Shafa Ortho J. 2019 May; 6(2):e90833. doi: 10.5812/soj.90833.

Published online 2019 May 12. **Case Report**

Extranodal Castleman Disease of Lower Extremities: A Case Report of a Rare Presentation

Sam H Sami [1], Milad Haji Agha Bozorgi [1,*] and Mehryar Khadem [1]

[1] Bone and Joint Reconstruction Research Center, Shafa Orthopedic Hospital, Iran University of Medical Science, Tehran, Iran

[*] *Corresponding author*: Bone and Joint Reconstruction Research Center, Shafa Orthopedic Hospital, Iran University of Medical Science, Tehran, Iran. Email: mld_bozorgi86@yahoo.com

Received 2019 February 19; **Accepted** 2019 April 28.

Abstract

Castleman disease (CD) is a rare condition of a benign proliferation of lymph nodes with currently unknown etiology. A 21-year-old male patient referred to the institute with asymptomatic, slowly enlarging, soft tissue mass located on the medial part of the femoral region of his left thigh. Magnetic resonance imaging detected a heterogeneous mass of about $132 \times 77 \times 68$ mm^3 in size, which was hypo-signal at T1 and hyper-signal at T2 sequences with central calcification and surrounded by hyperproliferative capillaries. The mass was completely excised through surgery and patient achieved complete remission. In pathologic evaluations, the specimen contained a fibrosclerotic lymph node with a partially distorted structure composed of small-sized mature lymphocytes in a hyper-vascularized stroma without the presence of neoplasia and malignant cells. Radiologic and histopathologic findings were suggestive of CD. The patient underwent surgery for excision of tumor and achieved complete remission without any complications.

Keywords: Castleman Disease, Extranodal Castleman, Femoral Mass, Benign Lymphadenopathy

1. Introduction

The Castleman disease (CD) is a rare condition defined as benign proliferation or hyperplasia of the angiofollicular lymph nodes. The etiology is not discovered yet, however, this disease is reported more in patients with HIV infection. It can potentially affect patients of various age; from adolescence to seventh decade (1-3).

CD was first described in 1950s by Benjamin Castleman as a benign proliferation of mediastinal lymph nodes in 13 cases (4).

CD is histologically classified into four subtypes including hyaline-vascular type (80% - 90% of cases), the plasma cell type (10% - 20%), plasmablastic type, and mixed type; the last two rarely appear (1, 4).

This phenomenon is also classified based on the clinical presentation; it may involve localized, or unicentric Castleman disease (UCD), disseminated, or multicentric lymphoid tissue. UCD only affects a single group of lymph nodes, whereas MCD affects more than one group of lymph nodes at any location. CD in patients with HIV usually involves multiple organs and similar to other cases of MCD presents with various infections, periods of fever of unknown origin, peripheral lymphadenopathy, significant weight loss, hepatosplenomegaly, fatigue, weakness, and night sweat. In these instances, laboratory studies indicate anemia and hypergammaglobulinemia (1, 4).

The most common involved site is mediastinal lymphoid tissue (about 70% of reported cases) followed by neck, axilla, pelvis, and retroperitoneum. Few articles reported extranodal involvement of CD in extremities and intramuscular tissue (2, 3, 5).

To make treatment decision, it is critical to distinguish between UCD and MCD; in addition, otherlymphoproliferative conditions that might be malignant should be thoroughly investigated. For instance, mediastinal masses are erroneously diagnosed as thymoma. Most of the time, asymptomatic cases (especially the ones with localized hyaline-vascular type) are randomly diagnosed during routine imaging studies. However, definitive diagnosis is not possible, unless after a postoperative pathologic evaluation of cold biopsy. Treatment options can vary from surgical removal of the prominent lymph node (for UCDs or hyaline types) to the aggressive multimodal chemotherapy (3, 4).

The current study aimed at describing the radiographic and clinicopathological features of a very rare case of UCD involving lower extremities and its management.

2. Case Presentation

A 21-year-old male patient was referred with an eight-year history of a slowly enlarging soft tissue mass located at the medial part of femoral region of his left thigh shown in Figure 1. He and his family had uneventful medical history for malignancies. He was neither smoker, nor diabetic and normotensive.

