Resident Scholarly Project
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Title of Project: Post Transplant Lymphoproliferative Disease in Children - A Retrospective Review

Brief Background:
Post-transplant lymphoproliferative disorder is a life-threatening complication of solid organ and hematopoietic stem cell transplantation in which there is an overproduction of lymphocytes. Diagnosis is guided by the WHO Classification system (Swerdlow 2017). The incidence of PTLD is relatively rare. According to a review of the UNOS database over a 10 year period, the overall incidence of PTLD in pediatric patients (defined as less than 18 years in this study) was around 2.63% (Dharnidharka 2002).

In adults, the incidence of PTLD seems to vary based on type of organ transplant – from highest to lowest: intestinal and multivisceral transplants (5%–20%), lung and heart transplants (2–10%), renal and liver transplants (1%–5%) (Petera 2015). Incidence of PTLD seems to follow the same trend in pediatrics; higher risk in heart and small bowel transplants and lower risk in liver and kidney transplants (Montanari 2021). This difference may be explained by the different immunosuppressive regimens for each transplant type. Increased immunosuppression is thought to increase the incidence of PTLD because it blunts the immune system's protective effects against malignancies (Absalon 2017). Additionally, Epstein-Barr virus (EBV) has long been identified as a risk factor for the development of PTLD, particularly in recipients who are initially EBV negative (Young 2004, Curtis 1999). Other risk factors include age and genetic factors (Al-Mansour 2013).

Current treatment varies based on the subtype of PTLD identified. In general, treatment strategies include reduction of immunosuppression, immunochemotherapy, and excision.

Outcomes also vary on the subtype of PTLD identified. A previous study based on a cohort of 45 patients at MS-CHONY showed that CD20 expression was associated with a longer event-free survival and overall survival (Orjuela 2010).

Aims or Hypothesis:
We aim to further describe patients at MS-CHONY who were diagnosed with PTLD after transplant.

Overall Project Methods:
This is a retrospective study of patients with biopsy-proven PTLD before the age of 25 at MS-CHONY over the past 20 years; diagnosis is based on the WHO criteria. We estimate the cohort will consist of approximately 90-100 subjects.

We will conduct a chart review of patient data to expand a database from a prior study. We plan to include the following metrics: patient demographics (age, gender, race), transplant type, type of transplant, donor type, time of onset of PTLD, presenting features, immunosuppressive regimen prior to diagnosis, number of rejection events and treatment prior to diagnosis, PTLD-subtype, EBV positivity in blood and tissue, pathologic findings/markers (e.g. CD20), steps in surveillance or prevention, treatment outcomes, toxicity (assessed using the National Cancer Institute Clinical Toxicity Criteria and Adverse Event version 5.0), and therapy regimen.

After data collection, subjects will be assigned a study number and patient identifiers removed.

Statistical analysis

Because we anticipate a small number of subjects who meet inclusion criteria, we primary plan to conduct descriptive analyses. We tentatively plan to analyze for quantitative variables of duration from SOT to PTLD and age at SOT between categories of factors such as SOT, CD20, EBV, gender, type of immunosuppression, number of rejection events. We also aim to describe therapies and toxicity. We also to describe overall survival and event free survival. Appropriate statistical comparisons will be determined based on the distribution of the data.

References

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