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ENDOSCOPIC TREATMENT OF KAPOSI'S SARCOMA IN A HEART TRANSPLANT PATIENT

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Kaposi's sarcoma (KS) is a malignant tumor caused by human herpesvirus 8. Due to etiological and pathogenetic factors, this type of tumor is common among patients with immunodeficiency of various genesis. Solid organ recipients are at a high risk of developing malignant tumors in various locations due to the peculiarities of subsequent drug immunosuppressive therapy. Because KS is so common in this patient cohort, methods for early detection, efficient treatment, and prevention of the neoplastic process must be developed. This paper presents a clinical case of a successful surgical treatment of KS of the aryepiglottic fold using an endoscopic electrosurgical station with an argon complex.

Keywords: endoscopy, heart transplantation, heart recipients, Kaposi's sarcoma.

INTRODUCTION

The number of solid organ transplants performed globally has been increasing over the years. In 2022, 157,494 organ transplants were performed worldwide. Kaposi sarcoma (KS) is a malignant poorly differentiated vascular tumor and is directly linked to human herpesvirus 8 (HHV-8). KS incidence is significantly higher in solid organ transplant recipients receiving immunosuppressive therapy for vital indications than, ranging from 0.2–11% in transplant recipients, compared to rare cases in the general population [2, 3].

KS has several distinct forms. The four main types are:

– Classical KS (idiopathic, sporadic, European KS);
– Endemic KS (African KS);
– Epidemic KS (AIDS-related KS);
– Immunosuppressive KS (occurs in individuals on chronic immunosuppressive therapy, including those taking cytostatic drugs) [4, 5].

CLINICAL CASE

Patient B, a 40-year-old male, was diagnosed with dilated cardiomyopathy prior to transplantation. In August 2022, he underwent orthotopic heart transplantation using the biatrial technique. His post-transplant immunosuppressive regimen included tacrolimus and mycophenolate mofetil at tailored dosages.

In the fall of 2022, he developed an acute upper respiratory infection (URTI), prompting a temporary adjustment in immunosuppressive therapy – mycophenolate mofetil was discontinued for three days before being resumed. In the spring of 2023, he experienced another episode of URTI, but no modifications were made to his immunosuppressive regimen.

In June 2023, the patient developed conjunctivitis accompanied by a low-grade fever. Laboratory tests conducted in August 2023 detected no DNA from cytomegalovirus, Epstein–Barr virus, or human herpesvirus types 1, 2, and 6; however, HHV-8 was positive.

During a routine esophagogastroduodenoscopy, an epithelial tumor was identified in the projection of the right aryepiglottic fold, measuring 30×10×15 mm (Fig. 1). Consultation with an ENT specialist was advised. Laryngoscopy was subsequently performed, and a tissue sample was obtained for morphological examination. The final diagnosis from the morphological study confirmed a cavernous hemangioma.

The patient was invited again on an outpatient basis at Shumakov National Medical Research Center of Transplantology and Artificial Organs for another examination with taking material for histopathology. Fibrolaryngoscopy was performed, biopsy was taken. Histopathological findings: morphological picture is characteristic of Kaposi's sarcoma (Fig. 2).

York et al. reported a clinical case of a heart recipient with incidentally diagnosed KS localized in the upper gastrointestinal tract [6]. The article demonstrates the occurrence of profuse bleeding from the stomach, which was the reason for endoscopic intervention for hemostatic purposes. During the therapeutic and diagnostic

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endoscopic manipulation, an vascular epithelial formation was visualized. Upon completion of endoscopic hemostasis, a biopsy of the tumor was performed. Histopathology carried out detected KS.

This clinical case highlights several key aspects regarding the development, progression, and diagnosis of such tumors. Firstly, it underscores the absence of clinical manifestations, making early detection challenging. Secondly, it points to the lack of screening for KS, which may delay diagnosis and treatment in transplant recipients.

According to the available world literature, no endoscopic techniques for KS removal have been documented. Existing studies primarily focus on observational endoscopy for generalized forms, utilizing gastroscopy and colonoscopy for diagnostic purposes [7]. Cutaneous forms of KS in a kidney recipient have also been reported.

