Kimura’s disease is a rare benign lymphoproliferative disorder that occurs mainly in Asian male patients. Kimura’s disease most commonly presents as swelling of a major salivary gland and regional lymphadenopathy in the head and neck region. Uncommon sites of involvement include the upper extremities, axilla, popliteal area and groin [1, 2]. The imaging findings of Kimura’s disease involving the head and neck region are well documented [3-8]. To the best of our knowledge, a report of Kimura’s disease involving the groin in the English language has not been reported. We report here a case of Kimura’s disease in the groin with MR imaging findings and histopathological correlations.

Case Report

A 36-year-old man presented with a complaint of a slowly enlarging palpable mass during a period of four years in the groin and accompanying itchiness. The patient had no underlying diseases such as a malignancy or infection. A physical examination revealed the presence of a soft and non-tender mass in the right groin without any skin color change. Blood tests determined a level of 12.6% hypereosinophilia. The serum immunoglobulin E level was not determined.

Ultrasonography that had been performed three years...
prior, showed multiple enlarged lymph nodes with an echogenic hilus and hypoechoic cortex, which was considered as benign reactive lymphadenopathy. MR imaging (MRI) was performed at admission using a 1.5 Tesla scanner with the following protocols: spin-echo T1-weighted (TR/TE, 500/7), fast spin-echo T2-weighted (5250/100) and gadolinium-enhanced T1-weighted images with/without fat-suppression. MR images of the right thigh showed the presence of a 5 cm sized subcutaneous mass and discrete nodules with isointensity or slightly higher signal intensity than that of muscle on T1-weighted images (T1WI), high signal intensity (SI) on T2-weighted images (T2WI) and homogenous enhancement on gadolinium-enhanced images. There were enhancing strands in the surrounding soft tissue with high SI on T2WI and gadolinium-enhanced images (Fig. 1). There were serpentine signal voids within the mass suggesting the presence of vascular structures. The preoperative differential diagnosis based on the MR imaging findings included Kimura's disease, lymphoma, inflammatory lymphadenopathy, tuberculous lymphadenitis and metastatic lymphadenopathy, in the order of decreasing likelihood.

Surgical resection of the masses was undertaken. The

![Fig. 1. MR images of Kimura’s disease in the groin are presented.](image)

A. An axial T1-weighted image shows a partially defined subcutaneous mass (arrowheads) in the right groin, with signal intensity slightly higher than that of muscle. There are serpentine signal voids (arrows) within the mass, suggestive of the presence of vascular structures.

B. An axial T2-weighted image shows the mass with high signal intensity relative to muscle. Fat strands (arrowheads) are visible in the surrounding soft tissue.

C. An axial gadolinium-enhanced T1-weighted fat-suppressed image shows homogenous enhancement of the mass with surrounding fat strands (arrowheads).

D. A coronal gadolinium-enhanced T1-weighted fat-suppressed image shows discrete daughter lymph nodes (arrows) around the main mass lesion (arrowheads).
gross specimens demonstrated the presence of a $5 \times 3.5 \times 2$ cm sized large lymph node and two discrete $1.5$ cm sized lymph nodes. The cut surface was glistening grayish white and fleshy. On a microscopic examination, the masses showed typical features of Kimura’s disease that consisted of exuberant lymphoid follicular hyperplasia with prominent germinal centers (Fig. 2A), and increased thin-walled vessels with dense infiltration of eosinophils in the paracortical area and surrounding soft tissue (Fig. 2B).

Discussion

Kimura’s disease is known as a rare, chronic inflammatory disorder resulting in an eosinophilic hyperplastic lymphogranuloma since its first description (1). Kimura’s disease is clinically characterized by the presence of painless pruritic subcutaneous masses, causing enlarged salivary gland and regional lymphadenopathy in the head and neck region, often with concomitant peripheral blood eosinophilia and an elevated level of serum immunoglobulin E (2). Manifestations in uncommon sites including auricular sites, the orbit, pharynx, axilla, groin and extremities have been reported (2, 3, 6, 7).

Many studies about the imaging findings of Kimura’s disease in the head and neck region have been nonspecific and variable (3–6). CT manifestations include the presence of subcutaneous masses or enlarged salivary glands with regional lymphadenopathy with variable enhancement patterns (4). On MRI, the soft tissue masses demonstrate isointensity or hypointensity on T1WI, variable signal intensity on T2WI and variable enhancement patterns (4, 5). The degree of enhancement and T2 signal intensity has been thought to depend on the amount of vascularity and fibrosis of the lesion (3, 4). However, the degree of enhancement and T2 signal intensity may also depend on the type of involved tissue; focusing on lymphadenopathy, the involved nodes showed homogenous enhancement on CT and MR images as compared to signal intensity of the involved salivary glands (3, 4, 9) and extranodal subcutaneous tissue (6).

In contrast to Kimura’s disease in the head and neck region, Kimura’s disease in the upper extremities has been reported to show consistent imaging features and lymphatic tissue involvement (7). In all cases of previous reports, Kimura’s disease in the upper extremities occurred consistently at the medial epitrochlear region, which corresponds with the epitrochlear lymphatic chains (7, 8). The imaging findings of Kimura’s disease in the upper extremities are characterized by the presence of isodense subcutaneous masses with homogenous enhancement on CT images. On MRI, signal intensity of masses was similar to or slightly higher than that of muscle on T1WI and high signal intensity on T2WI with homogenous enhancement on gadolinium-enhanced T1WI. All of the cases in the upper extremities characteristically showed strands in the surrounding soft tissue on CT images and MRI (7, 8), which have also

---

Fig. 2. Histopathological features of Kimura’s disease in the groin. Note the prominent lymphoid follicles [A] and increased vessels with eosinophilic infiltration [B].

A. H & E staining, × 10
B. H & E staining, × 400
been described in reports about imaging findings in the head and neck region [4].

Our case showed the involvement of the inguinal lymphatic chains of Kimura’s disease and demonstrated comparable MR appearances of the Kimura’s disease in the groin. The consistent imaging features of Kimura’s disease in the groin and upper extremities are thought to result from involvement of lymph nodes exclusively, in contrast to the involvement of variable tissue in the head and neck region.

Histologically, Kimura’s disease usually has three components: cellular (inflammatory infiltrates including increased eosinophils and follicular hyperplasia), fibro-collagenous and vascular (arborizing vascular proliferation of the postcapillary venule) [2]. The histopathological findings in Kimura’s disease are similar regardless of the site of involvement [10]. In our case, hyperplastic follicles with a prominent germinal center, diffuse eosinophilic infiltration and vascular proliferation were noted, which were consistent with previous reports [2, 10]. The irregular infiltrative lesion margins with diffuse surrounding edema on T2WI reflect the histopathological appearance of increased thin-walled vessels with dense infiltration of eosinophils into surrounding soft tissue [7].

Although it is a benign disease and has a good prognosis, Kimura’s disease frequently mimics a malignancy when it occurs in uncommon sites such as the extremities. The clues to the diagnosis of Kimura’s disease are as follows: [1] the presence of a painless soft tissue mass in a young Asian male, [2] peripheral eosinophilia, [3] masses of iso SI on T1WI, high SI on T2WI and homogeneous enhancement on MRI and [4] multiple adjacent lymphadenopathy and extensive strands in the surrounding soft tissue on MRI.

References