Image Quiz: Tonsillar Hypertrophy in a Heart Transplant Recipient

Basil M. Kahwash[1] Jingcai Wang[2] Samir B. Kahwash[2]

[1] Division of Allergy, Pulmonary and Critical Care Medicine, Vanderbilt University Medical Center, Nashville, Tennessee, United States
[2] Department of Pathology and Laboratory Medicine, Nationwide Children's Hospital and The Ohio State University, Columbus, Ohio, United States

Address for correspondence Samir B. Kahwash, MD, Department of Pathology and Laboratory Medicine, Nationwide Children's Hospital and The Ohio State University, Columbus, OH, United States (e-mail: samir.kahwash@nationwidechildrens.org).

Ibnosina J Med Biomed Sci 2023;15:145–147.

Question

►**Fig. 1** is a composite of microscopic images of a resected tonsil of a child who presented with tonsillar hypertrophy. The child had a past medical history significant for a heart transplant 1 year prior to this presentation. What is your diagnosis?

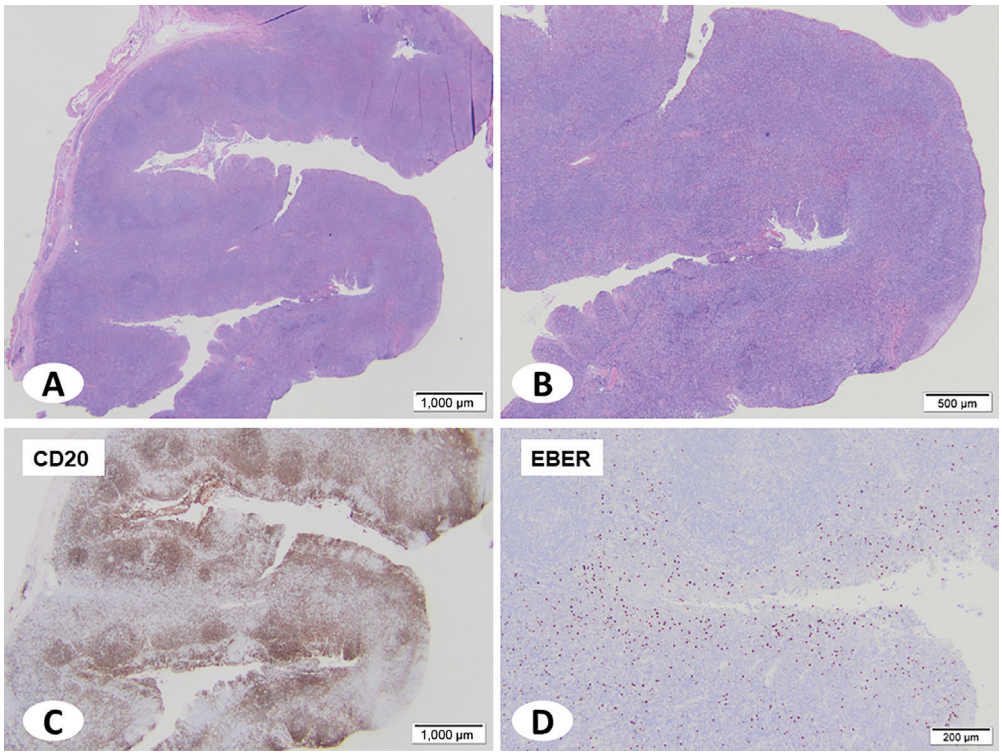

Fig. 1 (**A**,**B**) Representative microscopic images from tonsil (hematoxylin and eosin [H&E] stained) showing preserved follicular architecture of tonsil. (**C**) Immunohistochemical staining for CD20 highlighting the lymphoid follicles. (**D**) In situ hybridization staining for Epstein–Barr virus (EBV) encoded RNA (EBER) is shown.

article published online
July 20, 2023

DOI https://doi.org/10.1055/s-0043-1771206.
ISSN 1947-489X.

Thieme Medical and Scientific Publishers Pvt. Ltd., A-12, 2nd Floor, Sector 2, Noida-201301 UP, India

The Diagnosis

The diagnosis is nondestructive posttransplant lymphoproliferative disorder (PTLD).

Discussion

In this tonsil, the basic architecture of the tonsil appears intact but an expansion of the interfollicular T zone is noted. This change—especially in a transplant recipient—should trigger a workup to rule out viral infection. Epstein–Barr virus (EBV) infection, whether reactivation of a dormant infection or newly acquired, is a major driver behind lymphoproliferative disorders that have the potential of evolving to full-blown lymphoma if not managed properly, especially in an immunosuppressed host.

