

Synovial Metastasis Discovered During Total Knee Arthroplasty

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A 70-year-old female presented with worsening left knee pain and underwent a left total knee arthroplasty. During the procedure, the synovial tissue was different from the usual with brown and hard tissue. Frozen section diagnosis revealed “adenocarcinoma, metastatic” of bone and synovium. We report the case of a patient who presented a synovial metastasis has been discovered during total knee arthroplasty different from post total knee arthroplasty.

Key words: synovial metastasis, total knee arthroplasty

INTRODUCTION

Synovium remains as a rare site of metastasis to knee for solid tumors. The most common site of primary tumor which metastasize to knee was the lung, then the colon and rectum.¹ The traditional diagnostic workup for knee pain to differentiate osteoarthritis change from osteoarthritis change with metastasis is difficult.² We report the case of a patient who presented a synovial metastasis has been discovered during total knee arthroplasty different from post total knee arthroplasty.³

CASE REPORT

A 70-year-old female presented with left knee pain in May 2008. The initial plain radiographs had shown moderate osteoarthritis of the knee (Fig. 1). The patient received conservative treatment at first. In October 2010, the patient presented to outpatient department with worsening left knee pain and effusion. The pre-operative plain radiographs revealed



Fig. 1 Anteroposterior and lateral radiographs of the left knee showed moderate osteoarthritis.

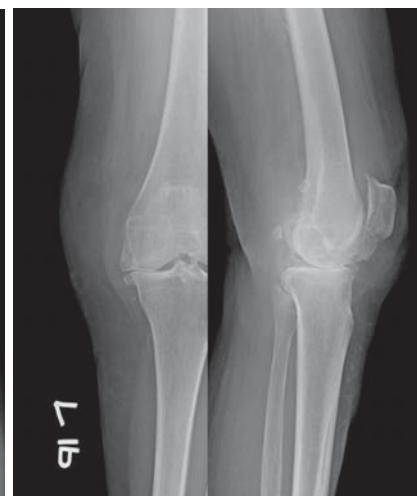


Fig. 2 Anteroposterior and lateral radiographs of the left knee before arthroplasty showed advanced osteoarthritis

advanced osteoarthritis with severe joint space narrowing and subchondral sclerosis in medial compartment of left knee (Fig. 2). Her medical history was hypertension with medication.

In December 2010, the patient underwent a left total knee arthroplasty with cemented posterior stabilized prosthesis (Zimmer NexGen LPS-Flex). A routine bone cut was performed first, but the following soft tissue release had bizarre finding. The synovial tissue was different from the usual with brown and hard tissue (Fig. 3). Frozen section diagnosis revealed “adenocarcinoma, metastatic” of bone and synovium. Owing to the procedure of previous bone cutting, we decided to complete the operation.

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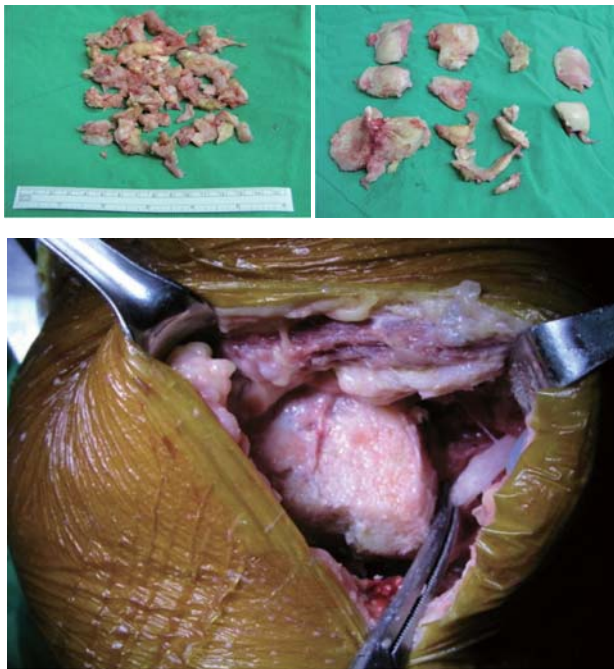


Fig. 3 The synovial tissue was brown and hard tissue with different from the usual tissue (left, right). The bone cuts and soft tissue after arthroplasty (low).

