Patellar Metastasis from a Lung Epidermoid Carcinoma

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Patellar metastases are very rare. There have been approximately 20 cases reported in the literature. We have also noted two other reports of patellar metastasis from lung carcinoma as the first manifestation of lung cancer in our literature review. We present a case of patellar metastasis as the first manifestation of lung epidermoid carcinoma in a patient who was a smoker for 33 years.

Key Words: Lung carcinoma, metastasis, patella, smoking

Patella tumors are uncommonly seen and metastatic bone tumors of the patella are extremely rare. Metastatic tumors of the patella from the breast, prostate, kidney, uterine cervix, lymphatic system, malignant melanoma, esophagus and lung adenocarcinoma are cited as case presentations (Ashby and Dappen 1976, Benedek 1965, Jaeger et al. 1992, Keeley 1973, Urvoy et al. 1993). In this case report, we present a case of patellar metastasis from lung epidermoid carcinoma.

CASE REPORT

A 55-year-old male farmer presented to a physician with left knee swelling and complaints of anterior knee pain in December, 1995. Aspiration of the left knee joint and intra-articular steroid injection were performed. The joint fluid was clear to inspection. The patient was seen by the same physician 3 weeks later and aspiration of the left knee joint was repeated. The aspired joint fluid was haemorrhagic and he was placed on nonsteroidal antiinflammatory treatment. When the symptoms persisted, the patient was referred to our orthopaedic surgery department.

Physical examination revealed left knee swelling, as well as positive patellar shock and grinding tests. There was no instability or meniscal tear signs on physical examination. Knee radiograms showed a radiolucent lesion in the superior half of the patella (Fig. 1). Computed tomography of the left patella revealed a 2.5 cm by 4 cm-sized expansive radiolucent lesion elevating the anterior cortex (Fig. 2). Tc⁹⁹m bone scintigraphy showed an increased uptake consistent with malignant neoplasms, but there was no other increased uptake site in the bone scintigraphy. Blood tests showed an elevated erythrocyte sedimentation rate of 56 mm/hour and an elevated acid phosphatase level of 9.9 U/L (Normal range=0 ~9 U/L). The other blood tests were normal.

We learned from the detailed history that the patient had smoked 20 cigarettes a day for 33 years. To that date, the patient had had no respiratory symptoms like cough, dyspnea or hemoptysis. On auscultation, the breathing sounds were diminished in the left hemithorax. Anteroposterior chest radio-
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Fig. 1. Left knee lateral radiogram showing radiolucent lesion in the superior half of the patella

Fig. 2. Computed tomography slide of the left knee showing anteriorly-expanded radiolucent lesion of the left patella with erosion of the anterior cortex

Fig. 3. Anteroposterior chest radiogram of the patient

gram revealed a high-density homogenous lesion in the upper and central part of the left lung, consistent with atelectasis (Fig. 3). Bronchoscopic examination was performed in the pulmonary diseases department on February 14, 1996. A white colored endobronchial growth with necrotic surface was seen 1.5 cm distal to the carina, obliterating the left main bronchus. Pathological examination of the biopsy specimen showed malignant cells, but it was not possible to do a histological classification of the tumor because of diffuse necrosis. However, endobronchial location, the presence of necrosis and malignant cells suggested the diagnosis of lung epidermoid carcinoma.

Gradually increasing knee symptoms was also restricting the patients daily activities. He underwent total patellectomy and a wide synovial resection procedure on February 26, 1996. Disruption of the anterior cortex by the tumor was observed in surgery. The surrounding bony and soft tissues were apparently intact after total patellectomy. Histopathological examination of the excision material revealed metastasis of the lung epidermoid carcinoma (Fig. 4). Surgical margins were free of tumor.

The primary lung tumor was inoperable. An appropriate chemotherapy + radiotherapy protocol was instituted with this histologic diagnosis. The patient was pain free in the second week after surgery. The left knee was kept in a cylindrical leg cast for 6 weeks and then a hinged knee brace was instituted. The patient returned to limited daily activities. He did not have any recurrent or other metastases on
follow-up. Despite the chemotherapy + radiotherapy, he died from pulmonary insufficiency 8 months after surgery.

**DISCUSSION**

Tumors and tumor-like lesions of the bone are commonly seen in the knee region. However, tumors of the patella are rare. Chondroblastoma was reported as the most common diagnosis among primary patellar tumors in the review of Kransdorf et al. (Kransdorf et al. 1989). According to Mercuri et al. the majority of patellar tumors are likely to be benign primary tumors; however the most common pathologic diagnosis was giant cell tumor in their series (Mercuri et al. 1991). Jaeger et al. in 1992, stated that there were 17 reported patellar metastases cases in the literature (Jaeger et al. 1992). In 1997, Ferguson et al. mentioned in their article that there were 20 reported cases of metastases to the patella (Ferguson et al. 1997). Benedek attributed the low incidence of metastatic patellar tumors to its minimal blood supply. According to his explanation, a few nutrient vessels from the collateral vessels of the knee would not give access to sufficient tumor emboli for metastatic lesions to develop (Benedek, 1965).

It is not uncommon to delay or skip the diagnosis of a patellar tumor due to its rarity. As in our case, the diagnosis could be made 2½ months after the onset of symptoms and the treatment of the metastatic and primary tumor was delayed. Jeager and Krugener, and Pazzaglia et al. reported their cases of solitary patellar metastasis as being the first sign of lung cancer (Jeager and Krugener 1991, Pazzaglia et al. 1989). It is common in adenocarcinomas of the lung to make their remote metastasis before pulmonary symptoms, since their pulmonary growth is peripheral. Central tumors of the lung like epidermoid carcinoma present their pulmonary symptoms earlier (Margolis, 1998). However, left knee symptoms from the metastasis were also the first manifestation of lung epidermoid cancer in our case.

Rheumatologic symptoms are frequently associated with pulmonary neoplasms. This is secondary to both hypertrophic osteoarthropathy and skeletal metastases. Left knee symptoms in our case were due to the patellar metastasis.

There are different treatment approaches to metastasis sites. Occasionally, the primary lung tumor could be small and relatively inaccessible to fiberoptic bronchoscopy and transthoracic needle
aspiration, but there might be radiographic or clinical evidence of distant metastasis. A direct approach to an accessible metastatic site then became a convenient means for establishing the diagnosis and stage with a single procedure (Margolis, 1998). In our case, the metastasis caused disability of the knee. The size of the lesion was more than 50% of the patella and the anterior cortex was not intact. We indicated total patellectomy and total synovial resection for both diagnostic and therapeutic purposes. While we were able to make a definitive histological diagnosis of the tumor, we were also able to improve the patient’s quality of life by eliminating severe pain and disability.

Patellar metastases are very rare, but other skeletal metastases are commonly seen. Nakano et al. surveyed for the primary tumor sites in 27 patients whose initial clinical manifestation was bone metastasis. They were able to identify the primary tumor site in 20 patients, and 9 of them had lung cancer (Nakano et al. 1993). The relation between smoking and lung cancer is well known. The smoking history of a patient may give a clue about the primary tumor site and thereby should be included in the survey for physicians dealing with metastatic bone lesions.

REFERENCES


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