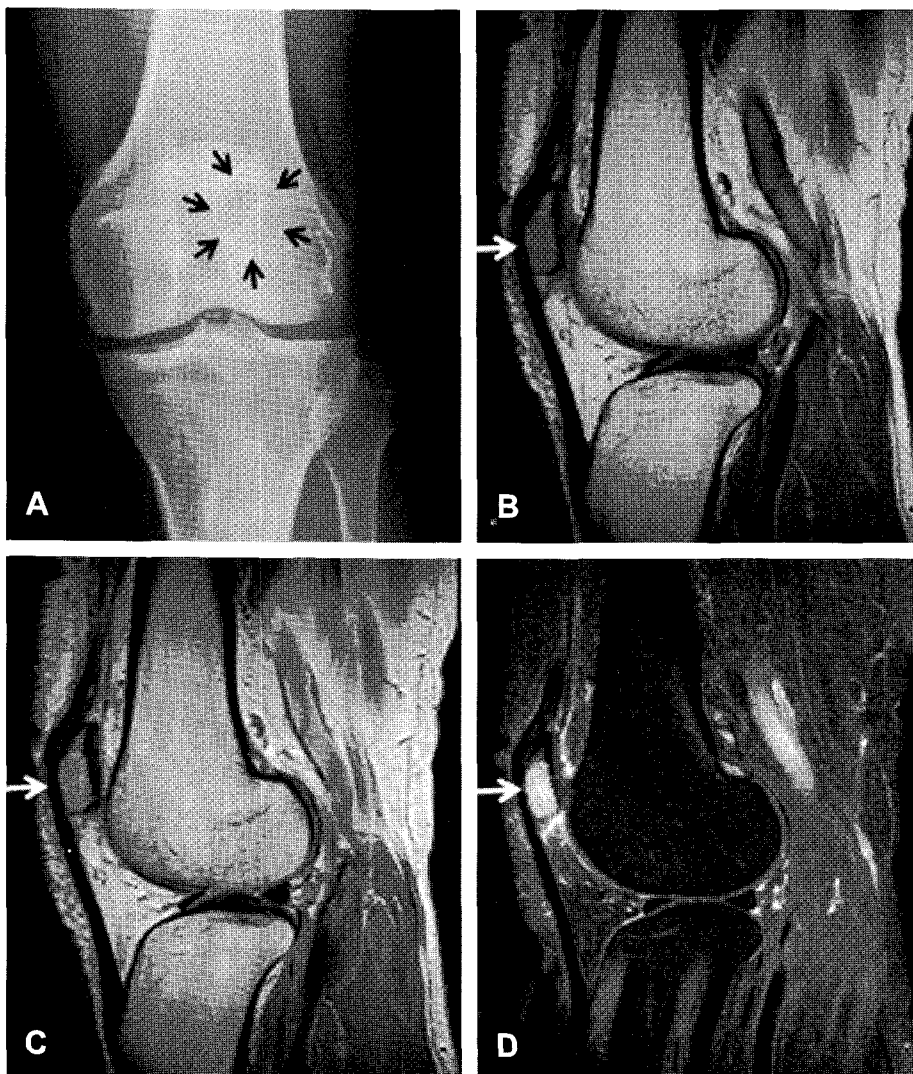


Figure 1. In plain radiograph of left knee (A), there is a 1.4 x 2.2 x 2.4 cm ovoid osteolytic lesion (black arrow) in lateral facet of patella without cortical break or any internal calcifications. Left knee MRI shows an ovoid well-defined mass (white arrow) in the left patella lateral facet. Mass is clearly defined as low signal on T1 weighted image (B), relatively homogeneous increased signal on T2 weighted image (C) with diffuse enhancement after contrast infusion (D). Adjacent patella shows mild enhancement of the marrow and regional soft tissue edema. But no evidence of any cortical destruction is noted.

histopathologic result was metastatic papillary thyroid carcinoma (Fig. 3).