The mass progressively enlarged in last three years. He had no complaint of erythema, tenderness, fever, or weight loss.

At physical exam, systemic examination of his heart, lungs, and abdomen detected no pathologies. The mass was sharply demarcated, soft, mobile, and not painful.

All laboratory data were in normal ranges; except for erythrocyte sedimentation rate (ESR), which varied around upper normal limit at serial laboratory tests. No abnormality was observed in chest X-ray.

Radiographies revealed huge mass in medial compartment of the left thigh with small areas of calcification at the center shown in Figure 2.

Magnetic resonance imaging (MRI) demonstrated a heterogeneous mass about 132 × 77 × 68 mm^3 in size, which was hypo-signal at T1 and hyper-signal at T2 sequences in the medial of thigh, which could be due to the mesenchymal tumor shown in Figure 3. Femoral bone showed normal bone marrow signal. There were also tortuous vessels surrounding the mass and some tiny septations inside. Also, one prominent lymph node was detected in the left inguinal region.

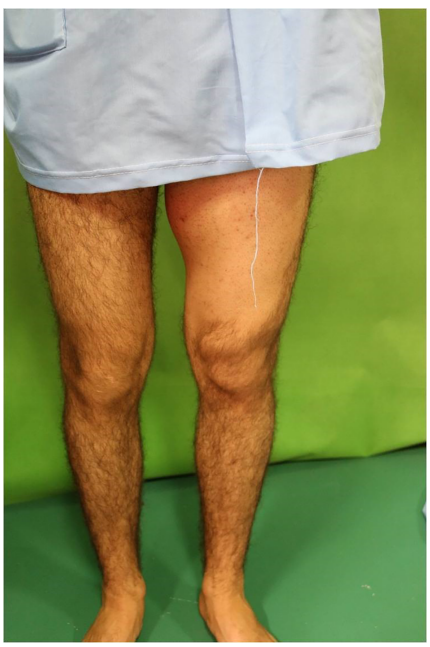

Figure 1. A huge soft tissue mass at medial compartment of left thigh

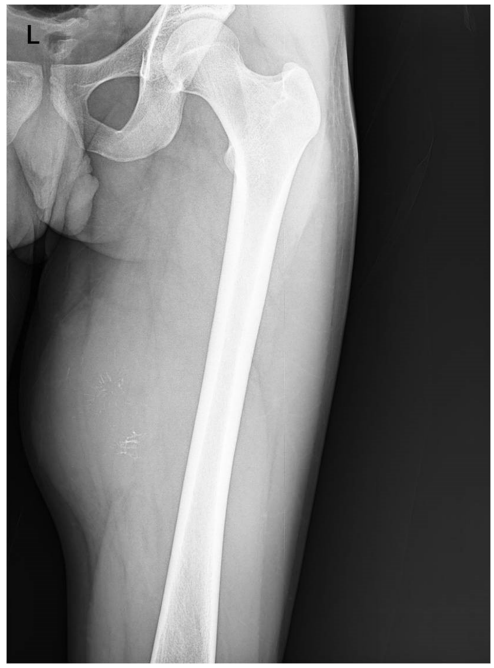

Figure 2. A huge soft tissue mass at medial compartment of left thigh with central calcification

Based on clinical and radiographic findings, patients were admitted with the first impression on soft tissue sarcoma (such as liposarchoma or synovial sarcoma), malignant peripheral nerve sheath tumors (MPNST), or extraskeletal chondrosarchoma.

At first, core needle biopsy was performed and lymphoid tissue with follicular hyperplasia and no evidence of malignancy was reported. Then he underwent incisional biopsy duo to the strong suspicion for sarcomas through a 3-cm incision medial to mass. After the biopsy, patient had massive bleeding, since the mass was surrounded by proliferated capillaries. Similarly, the pathology result was in favor of reactive lymphadenopathy.

The expert musculoskeletal pathologist report of specimen was as follows: “macroscopically specimen consists of multiple pieces of firm and rubbery tissue. Microscopically speaking, the section that contained fibrosclerotic lymph node with partially distorted structure composed of small sized mature lymphocytes in a hyper-vascularized stroma. The remained follicles revealed active germinal centers. Histopathologic features approved the diagnosis of reactive lymph node without the presence of neoplasia and malignant cells. Some histiocytic and plasma cells were detected”.

