Introduction

Solitary plasmacytoma of bone is a rare localized neoplasm that accounts for only 5% of malignant plasma cell tumors. Unlike multiple myeloma, solitary bone plasmacytoma does not include the presence of abnormal plasma cells throughout the bone marrow. Plasmatic cell infiltration is usually located in flat bones, including the vertebral column, pelvis, ribs, sternum, and skull, while a solitary lesion is rare. We present a case of a 71-year-old woman who was diagnosed with a solitary plasmacytoma of the bone located in the right third rib after surgical resection. A chest roentgenogram showed a solitary expanding lesion in the right third rib. Chest computed tomography (CT) revealed an osteolytic chest wall tumor. Fluorodeoxyglucose positron emission tomography and CT (PET-CT) showed no abnormal uptake in the whole body, except for the third rib lesion. The patient underwent complete en-bloc resection of the chest wall including ribs, muscle, and parietal pleura. The patient is asymptomatic without any recurrence after one and a half years of follow up.

Keywords: plasmacytoma, multiple myeloma, rib, surgical resection

Case Report

A 71-year-old woman visited our hospital with a complaint of right chest pain and mild dyspnea. A chest roentgenogram showed a solitary expanding lesion in the right third rib. Chest computed tomography (CT) revealed an osteolytic chest-wall tumor of 70 × 35 mm and a small amount of pleural effusion (Fig. 1). The radiologic features suggested a malignant process of metastatic or lymphoproliferative nature. Upper and lower gastrointestinal scopes showed no malignant lesion. Fluorodeoxyglucose positron emission tomography and CT (PET-CT) showed abnormal accumulation only in the right chest wall (Max SUV of 10.36), while no uptakes were found in other organs (Fig. 1). Cytological
examination revealed no malignant cells in pleural effusion. Peripheral blood examinations showed no abnormalities. Therefore, we decided to remove the rib lesion by surgical approach for the treatment and diagnosis of the tumor. At operation, a right thoracotomy incision was performed over the third rib. The tumor was resected with the surrounding second and fourth ribs with a safety margin of at least 3 cm. Adherent parietal pleura at the tumor site was also resected. No pleural dissemination was found. The cut surface of the tumor showed the medulla to be replaced by a pale tumor (Fig. 2). Histologic examination showed complete replacement of the medulla by a dense population of mildly atypical plasma cells. Immunohistochemical staining showed that the specimen is positive for CD79α and λ-chain but negative for κ-chain (Fig. 3). Immunoelectrophoresis revealed no M-protein in the serum or urine. These characteristics were consistent with a plasmacytoma. The postoperative course was uneventful. After one and a half years of follow-up, the patient remained relapse-free.

Discussion

Recommended diagnostic criteria for solitary plasmacytoma of bone that used on all sensitive techniques are shown as follows:2) (i) single area of bone destruction due to clonal plasma cells, (ii) normal marrow without clonal disease, (iii) normal skeletal survey, (iv) no anemia, hypercalcemia, or renal impairment attributable to myeloma, and (v) absent or low serum or urinary level of monoclonal protein and preserved levels of uninvolved immunoglobulins. Solitary plasmacytoma of bone is rare and occurs in 5% of patients with plasma cell neoplasms.1) Two thirds of patients were men, and their median age was approximately 55 years, about a decade younger than patients with multiple myeloma.3) The common symptom is pain due to bone destruction or palpitation of tumor, but some cases are asymptomatic.3)

Overall, patients with solitary plasmacytoma of bone had an indolent course of disease, with a median survival of 10.7 years and a 5-, 10-, and 20-year survival of 75%, 52%, and 37%, respectively.4) Soutar, et al. reported that
more than 75% of patients with apparent solitary bone plasmacytoma develop multiple myeloma, with a median time to progression of 2–4 years. Sabanathan, et al. showed that, of 17 solitary plasmacytoma treated by radical excision, 7 progressed to multiple myeloma within 2 years of surgery.

Solitary plasmacytoma of the bone is a highly radiosensitive disease, resulting in excellent local control in more than 80% of patients with radiation alone. However, according to the largest series in the literature as to radiation therapy, the survival rate was disappointing because of progression to multiple myeloma, although high rates of local control were obtained. The role of adjuvant chemotherapy in preventing progression to multiple myeloma still remains to be discussed. According to some previous reports, adjuvant chemotherapy did not affect the incidence of conversion, but could delay progression to multiple myeloma. Holland, et al. reported that tumor size, total serum protein levels and the presence of a monoclonal spike on serum electrophoresis might relate to the conversion to myeloma. In our case, the patient refused to receive chemotherapy or radiotherapy and remains relapse free after one and a half years of follow-up. Further investigations are required to prove the effectiveness of chemotherapy and/or radiation therapy to solitary plasmacytoma of the bone.

Disclosure Statement

Kouhei Tajima, Nobuyuki Uchida, Yoko Azuma, Toshiyuki Okada, Hajime Sasamoto, Hideaki Yokoo and Hiroyuki Kuwano have no relevant conflicts of interest or financial to declare.

References