Discussion

When solid mass of patella is noted in patient with anterior knee pain, the differential diagnosis includes several primary bone tumors. Less than 1% of primary bone tumors arise at patella. Primary tumors of patella are mostly benign lesion such as chondroblastoma and giant

cell tumor. If the patient has history of cancer, bone metastasis must be suspected. Of course patellar metastasis is recognized as rare, mere cases have been reported. Example of primary site is lung, esophagus, colon, male breast, and so on.⁸⁾

MRI has been used most extensively for outlining a bone tumor. But, it may be hard to tell what kind of tumor is involved. In our case, MR imaging with low signal on T1 and high signal on T2 is not specific finding of benign or malignant lesion. But, marrow and regional

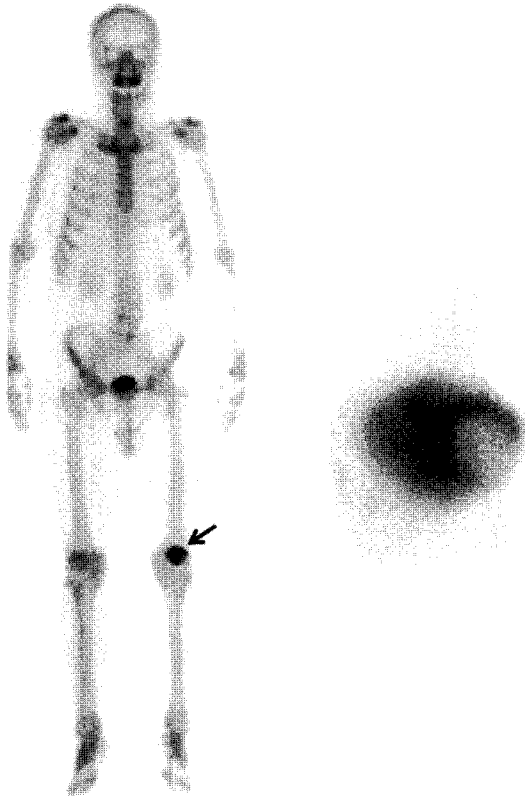


Figure 2. In the pinhole image of left knee and whole body bone scan image, an ovoid photon deficient area is noted in left portion of left patella. Left patella except this lesion shows diffusely increased activity.

soft tissue edemas are noted around solid mass; more likelihood is that the lesion is malignant.

Whole body bone scan can be useful in the differential diagnosis of bone tumor. Benign bone neoplasm demonstrates variable appearance on bone scan. Of the bone tumor, giant cell tumor shows intense hot uptake rather than photon defect. Bone metastatic lesions of most cancer show increased uptake. But, there are exceptional neoplasms with bone metastases demonstrating localized photon defect: neuroblastoma, renal cell carcinoma, thyroid carcinoma, and anaplastic tumors. In cancer patients, focal photon defects are due to metastatic lesion in more than 80% of cases.⁹⁾

The bone metastasis of papillary thyroid carcinoma is uncommon finding. Papillary carcinoma is characterized by lymphatic spread to local lymph nodes, whereas follicular carcinoma is characterized by hematogenous spread with metastases more often in the lungs and bones. In many reports, bone metastasis of papillary thyroid carcinoma has incidences ranging from 0.5~7%. The most common histologic type of bone metastasis is follicular thyroid carcinoma with incidences ranging from 7~28%.⁶⁾ The most common sites of bone metastasis are

