The risk of active tuberculosis (TB) is elevated following solid organ transplantation with an estimated relative risk of 26.6 vs. the general population. Renal transplant recipients have an estimated TB incidence of 1.7-3.9%. The risk of mortality from TB in transplant patients ranges from 10-36%; the attributable risk of mortality from a TB is estimated to be 9.5%. In BC, solid organ transplant (SOT) donors and recipients have been screened inconsistently. But, individuals testing positive were referred for treatment. From December 2014 to March 2015, there were two cases of TB among SOT recipients, prompting a review of all TB cases among SOT recipients since 2005. The objectives of this study were to describe the epidemiology and clinical outcomes of SOT recipients diagnosed with TB to identify potential missed opportunities for TB prevention.

Methods

We identified all cases of TB diagnosed in BC between January 2005 and June 2015 who had transplant reported as a risk factor in the provincial electronic database, integrated Public Health Information System. Only cases who received SOT prior to TB diagnosis were included. Charts were reviewed to collect and analyze demographic, clinical and laboratory data including genotyping results if available. Contact tracing data was not reviewed.

A 24-focus Mycobacterial Interpersed Repetitive Units Variable Number Tandem Repeats (MIRU-VNTR) results were compared for similarity against a database of all MIRU-VNTR performed in BC (BC Bioinformatics database). A linkage was performed with BC Transplant to collect transplant information.

TB diagnosis rate was estimated using the population of SOT recipients followed by BC Transplant for two time-points and extrapolated. There were 4036 and 4233 patients in BC being followed post-transplant in 2015 and 2016, respectively. Thus, we project that there is an estimated diagnosis rate of 0.7% among SOT recipients since 2005. A risk of mortality from TB in transplant patients ranges from 10-36%; the attributable risk of mortality from a TB is estimated to be 9.5%.

Results

There were 28 patients diagnosed with active TB with transplantation as a risk factor over the study period. Six of 22 clients, 17 were successfully treated for TB, 1 was lost to follow-up, and 4 died prior to completion of TB treatment for a mortality rate of 18%; 5 of 20 (25%) individuals were known to have an adverse reaction to a TB medication requiring a medication change.

Of the 6 individuals who died or had a graft failure, the median time from TB diagnosis to death or graft failure was 82.5 days (range: 7-120 days).

Discussion

We identified 22 SOT recipients with active TB over a 10.5 year period, or an estimated diagnosis rate of 0.7%. The estimated diagnosis rate is lower than that found in the literature while the median time from transplant to TB infection was higher. This may be because of the small number of SOT recipients that we identified with TB or may reflect that many of the studies were conducted in patients with a higher incidence of TB than Canada. The mortality rate was similar to that reported in the literature.

The vast majority of cases with clustered MIRU-VNTR patterns were from TB lineages corresponding to their clade. We pre-transplant) to risk stratify patients and identify those with tuberculosis after solid-organ transplant: incidence, risk factors, and clinical characteristics in the RESITRA (Swedish Network of Infection in Transplantation) cohort. Clinical Infectious Diseases; an official publication of the Infectious Diseases Society of America. 2009;49(10):1453-65.


For more information, please contact Jason Wong at jason.wong@bccdc.ca