Post-operative workup of tumor marker showed very high elevation of CA-199 level (56685 U/ml; reference value, <35.0 U/ml). The other tumor marker including CA-125, CA-153, and CA-199 were within normal range, except CEA is slightly high. Whole body scan revealed increased MDP (methylene diphosphonate) uptake of bilateral knees (Fig. 4), but post-contrast enhanced CT scan of chest and upper abdomen revealed a mass lesion in S6 of liver, with adjacent intrahepatic duct dilatation (Fig. 5). Cholangiocarcinoma was favored.

DISCUSSION

The common metastatic carcinoma of bone neoplasms are breast, prostate, lung, renal cell and thyroid carcinoma. But, the incidence of synovial metastasis is relatively rare. Some articles propose the hypothesis of synovial metastases: direct spread from a periarticular bony metastasis or via the hematogenous route.^{4,5} The former can be considered as one of the common tumor metastatic pathway. However, hematogenous metastasis to proximal long bones (eg: proximal tibia) from gastrointestinal tumor can occur via Batson venous plexus.

The case is a case of peripheral type cholangiocarcinoma with distant metastasis to musculoskeletal system.

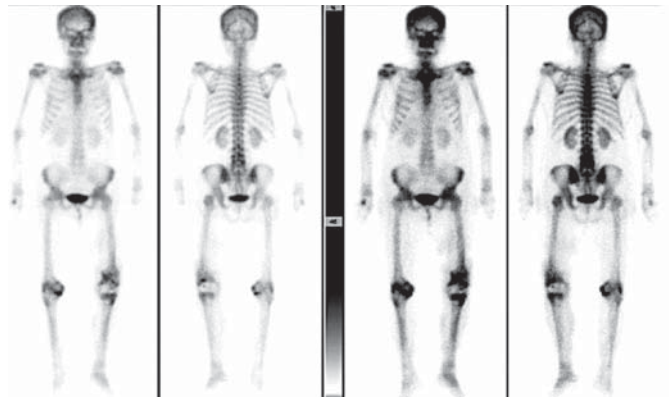


Fig. 4 Whole body bone scan: Increased MDP uptake of bilateral knees.

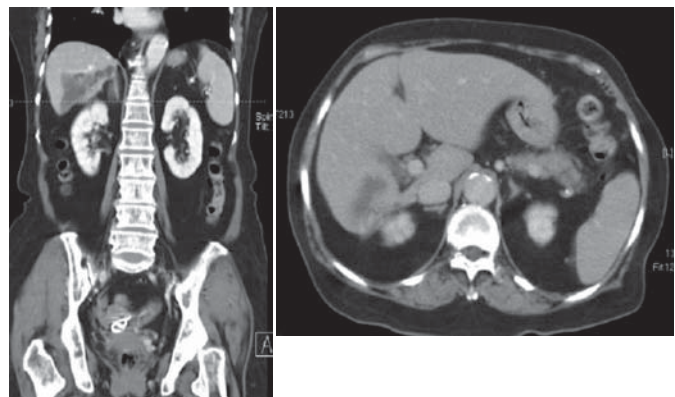


Fig. 5 Post-contrast enhanced CT scan: A mass lesion in S6 of liver with adjacent intrahepatic duct dilatation.

Cholangiocarcinoma is a biliary carcinoma that arises from the intra-(peripheral type), the hilum and extra-hepatic bile ducts depending on the site of origin. It frequently invades adjacent organs or metastasizes to other visceral organs such as the lungs, bones, adrenals, and brain.⁶ There is a higher prevalence of cholangiocarcinoma in Asia, and the incidence increases with age. The common clinical presentations are shown weight loss, anemia and fatigue.⁷ However, those non-specific presentations may be ignored. Unless those patients whom association with hepatolithiasis may frequently present with biliary tract infection with symptoms of fever and jaundice.⁸

Verity A. Currall *et al.*¹ described 39 well-documented synovial metastasis cases after total knee arthroplasty. Less than half of the cases (47%) were initially revealed normal plain radiographs. 16 of 39 patients (41%) presented no symptoms initially. Initial identification those

