



Case Report

Non-Hodgkin Lymphoma Mimics Infected Total Knee Arthroplasty 非何傑金氏淋巴瘤模仿全膝關節置換感染

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ABSTRACT

Lymphoma associated with total knee arthroplasty is a rare condition. We report a case of non-Hodgkin lymphoma mimicking an infected total knee arthroplasty. A 73-year-old woman who received left total knee replacement presented with fever and a discharging sinus over her left knee 12 weeks after surgery. The diagnosis of prosthetic joint infection was made and a two-stage revision arthroplasty planned. After implant removal and insertion of an antibiotic spacer in the first-stage operation, culture results of all intraoperative specimens were negative but the pathology report showed diffuse large B-cell lymphoma. She then received chemotherapy and a second-stage reconstruction operation. The wound healed uneventfully and she regained independent mobility.

中文摘要

與全膝關節置換相關的淋巴瘤是罕見病症。我們報告一宗非何傑金氏淋巴瘤模仿全膝關節置換感染的病例。一名73歲的女性患者在接受左膝全膝關節置換術12週後出現人工關節感染的病徵。臨床診斷為全膝關節置換感染，我們安排病人進行兩個階段全膝關節翻修置換術。我們為她進行第一階段清創手術後，膝關節組織樣本的病理報告顯示為淋巴瘤。在接受了化療及第二階段全膝關節翻修置換術後，她的傷口順利癒合並能夠獨立步行。

Introduction

Non-Hodgkin lymphoma is a cancer of the lymphatic system resulting from uncontrolled proliferation of lymphocytes. It typically presents with lymphadenopathy of the neck, arm, and groin. It might occasionally affect the skeletal system, giving rise to a palpable mass, bone pain, and pathological fracture. Lymphoma associated with total knee arthroplasty is rare and poses a diagnostic challenge to orthopaedic surgeons. A case of non-Hodgkin lymphoma mimicking infected total knee arthroplasty and a review of the literature are presented here.

Case Report

A 73-year-old woman presented with bilateral mechanical knee pain ongoing for 10 years. She enjoyed good health in the past. Her knee pain deteriorated progressively and she had become

wheelchair-bound for the previous 6 months. There was no history of trauma or septic arthritis. Plain radiographs showed tri-compartmental osteoarthritis of her knees without any bone lesion (Figure 1). Preoperative chest radiography and blood tests including complete blood count, erythrocyte sedimentation rate, C-reactive protein, serum alkaline phosphatase, and serum calcium were normal. Right total knee replacement was performed in June 2011 using a cemented implant (NexGen Complete Knee Solution Legacy Knee; Zimmer, Warsaw, IN, USA). A subsequent left total knee replacement was performed in November 2011 using the same implant. Both operations were uneventful. Upon follow-up in January 2012, she had good recovery from her operations and was able to walk with a frame independently for 30 minutes.

She developed fever and left knee pain in February 2012. She did not have night sweats, weight loss or fatigue. Physical examination revealed left knee effusion and a 1-cm discharging sinus at the distal wound edge. There was no enlarged lymph nodes or hepatosplenomegaly. Radiographs did not reveal any bone erosion or implant loosening (Figure 2). Blood tests showed an elevated white cell count ($1.39 \times 10^{10}/L$), erythrocyte

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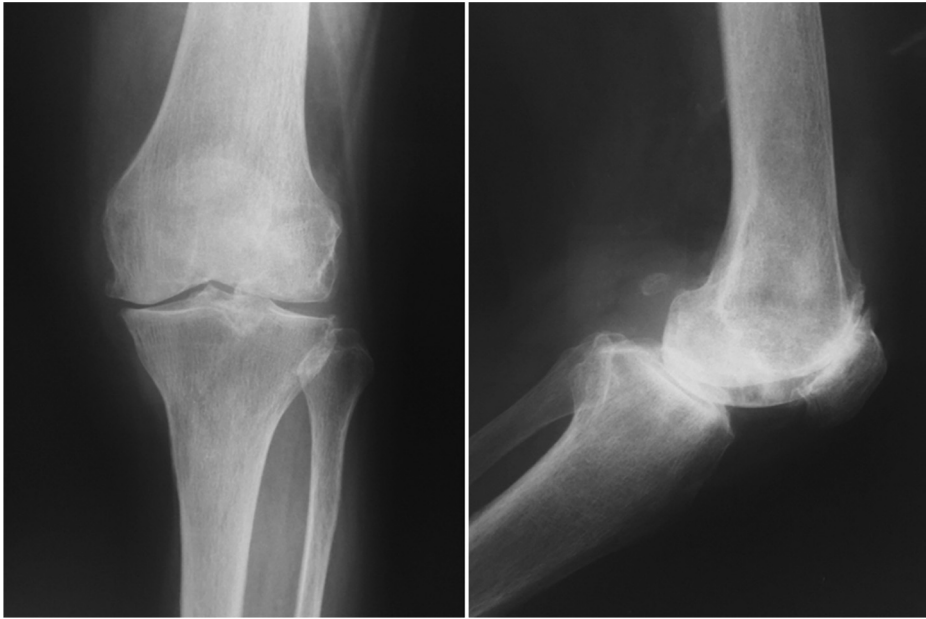


