

Kimura's Disease in the Upper Extremity – A Case Report –

Misun Choe, M.D., Hye Ra Jung, M.D., Jung Sook Ha¹, M.D., Sung Moon Lee², M.D.,
Kwang Soon Song³, M.D.

*Departments of Pathology, Laboratory Medicine¹, Radiology² and Orthopedic Surgery³,
Keimyung University School of Medicine, Daegu, Korea*

Abstract

Kimura's disease is an uncommon chronic inflammatory disorder involving subcutaneous tissue, predominantly in the head and neck region. It frequently associated with regional lymphadenopathy or salivary gland involvement. Occurrence in extremities has been infrequently reported and the involvement of peripheral nerve bundle has been very rarely documented. We report a case of Kimura's disease in arm, involving peripheral nerve in 7-years-old boy. The pathogenesis of Kimura's disease, especially relationship with nerve involvement is poorly understood. With more cases in the future, our understanding of this disorder would be increased. It is noteworthy to clinician as well as pathologist and radiologist that Kimura's disease may involve peripheral nerve, giving an impression of malignant neoplasm or difficulties in surgical resection.

Key Words : Arm, Kimura's disease, nerve

Introduction

Kimura's disease is a chronic inflammatory disorder of unknown etiology, preferentially affecting Asian. Young male is predominantly affected. It usually presents as a deep, subcutaneous mass in the head and neck region. It is frequently associated with

regional lymphadenopathy or salivary gland involvement, particularly parotid gland [1]. Histologically, it is characterized by hyperplastic lymphoid tissue with well-developed lymphoid follicles, dense infiltrates of eosinophils, proliferation of small blood vessels and variable degrees of fibrosis. It needs to be differentiated from angiolymphoid

hyperplasia with eosinophilia (ALHE). Involvement of extremities has been infrequently reported and the encasement of peripheral nerve bundle has been very rarely documented. We report a case of Kimura's disease in arm, involving peripheral nerve in 7-year-old boy.

Case Report

A 7-year-old boy was referred to orthopedic surgery department due to mass of left arm. He had been previously healthy. Duration of the mass was not clearly defined. On physical examination, the mass was located at the medial side of left elbow. It was movable and non-tender. Overlying skin was unremarkable. Sensation and motor function of left arm were within normal range. Laboratory tests revealed peripheral eosinophilia of 29.8% (normal ranges: 0~7%). The serum IgE level was not checked. The ultrasonogram of left arm revealed an ill-defined, lobulating solid mass involving the deep soft tissue layer. The fat suppressed T2-weighted magnetic resonance (MR) image showed poorly marginated, homogeneous high signal intensity mass located in subcutaneous fat layer of medial epitrochlear region (Fig. 1). After intravenous gadolinium enhancement, the mass was enhanced strongly and homogeneously. There were perilesional edema and inflammatory change. Needle biopsy for the mass was performed and the diagnosis of Kimura's disease was made. On follow-up of 1 and 1/2 years, the mass showed no change in size and nature. Surgical excision of the mass was performed. On gross examination, the mass

measured 7.5x3.0x2.7 cm and was poorly demarcated. The cut surface of the mass was solid, slightly nodular and pale pink to tan. No necrosis or hemorrhage was observed (Fig. 2). On microscopic examination, the mass was composed of numerous lymphoid follicles of variable size with germinal centers and intervening inflammatory cells infiltration. It is associated with proliferation of blood vessels. Focal fibrosis was also observed. The intervening inflammatory cells are mostly eosinophils and occasional lymphocytes and plasma cells (Fig. 3&4). Scattered within mass are fascicles of nerve bundles with perineurium. 10 months after resection of the mass, the patient is well without evidence of recurrence.

Discussion

Kimura's disease usually presents in head and neck, predominantly being periauricular. Occasionally, oral cavity or orbits are involved. Sites other than head and neck region have been infrequently reported, including extremities, buttock, groin, axilla and trunk. The present case was located at the subcutaneous fat layer of epitrochlear lesion of left elbow. It is interesting finding that the most cases of Kimura's disease in upper extremity occur in epitrochlear area [2–5]. It may be associated with anatomic relationship, especially with epitrochlear lymph node.

Choi *et al.* reported that Kimura's disease in upper extremity usually displaced the neurovascular bundles on radiologic study [6]. However, there were several previous case reports describing the involvement of