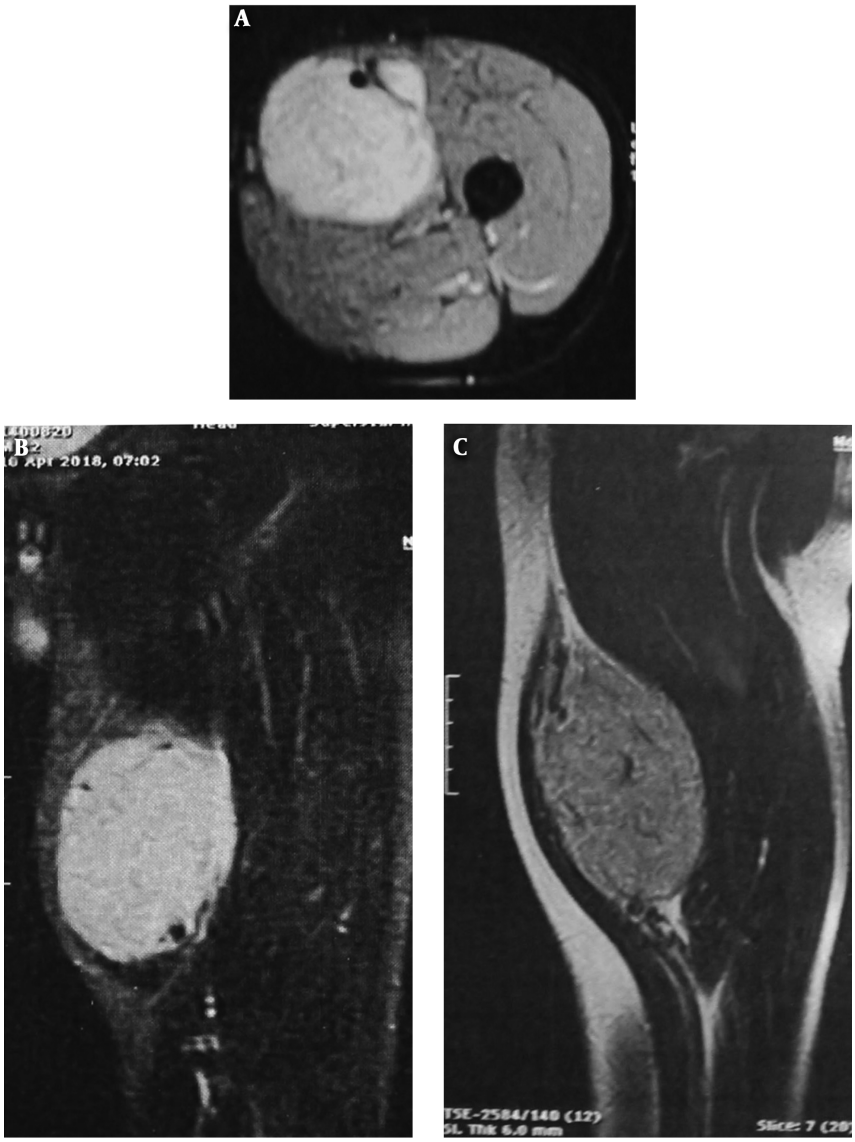

Figure 3. A, axial T2; B, sagittal T1; C, sagittal T2

Two weeks after open biopsy, patient underwent wide mass resection (with a 2-cm safe margin around the tumor bed) with femoral artery and vein exploration shown in Figure 4.

The mass and its capsule were sent for further evaluations. The mass had creamy-brown rubbery tissue with 20 cm adhesion to femoral vein in its length. During operation, the adhesion with vein that was gently detached to a 3.5-cm part of vastus medialis muscle had to be resected with the mass.

Histopathologic section showed multiple hyperproliferated fibrosclerotic lymph nodes composed of large follicles. With marked vascular proliferation and hyalinization containing small to medium sized lymphocytes, plasma cell, scattered polymorphonuclear neutrophils, and leukocytes in the interfollicular spaces with numerous post-capillary venules are shown in Figure 5.