Figure 1. Plain radiograph of the patient's left knee on initial presentation, showing features of osteoarthritis without bone lesion.

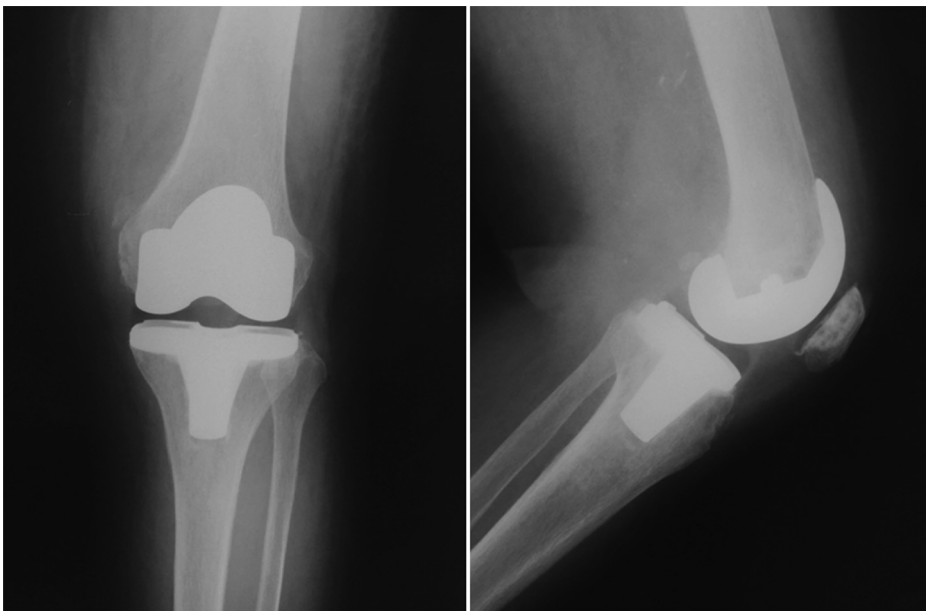


Figure 2. Plain radiograph of the patient's left knee when she presented with fever and a discharging sinus. The implant was well fixed without bone erosion.

sedimentation rate (97 mm/h), and C-reactive protein (167 mg/L). Serum calcium and alkaline phosphatase were normal. Bacterial culture of the left knee discharge was negative. Based on the Musculoskeletal Infection Society criteria, the presence of sinus tract communicating with the prosthesis was suggestive of infected knee prosthesis despite a negative culture result. Open debridement with removal of all the implants and insertion of a cement spacer was performed in February 2012. The synovium was inflamed with 10 mL of turbid fluid collected inside the joint. The knee implants were well fixed. There was no bone erosion or soft tissue mass. Intraoperative frozen sections of the synovium and femoral and tibial membranes showed chronic inflammatory cell infiltration with 5–10 polymorphs per high-power field. The bacterial and acid-fast bacilli cultures for the synovium and femoral and tibial membranes were negative. Formal

pathological reports of the femoral membrane revealed diffuse infiltration of large and small lymphoid cells (Figure 3). The lymphoid cells were positive for CD20 (B-cell marker) in immunohistochemical studies. Molecular studies using polymerase chain reaction showed a clonal proliferative pattern for immunoglobulin heavy chain *Fr2/JH* gene which was suggestive of B-cell lymphoma.

The diagnosis of diffuse large B-cell lymphoma was made and she was referred to a haematologist with a positron emission tomography/computed tomography scan showing hypermetabolic lesions at the diaphragm and the left knee. She was put on eight courses of chemotherapy consisting of rituximab, cyclophosphamide, etoposide, vincristine, and prednisone for 5 months. After discussion with the haematologist, a second-stage reconstruction operation was performed in May 2012 using stemmed implants

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