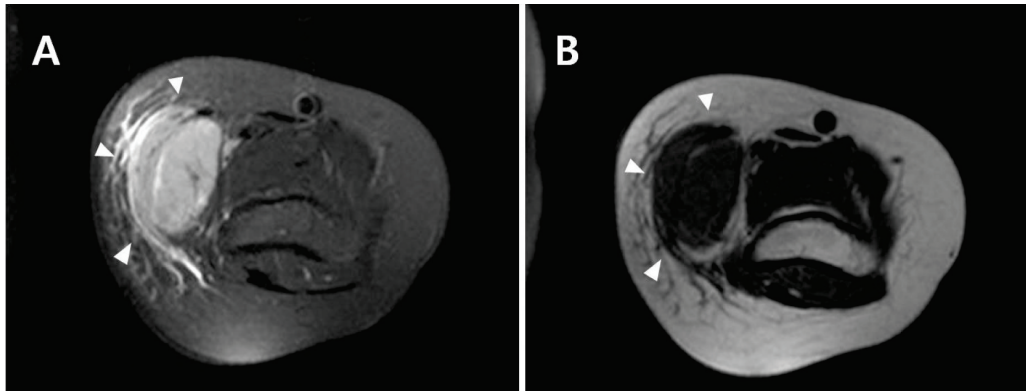


Fig. 1. A. Transverse fat suppressed T2-weighted MR image shows a poorly defined mass with homogeneous high signal intensity located in medial epitrochlear area of left upper arm. B. Transverse T1-weighted MR image shows the mass with isosignal intensity compared to the muscle.

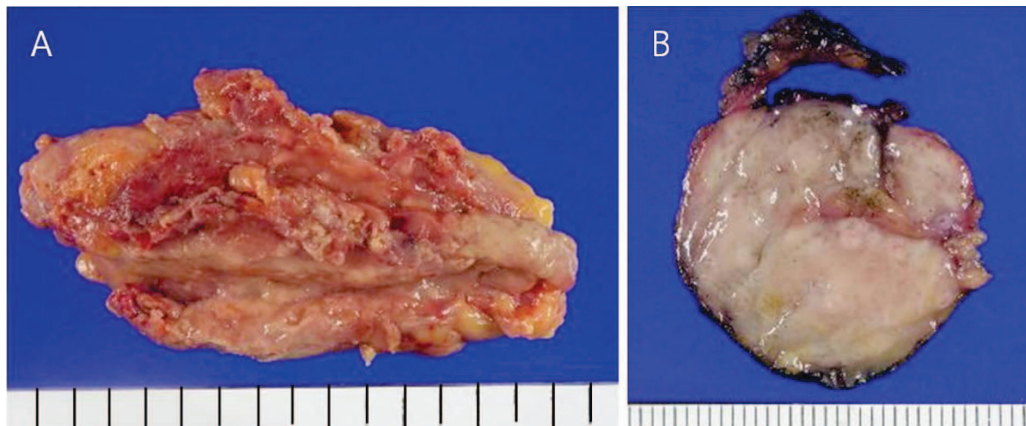


Fig. 2. A. Gross photograph shows a poorly demarcated mass (7.5 x 3.0 x 2.7 cm) with surrounding fatty tissue. B. The cut surface of the mass is solid, pale pink and slightly nodular with scattered vascular structure within mass.

major nerve bundle in upper extremity [4, 7]. Lee *et al.* reported a case of Kimura's disease with involvement of median nerve, occurring in 21-year-old Chinese girl [7]. In Korean, Cho *et al.* reported a case of Kimura's disease in upper extremity, encasing the medial cutaneous nerve. Involvement of nerve has been documented in parotid gland as well [8]. In this case, components of Kimura's disease were surrounding the individual fascicles of peripheral nerve without infiltration into perineurium. Whether the nerve involvement is incidental finding or related to the

pathogenesis is uncertain. More cases with histologic examination are needed for clarification. Of importance, the clinicians as well as pathologists or radiologists need to include Kimura's disease in the differential diagnoses of soft mass involving nerve.

Histologically, Kimura's disease has inflammatory infiltrate, especially eosinophils and lymphoid follicular hyperplasia, arborizing vascular proliferation of the postcapillary venule and fibrocollagenous tissue. Until recently, there was considerable confusion between Kimura's disease and ALHE due to

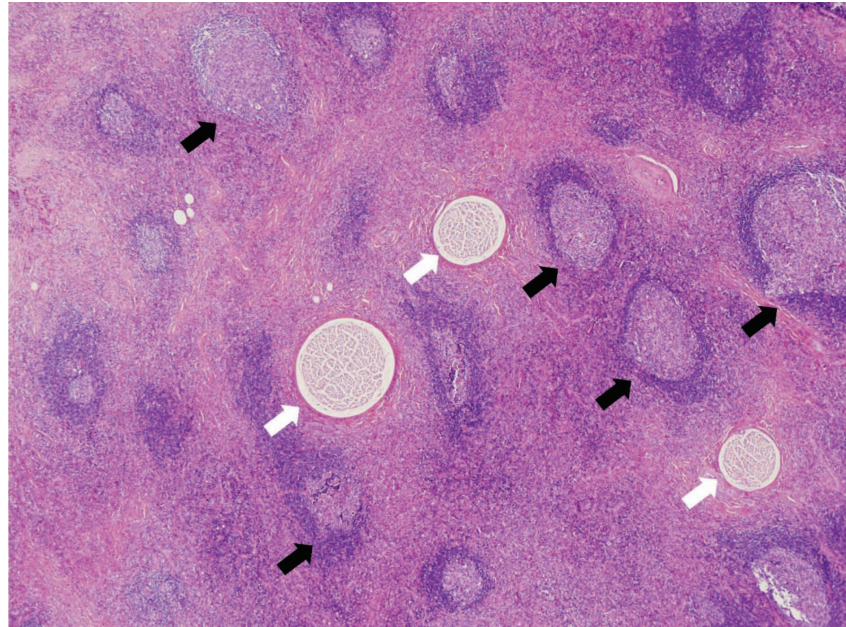


Fig. 3. The low magnification field on microscopic examination shows hyperplastic lymphoid follicles (black solid arrow) with scattered nerve fascicles (white arrow) (H&E, x 40).