To suppress active vascular proliferation, the immunosuppressive regimen was modified: tacrolimus was discontinued, and everolimus was introduced at a daily dose of 3.5 mg, maintaining blood levels within 4–8 ng/

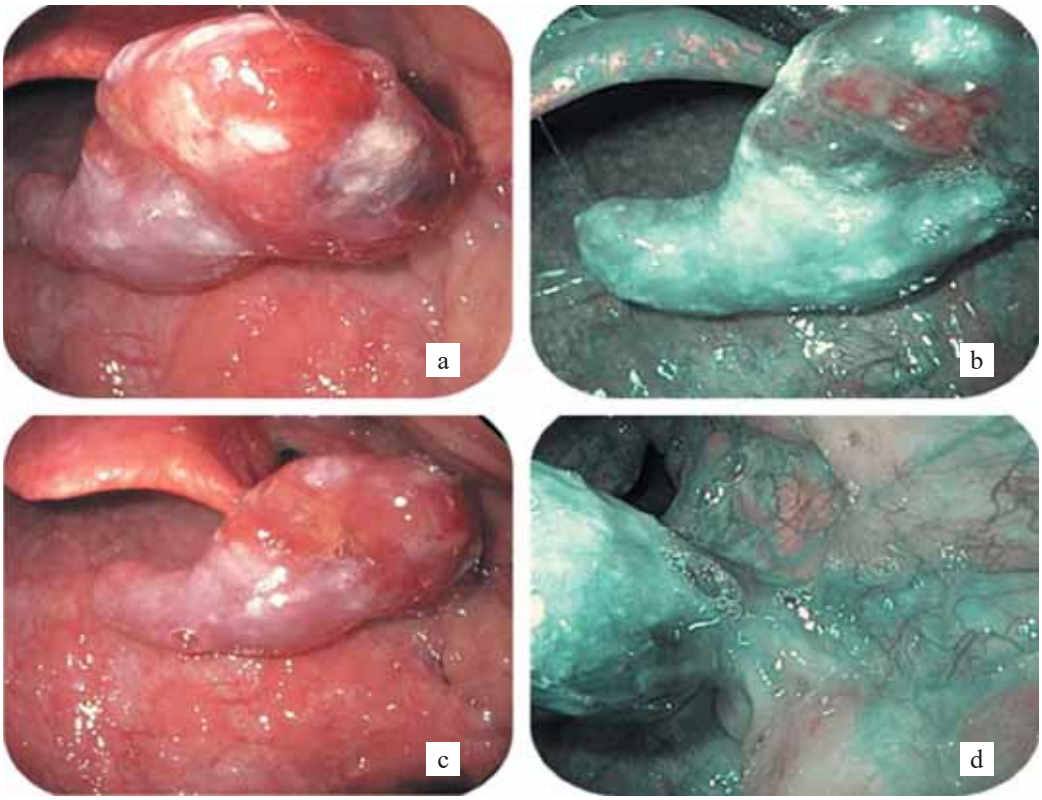

Fig. 1. Kaposi's sarcoma: a, c – white color diagnosis; b, d – narrow band imaging (NBI), visualization of the base area

