Abstract

Objective: Learn about two cases of diagnosis of graft-versus-host disease through nasal biopsy. Understand the role of the Otolaryngologist in the evaluation of pediatric transplant patients for graft-versus-host disease.

Methods: This is a review of two cases of pediatric transplant patients after multivisceral organ transplantation between 2005-2006 requiring nasal biopsy for initial diagnosis and monitoring of graft-versus-host disease.

Results: These two cases were both pediatric patients requiring multivisceral transplantation, who developed fever and nasal obstruction post-operatively. After sequential nasal and lung biopsies were found to be inconclusive, turbinate biopsy were done, showing conclusive evidence of graft-versus-host disease. Sequential biopsies were then performed in order to observe the immune response during treatment.

Conclusions: After review of the literature, there are no prior published cases using nasal biopsy in order to diagnose GVHD after failure of other biopsy types to confirm the diagnosis. In university medical centers, there may be further need of nasal biopsies in transplant patients for diagnosis of GVHD, with the ease of nasal biopsy and minimal risk of complication in comparison to other biopsy types, although the accuracy and sensitivity of this particular test has yet to be determined.

Introduction

Transplant surgery has experienced tremendous scientific advancement in recent decades, and with this comes continued vigilance to monitor for complications in the post-operative period. One such complication is graft-versus-host disease, a result of donor T lymphocytes reacting against recipient antigens. The signs of GVHD are usually manifested in the skin, lungs, liver and gastrointestinal tract. While epithelial changes have been identified in the oral cavity in certain transplant patients, the nasal cavity has never been involved in the diagnostic algorithm. Recently, our university-based Otolaryngology program has encountered two cases of graft-versus-host disease confirmed by nasal turbinate biopsy in the pediatric transplant population after symptoms of nasal obstruction and rhinorrhea.

Case Reports

Case 1: 1 y/o male with a history of Severe Combined Immunodeficiency syndrome (SCID) and small bowel atresia who underwent a liver and small bowel transplant in April 2005. The patient was readmitted three months post-operatively after having fever, weight loss and nasal obstruction. He underwent sequential gastrointestinal tract biopsies which showed possible signs of GVHD versus viral etiology of diarrhea on rectal biopsy. In December 2005, the child was taken to the OR for nasal endoscopy with suspected allergic fungal sinusitis. During the case, it was noted that the turbinate appeared very pale and biopsies were taken. The left middle turbinate biopsy was the first biopsy to show definitive GVHD. The gastrointestinal tract subsequently also showed positive biopsies for GVHD. The child had sequential biopsies showing resolving GVHD from the turbinate and other sites. The patient ultimately expired from complications of immunodeficiency related to his transplant.

Case 2: 1 y/o male with short gut syndrome and liver failure secondary to total parenteral nutrition, subsequently needing a liver and small bowel transplant in 2006. Patient was admitted after transplant secondary to respiratory distress and nasal congestion on typical immunosuppressive medications. After experience from the prior case, and with inconclusive esophagogastroduodenoscopy, stomach and jejunal biopsies for GVHD, the patient had three consecutive biopsies of the turbinate showing positive evidence for chronic GVHD. Subsequent biopsies showed resolving GVHD and his nasal turbinate continues to be intermittently tested for this chronic problem.

Diagnosis

In the two cases above, there were symptoms of clear rhinorrhea and nasal obstruction. This lead to an initial differential which included infectious and fungal etiology in these immunocompromised children. In each episode of biopsy, the surgical team noted a pale appearance to the turbinate and a surprising lack of bleeding after biopsy. The middle turbines were chosen secondary to accessibility and their impressive appearance on endoscopy. The current algorithm for GVHD diagnosis is well known for those patients who have a simple bone marrow transplant, but not for those with large quantities of transplanted tissue in comparison to “self” body mass, such as the pediatric population.

Discussion

Although oral mucosal lesions from graft-versus-host disease are well-documented in the literature for certain transplant patients, there are currently no published cases of nasal graft versus host disease. Biopsies of the oral lesions are not considered to be normal protocol for the diagnosis of GVHD, rather they are used to grade response to treatment. Through our two cases where these diagnosis were made, it shows that nasal biopsy may be an appropriate and safe alternative to the typical areas of biopsy that carry significant opportunity for morbidity.

The presence of this pathology in the pediatric patient produces the theory that GVHD occurred in an unusual area secondary to the sheer mass of foreign tissue that has been introduced into the pediatric patient. The amount of foreign lymphocytes present for reaction is profound and easily overwhelms the native immune system. It is also possible that the nasal cavity has previously been overlooked as a site for GVHD because Otolaryngologists have not regularly been consulted.

Conclusions

There are no prior published cases using nasal turbinate biopsy to diagnose GVHD after failure of other biopsy types to confirm the diagnosis. This type of biopsy may be a less invasive way to evaluate for GVHD, possibly even becoming a bedside procedure in the future. The ease of nasal biopsy and minimal risk of complication in comparison to other potential biopsy sites must be weighed against the fact that there is currently no data showing accuracy or sensitivity of this particular test.

References

2. Reddy P and Ferrara J. Hoffman: Hematology: Basic Principles and Practice

Acknowledgments

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