All findings were in favor of the unicentric hyaline-vascular type CD located at a rare location.

Postoperatively, he was admitted to the intensive care unit for two days. Due to massive bleeding, secondary to injury to the surrounding proliferated capillaries, he received four units of packed red blood cells and was under direct observation for 48 hours after the surgery. Leg

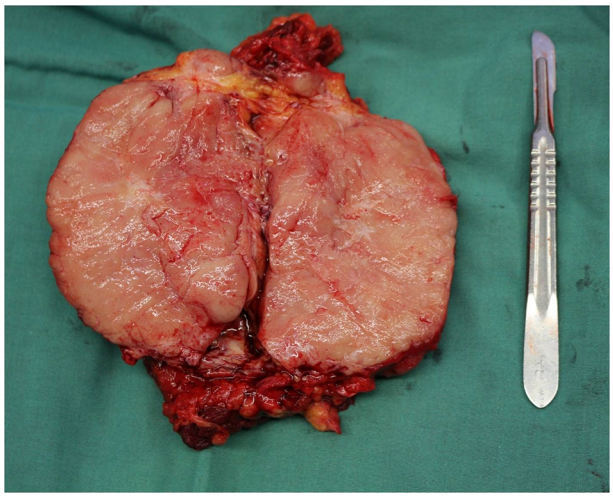

Figure 4. Macroscopic appearance of the mass after surgical excision

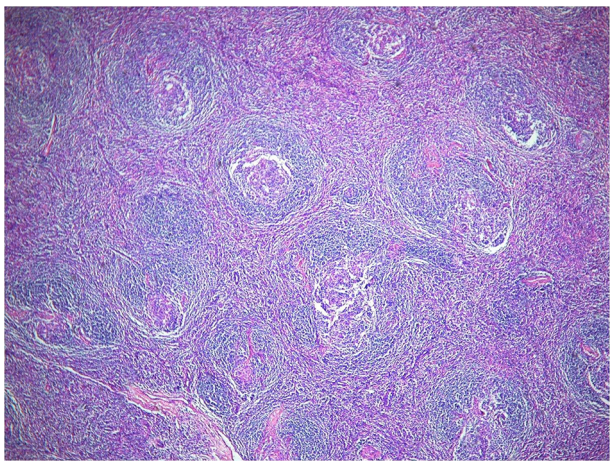

Figure 5. Pathological study of incised specimen

was elevated at rest to avoid swelling. One week after the surgery, he was allowed to do daily physical activities and bear weight as far as he could tolerate. He was discharged in good health, with the prescription of subcutaneous enoxaparin ampules, pantoprazole capsules, and acetaminophen tablets. After a 10-months follow-up, he did not experience any complication or recurrence.

3. Discussion

Extranodal CD is a rare condition, especially in young population. Although it is a well-recognized entity, it is uncommonly observed in the extremities (3).

The first case of CD was referred with multiple mediastinal masses with hyperplasia of the follicular lymph nodes and hyperplasia of the endothelium of surrounding capillaries. All other 12 cases only had mediastinal nodes involvement. Later, Gaba et al. reported a case of multicentric involvement at retroperitoneum and axilla with the same pathologic finding as CD cases (6).

Based on the review of the articles, there were only nine cases of CD of the extremities. All others, similar to the current patient, were of the hyaline vascular type (2), eight of all were female.

The reported cases suggested that this disease was more prevalent among young individuals. Seven of the eight reported cases aged 15 - 37 years, the remaining one reported by Eward et al., was 76 at the time of diagnosis (2).

The current study reported a 21-year-old male patient referred to the institute with slowly enlarging mass at medial compartment of proximal of thigh without associated neoplastic, autoimmune, or infectious diseases. He noted no history of fever of unknown origin or night sweating. He did not experience any other significant systemic features. At physical examination a huge, soft, and mobile mass was palpated. Routine laboratory data indicated mild elevated ESR, but not hypergammaglobulinemia and anemia. Radiographies and MRI reported a huge isolated soft tissue mass.

