A Rare Case of ALK-negative Anaplastic T-Cell Lymphoma Arising in a Prosthetic Knee Joint

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INTRODUCTION

- Peripheral T-cell lymphoma (PTCL) is an uncommon form of lymphoma presents with more aggressive features, systemic symptoms.
- Prosthetic joint-associated Anaplastic large cell lymphoma is exceptionally rare.
- We present a unique case of prosthetic joint-associated ALK-negative ALCL in an elderly patient.

CASE PRESENTATION

- 75-year-old man with right total knee replacement 14 years ago, later revised for osteolysis, developed arthrofibrosis with quadriceps scarring limiting range of motion.
- He developed right knee redness, peeling, and swelling concerning for prosthetic joint infection 6 months after last revision.
- Initial labs remarkable for mild leukocytosis (table-1). Skin biopsy confirmed cellulitis. Synovial fluid culture negative.
- He was readmitted with persistent symptoms; labs revealed was evident for worsening inflammatory markers (table-1).
- CT showed suprapatellar effusion with anterior fluid collection suggesting abscess.
- Underwent total knee irrigation and debridement with polyethylene exchange, intraoperative cultures grew *Staphylococcus epidermidis*.
- Pathology revealed neoplastic cells strongly positive for CD30 with partial CD45 expression and positive CD2, CD4, CD5. Cells were negative for ALK1, confirming ALK-negative ALCL with Ki-67 proliferation index 70-80%. DUSP22 negative.
- Initial PET scan revealed metastatic disease including mediastinal and iliac lymphadenopathy, bilateral pulmonary nodules, and intense uptake around the right knee. Bone marrow biopsy was negative. (Figure-1)
- Following multidisciplinary discussion, Patient received 6 cycles of BVCHP (brentuximab vedotin, cyclophosphamide, doxorubicin, prednisone) was initiated per NCCN guidelines, interm PET scan (Figure-2) showed complete response. Patient is currently being evaluated for bone marrow transplant

Parameter	Reference range	Initial presentation	Readmission
WBC (×10⁹/L)	4.0–11.0	11.3	18.0
Hemoglobin (g/dL)	13.5–17.5	11.4	8.9
Platelets (×10⁹/L)	150–400	300	370
ESR (mm/h)	0–15	95	54
CRP (mg/dL)	<0.5	4.7	23.0
Synovial fluid culture	Negative	Negative	—
Skin biopsy	—	Consistent with cellulitis	—

Table-1: blood work and cultures

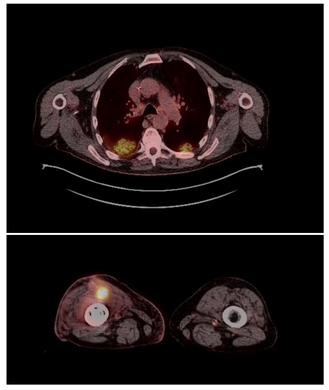

Figure-1: Initial PET scan

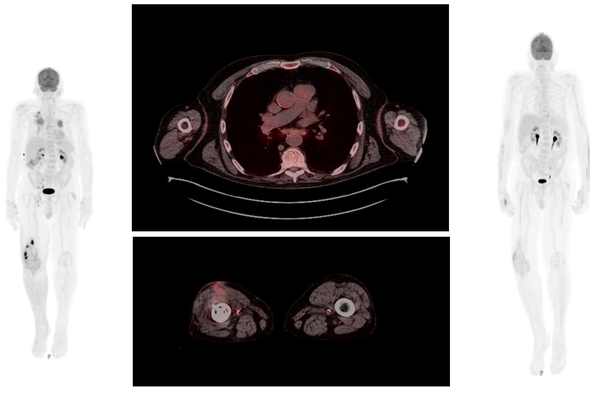

Figure-2: interm PET scan

EDUCATIONAL POINT

This unusual case of advanced ALK-negative ALCL involving a prosthetic knee joint highlights the importance of considering lymphoma in atypical presentations of prosthetic joint complications