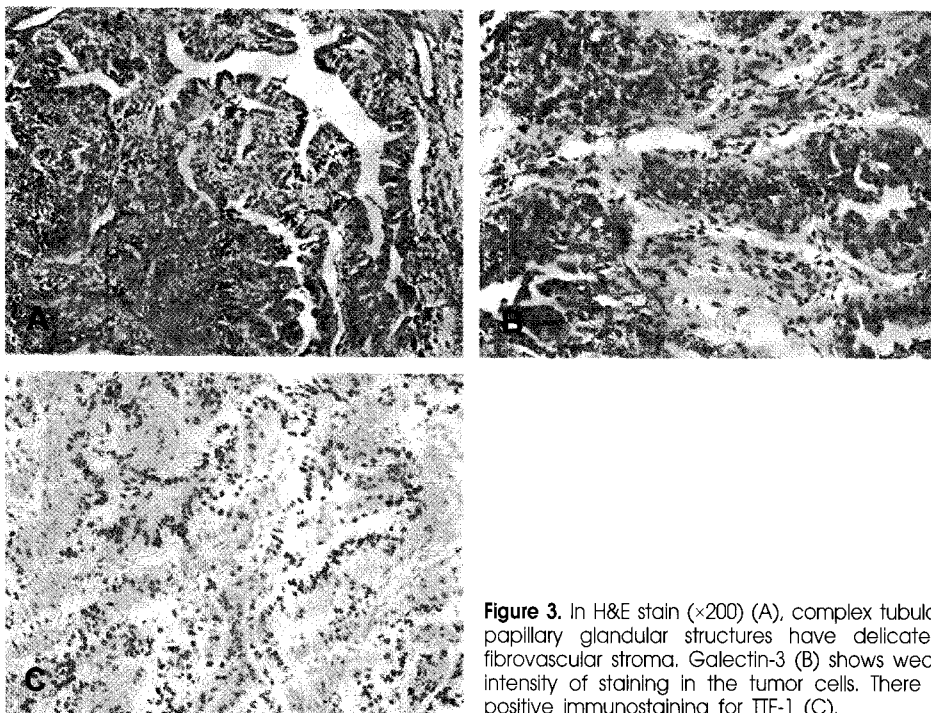


Figure 3. In H&E stain (×200) (A), complex tubulo-papillary glandular structures have delicate fibrovascular stroma. Galectin-3 (B) shows weak intensity of staining in the tumor cells. There is positive immunostaining for TTF-1 (C).

vertebrae, pelvis, ribs, and femur. In addition to metastases to sternum, skull and others were reported. Metastasis of thyroid carcinoma presents multiple lesions in above half (53%).³⁻⁵⁾ To our knowledge, patellar metastasis in papillary thyroid carcinoma has not been reported. Solitary patellar metastasis without other bone metastasis in thyroid carcinoma is rare findings. However, when radiologic abnormality is noted in papillary thyroid carcinoma patient with anterior knee pain, differential diagnosis of metastasis is necessary.

Reference

1. Schlumberger MJ. Papillary and follicular thyroid carcinoma. *N Engl J Med* 1998;338:297-306.
2. Fred A, Miton J. Essentials of Nuclear Medicine Imaging. 5th ed. Philadelphia. Saunders; 2006. p. 244-92.
3. Lawrence E, Lord ST, Leon Y, McIntyre PJ, Penix J, Grebenev D, et al. Tall cell papillary thyroid carcinoma metastatic to femur: evidence for thyroid hormone synthesis within the femur. *Am J Med Sci* 2001;322:103-8.
4. Pittas AG, Adler M, Fazzari M, Tickoo S, Rosai J, Larson SM, et al. Bone metastases from thyroid carcinoma: clinical characteristics and prognostic variables in one hundred forty-six patients. *Thyroid* 2000;10:261-8.
5. Eroglu A, Karaoglanoglu N, Bilen H, Gursan N. Follicular thyroid carcinoma: metastasis to the sternum, 13 years after total thyroidectomy. *Int J Clin Pract* 2006;60:1506-8.
6. Do MY, Rhee Y, Kim DJ, Kim CS, Nam KH, Ahn CW, et al. Clinical features of bone metastases resulting from thyroid cancer: a review of 28 patients over a 20-year period. *Endocr J* 2005;52:701-7.
7. Jemal A, Siegel R, Ward E, Murray T, Xu J, Thun MJ. Cancer statistics, 2007. *CA Cancer J Clin* 2007;57:43-66.
8. Kransdorf MJ, Moser RP, Jr., Vinh TN, Aoki J, Callaghan JJ. Primary tumors of the patella. A review of 42 cases. *Skeletal Radiol* 1989;18:365-71.
9. Fred A, Milton J. Skeletal system. In: Essentials of Nuclear Medicine Imaging: Saunders; 2006. p. 244-292.