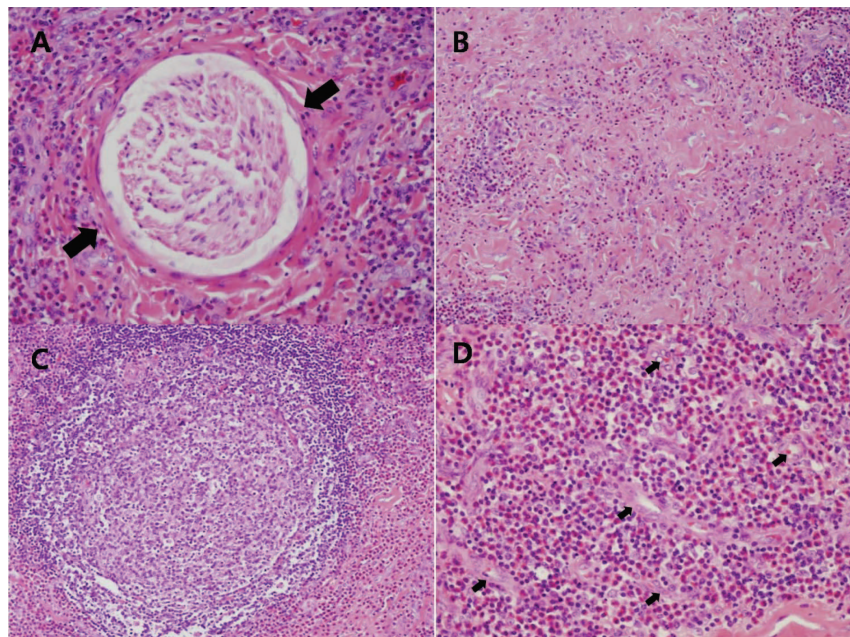


Fig. 4. A. There is a nerve fascicle (solid black arrow) surrounded by Kimura's disease (H&E, x 400). B. The mass shows focal fibrosis (H&E, x 200). C. The lymphoid follicle shows mantle zone and folliculolysis (H&E, x 200). D. The intervening stroma between lymphoid follicles shows proliferation of blood vessels (solid black arrow) and dense infiltration of eosinophils (H&E, x 400).

histologic similarity. Contrast to the Kimura's disease, ALHE involves more superficial skin lesion, forming clusters of papule and is characterized by vascular proliferation with hypertrophic endothelial cells protruding into lumen. The lymphadenopathy is generally not associated with ALHE. The present case showed typical features of Kimura's disease (Fig. 4).

Characteristically, peripheral blood eosinophilia and elevated serum levels of immunoglobulin (Ig) E are found in Kimura's disease patients. In our patient, laboratory studies revealed peripheral eosinophilia of 29.8% (normal range: 0~7%). Nephrotic syndrome or proteinuria may also occur in a certain number of cases [9]. There was no functional impairment of kidney in the present case.

Kimura's disease is benign but occasionally recurs. During follow-up of one and half year, the size of the present mass did not change and after operation, no recurrence was observed. The pathogenesis is still unknown. Infection, allergy, autoimmune reaction with aberrant immunologic reaction have been suggested [10]. Increased eosinophils, raised IgE amounts, increased T helper 2 (T_{H2}) cytokine profile of T lymphocytes and association with nephrotic syndrome suggest abnormal T-cell immunologic reaction [9,11]. The role of known infectious agent such as Epstein-Barr virus (EBV) has been debated and generally excluded [12]. Studies for clonality revealed polyclonality, supporting the reactive nature [10]. However, several cases of monoclonality of Kimura's disease have been reported [13,14]. In addition, there have been cases of lymphomas associated with Kimura's disease [15,16]. The inter-

pretations regarding these observations may be as follows: It may be accidental; Kimura's disease may be heterogeneous entity; A presumptive immunologic stimulation for prolonged duration may lead originally reactive Kimura's disease to clonal proliferation [14].

The treatment of choice is surgical excision. Other treatment options are radiation, high-dose intralesional steroid, and vinblastine. Some investigators have reported satisfactory results with cyclosporine, pentoxifylline, antiallergic drugs, all-trans-retinoic acid or combined treatment [17].

The pathogenesis of Kimura's disease, especially relationship with nerve involvement is still poorly understood. With more cases in the future, our understanding of this disorder would be increased. It is noteworthy to clinician as well as pathologist and radiologist that Kimura's disease may involve peripheral nerve, giving an impression of malignant neoplasm or difficulties in surgical resection.

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