PTLD is a rare but serious complication that occurs after transplant of a solid organ, such as kidney, heart, or liver, or after a hematopoietic stem cell transplant.[1,2] It is more common in children and in those who receive a more intense immunosuppressive regimen.[3]

PTLD occurs due to uncontrolled replication of the EBV in B cells.[1] The immune defenses that halt EBV replication under physiologic conditions are iatrogenically suppressed in posttransplant patients with the aim of preventing donor organ rejection. The majority of PTLD cases (>85%) are observed in the first year after transplantation.[1] PTLD can occur in several organs, including the lymph nodes, liver, spleen, and gastrointestinal tract. The mucosa-associated lymphatic tissue in the nasopharynx and oropharynx is the primary site where the EBV enters and infects B cells.[4] Roughly 30% of all PTLD patients experience posttransplant tumor masses in the sinonasal, nasopharyngeal, or oropharyngeal regions, with the tonsils being the most affected area.[4]

Symptoms of PTLD can vary depending on the location and extent of the disease. In its initial stages, PTLD can present as EBV-related lymphoid hyperplasia or as fulminant monomorphic PTLD, which can be observed in the tonsils and adenoids.[5] In pediatric patients, PTLD affecting the tonsils and/or adenoids can pose an acute life-threatening risk due to upper airway obstruction or progress to systemic involvement, resulting in irreversible monomorphic PTLD or high-grade lymphoma.[6]

Treatment for PTLD typically involves reducing immunosuppressive therapy to enable the immune system to combat cancer. In certain situations, chemotherapy or radiation therapy may also be required. In refractory cases, removing the transplanted organ may be necessary.[1,7]

Early detection of PTLD involves monitoring transplant recipients for signs of the disease, testing for EBV infection, and adjusting immunosuppressive therapy as necessary. Additionally, antiviral medications may be used to prevent EBV infection.[1,7]

PTLD is a prototypic disorder that illustrates the intricate relationships between infections and cancers, and the importance of the immune status in determining the clinical pathologic course and outcome (►**Fig. 2** is a visual reminder of these complex relationships).

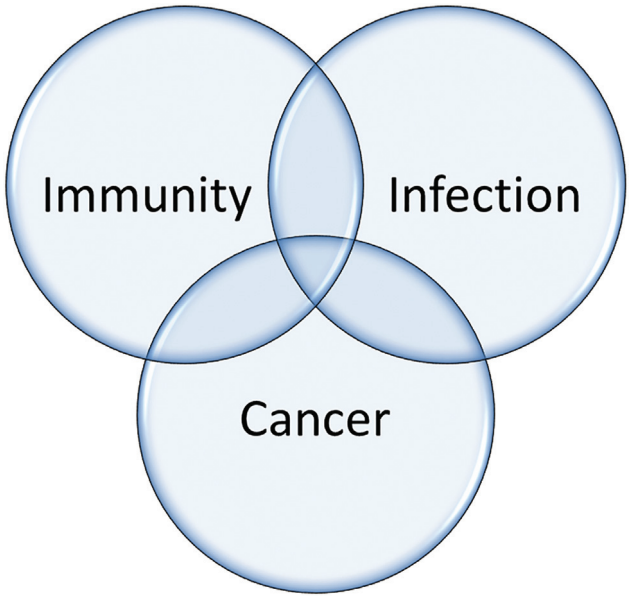

Fig. 2 Representation of the intricate relationships between infection, immunity, and cancer that an Epstein–Barr virus (EBV) infection may uncover.

In summary, PTLD is a serious but rare complication of organ transplantation. Close monitoring, early detection, and appropriate treatment can improve outcomes for transplant recipients with PTLD.

Author Contributions
B.M.K. performed a literature search and edited the manuscript. J.W. prepared the first draft, reviewed, and edited the discussion. S.B.K. designed the outlines, took photographs, created the composite figure, and edited the discussion.

Funding and Sponsorship
None.

Conflict of Interest
None declared.

References

1 Abbas F, El Kossi M, Shaheen IS, Sharma A, Halawa A. Post-transplantation lymphoproliferative disorders: current concepts and future therapeutic approaches. World J Transplant 2020;10 (02):29–46
2 Dharnidharka VR. Comprehensive review of post-organ transplant hematologic cancers. Am J Transplant 2018;18(03): 537–549
3 Marie E, Navallas M, Navarro OM, et al. Posttransplant lymphoproliferative disorder in children: a 360-degree perspective. Radiographics 2020;40(01):241–265
4 Akbas A, Tiede C, Lemound J, Maecker-Kolhoff B, Kreipe H, Hussein K. Post-transplant lymphoproliferative disorders with naso- and oropharyngeal manifestation. Transpl Int 2015;28(11): 1299–1307

5 Shapiro NL, Strocker AM. Adenotonsillar hypertrophy and Epstein-Barr virus in pediatric organ transplant recipients. Laryngoscope 2001;111(06):997–1001
6 Lones MA, Mishalani S, Shintaku IP, Weiss LM, Nichols WS, Said JW. Changes in tonsils and adenoids in children with posttransplant lymphoproliferative disorder: report of three cases with early involvement of Waldeyer's ring. Hum Pathol 1995;26(05): 525–530
7 Asleh R, Alnsasra H, Habermann TM, Briasoulis A, Kushwaha SS. Post-transplant lymphoproliferative disorder following cardiac transplantation. Front Cardiovasc Med 2022; 9:787975