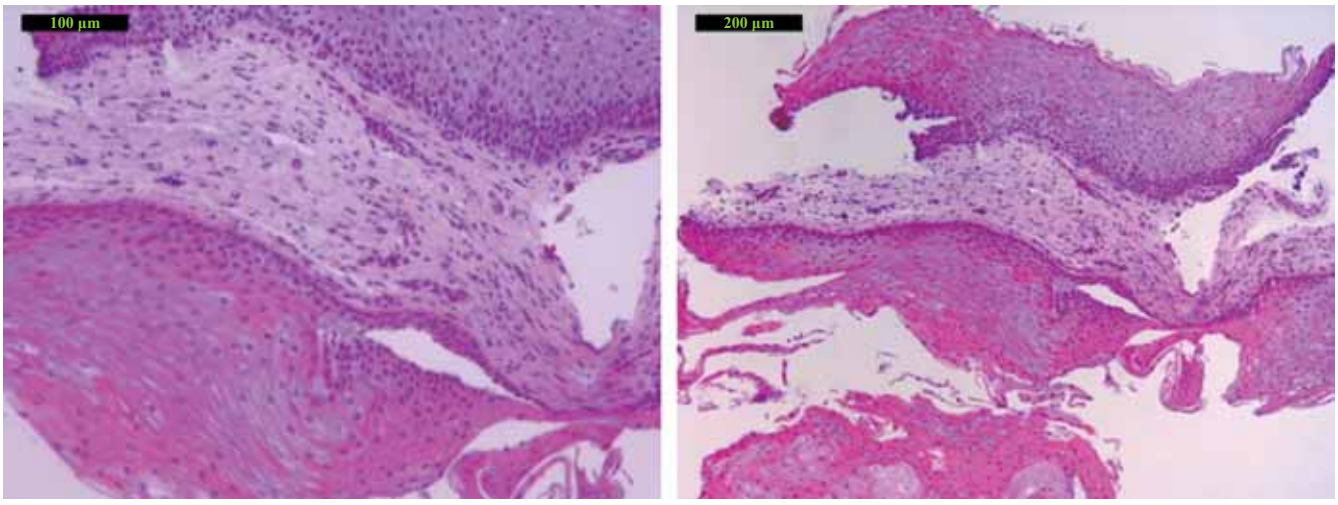

Fig. 2. Histologic picture of Kaposi's sarcoma

mL. However, no positive response was observed. Due to declining graft function, a transplantectomy was performed, and immunosuppressive therapy was discontinued. Chronic hemodialysis was resumed. Following the withdrawal of immunosuppressive therapy, complete regression of KS skin manifestations was achieved [8].

According to the 2020 clinical guidelines for the management of KS, isolated forms of the disease can be treated using electrosurgical methods or local cryotherapy.

In October 2023, the surgical intervention was performed in the operating room under general anesthesia, using a flexible endoscope of the OLYMPUS EXERA III 190 PLUS endoscopic stand, using NBI and DUAL FOCUS modes. KS was removed using ERBE VIO 300D electrosurgical station with ERBE APC2 argon complex in "CUT" and "COAG" modes (Fig. 3). There was no bleeding.

FOLLOW-UP RESULTS

A follow-up diagnostic examination was conducted three months after KS removal, revealing a whitish scar at the excision site (Fig. 4). A biopsy taken from the scar area for histopathological analysis showed no evidence of recurrent KS.

Ten months post-removal, the surgical site was re-evaluated using an OLYMPUS EVIS X1 endoscopic system with a GIF-H290EC endocytoscope, utilizing TXI, NBI, and magnification modes of 100× and 520× (Fig. 5). Staining with an aqueous methylene blue solution was performed, and the absence of dye uptake at the surgical site indicated no pathological epithelial tissue. At the time of writing, the follow-up period exceeded 10 months, with no signs of recurrence.

CONCLUSION

Endoscopic removal of localized KS is a relatively safe and effective treatment option. The use of advanced endoscopic equipment with various optical modes enhances the diagnosis of tumors in solid organ transplant recipients in the late postoperative period. The integration of magnification technology, such as endocytoscopy, provides a real-time method for identifying pathological areas with greater accuracy.

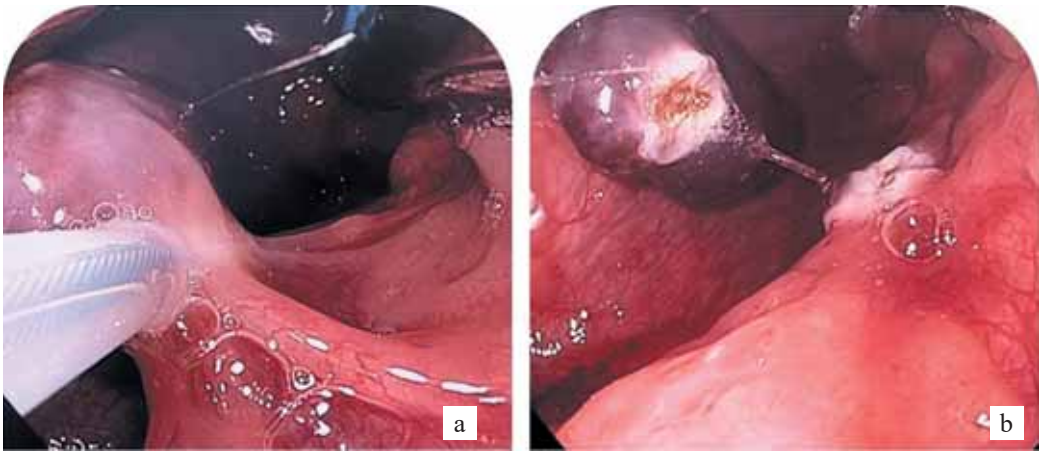

Fig. 3. Stages of Kaposi's sarcoma removal: a, diathermy loop fixed for removal; b, whitish necrosis after removal