Differential diagnosis of CD includes vascular tumors, soft tissue sarcoma (i e, liposarchoma or synovial sarcoma), lymphoma, MPNST, extra-skeletal chondrosarchoma, and metastasis (7).

The first impression of the current study was soft tissue sarcoma; however histiopathological findings beside radiologic characteristics were in favor of hyaline-vascular type CD.

Schaefer et al. reported a case of CD with lymph node involvement along the femoral neurovascular bundle. Similar to the current case, their patient did not show accompanying sign or symptom. MRI showed a homogeneous hypersignal lesion of 9.3 cm length, exactly below the inguinal ligament. Pathology report of his excised tumor comprised lymphoid tissue with numerous germinal centers with central fibrosis, onion-skinning, and rich interfollicular vascularization that was suggestive of lymphoid tissue (3).

Later, Eward et al. reported a case of CD of left forearm, which appeared at advanced age. Unlike the current case, the mass was painful, but the pain stopped after few months. Comparable to the current case, their radiologic findings detected a soft tissue mass with central calcification and high signal intensity on T1 (2).

Because of very low incidence, most cases of CD are missed and proper preoperative diagnosis is challenging.

The diagnosis is only confirmed by pathologic evaluations, after excluding similar lymphoproliferative malignant disorder.

Among best guides for diagnosis, central calcification, contrast enhancement in MRI, and proper tissue sampling are noteworthy.

3.1. Conclusions

CD rarely involves extremities and should be considered as a lymphoproliferative disorder. Some characteristics can distinguish it from large soft tissue sarcomas. It means that in case of a huge, slow-growing soft tissue mass, with no tenderness but central calcification on X-ray and well margin on MRI, and a biopsy confirming lymphoid proliferation, this entity should keep in mind. UCD of extremities is a benign condition can be treated with surgical excision without further risk of recurrence.

Footnotes

Conflict of Interests: Authors declared no conflict of interests.

Funding Support: There was no financial support for the current study.

Patient Consent: It is not declared by the author.

References

1. Gomez-Ramirez J, Posada M, Sanchez-Urdazpal L, Martin-Perez E, Del Campo L, Garcia I, et al. Castleman's disease: A case report of the unicentric type. *Case Rep Surg*. 2012;**2012**:175272. doi: 10.1155/2012/175272. [PubMed: 22991681]. [PubMed Central: PMC3443986].
2. Eward WC, DeWitt SB, Brigman BE, Kontogeorgakos V, Lagoo AS. Extranodal Castleman disease of the extremities: A case report and review of the literature. *Skeletal Radiol*. 2014;**43**(11):1627–31. doi: 10.1007/s00256-014-1945-z. [PubMed: 24970669].
3. Schaefer IM, Gunnel H, Schweyer S, Korenkov M. Unicentric castleman's disease located in the lower extremity: A case report. *BMC Cancer*. 2011;**11**:352. doi: 10.1186/1471-2407-11-352. [PubMed: 21838880]. [PubMed Central: PMC3171385].
4. Izuchukwu IS, Tourbaf K, Mahoney MC. An unusual presentation of Castleman's disease: A case report. *BMC Infect Dis*. 2003;**3**:20. doi: 10.1186/1471-2334-3-20. [PubMed: 12969507]. [PubMed Central: PMC212557].
5. Hakozaki M, Tajino T, Yamada H, Kikuchi S, Hashimoto Y, Konno S. Intramuscular Castleman's disease of the deltoid: A case report and review of the literature. *Skeletal Radiol*. 2010;**39**(7):715–9. doi: 10.1007/s00256-010-0895-3. [PubMed: 20221596].
6. Gaba AR, Stein RS, Sweet DL, Variakojis D. Multicentric giant lymph node hyperplasia. *Am J Clin Pathol*. 1978;**69**(1):86–90. doi: 10.1093/ajcp/69.1.86. [PubMed: 619617].
7. Patwary I, Hossain A, Rahman M, Chowdhury AI, Rahman K, Kabir R. Castleman's disease- a case report. *Bangabandhu Sheikh Mujib Med Univ J*. 2012;**5**(1). doi: 10.3329/bsmmuj.v5i1.11031.