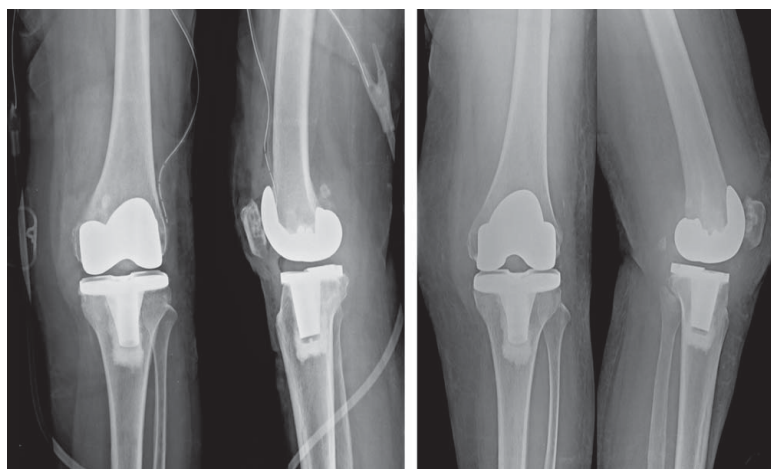


Fig. 6 The post-operative plain film showed good prosthetic position (left). One month follow-up, there was no loosening of prosthesis (right).

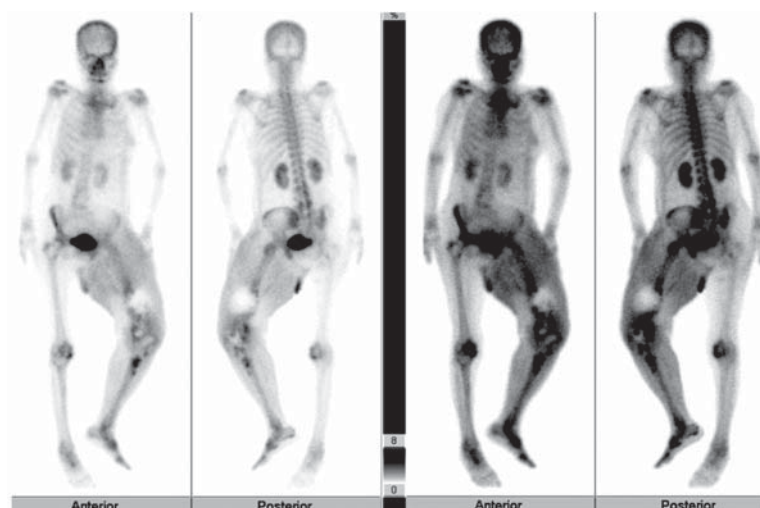


Fig. 7 Whole body bone scan: Cold defect in left distal femur was found, and left lower limb swelling with metastatic lesion was noted.

arthropathies indeed was difficult.

In light of the case of our patient, we believe that metastatic disease should be added to the list of potential causes of knee pain before total knee replacement. This diagnosis should especially be considered in a patient with a known malignant lesion.

Metastatic disease is the common destructive bone lesion in the older patient.

We report the case of a patient who presented a synovial metastasis has been discovered during total knee arthroplasty. During operation, the synovial soft tissue was brown with hardness. Frozen section was a good tool to early detection those lesion which existed tumor cells or not.

Although the technique of total knee arthroplasty is a popular surgery, the picture of abnormal destructive bone and unusual soft tissue lesions should keep in mind.

FOLLOW-UP:

The patient was transferred to gastrointestinal and oncologic specialist after surgery. Palliative radiotherapy was suggested, but she did not receive the treatment. After one-month follow-up, there was no loosening of prosthesis (Fig.6 right).

Unfortunately, the patient complained numbness and painful swelling over left lower extremity.

After one-year follow-up, whole body bone scan (Fig. 7) is performed at 3 hr after intravenous injection of 20 mCi Tc-99m-MDP, and cold defect in left distal femur was found. Metastatic lesion of left lower extremity was progressed. Finally, the patient received conservative treatment.

DISCLOSURE

All authors declare no competing financial interests.

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