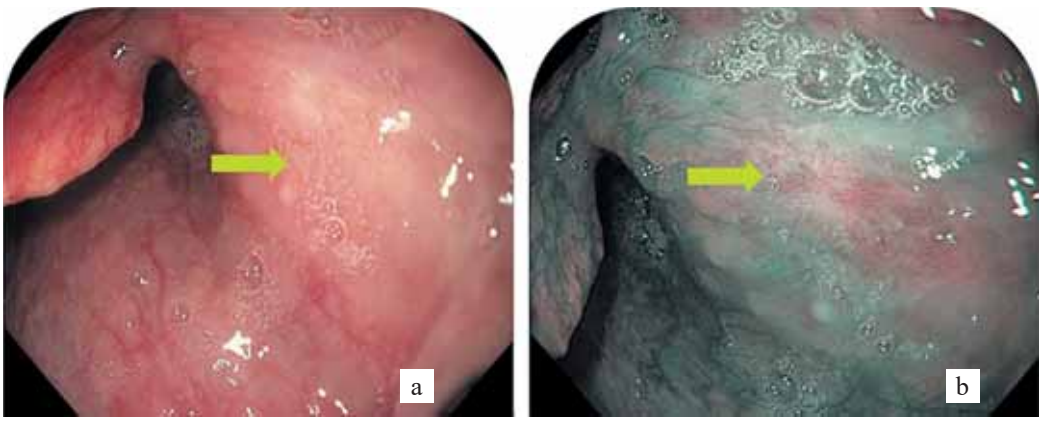

Fig. 4. Kaposi's sarcoma removal area 3 months after surgery: a, white light examination, a whitish scar is clearly visualized; b, narrow-band imaging (NBI) – no evidence of recurrence. The arrow indicates the postoperative scar area

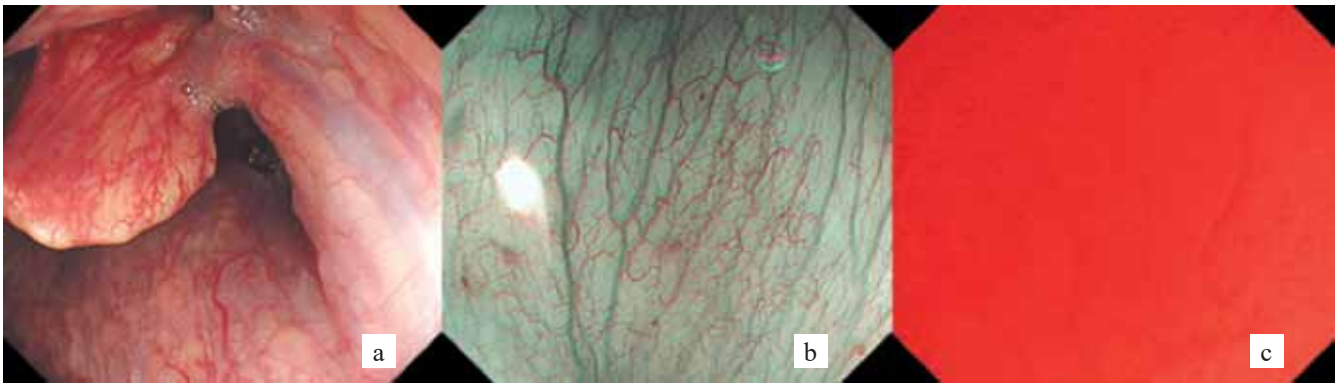

Fig. 5. Kaposi's sarcoma removal area 10 months after surgery: a, examination in TXI mode, scar area; b, examination in narrow-band imaging (NBI) mode at ×100 magnification; c, examination at ×520 magnification – no pathologic cellular structures were detected, no evidence of recurrence

Unlike other transplanted organs, discontinuation of immunosuppressive therapy in heart transplant recipients is fatal. Therefore, endoscopic KS removal may serve as a viable alternative to the standard practice of withdrawing immunosuppressive treatment in transplant patients.

The authors declare no conflict of interest.

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