Clin Infect Dis. 2020 Dec 3;71(9):e392-e398. doi: 10.1093/cid/ciaa054.

Impact of Diabetes and Low Body Mass Index on Tuberculosis Treatment Outcomes

Hardy Kornfeld [1], Shruthi B Sahukar [2], Elizabeth Procter-Gray [1], Nathella P Kumar [3], Kim West [1], Kevin Kane [1], Mohan Natarajan [4], Wenjun Li [1], Subash Babu [3], Vijay Viswanathan [2]

Affiliations

PMID: 31955202 PMCID: PMC7713690 DOI: 10.1093/cid/ciaa054

Free PMC article

Abstract

Background: Diabetes was identified as a tuberculosis (TB) risk factor mostly in retrospective studies with limited assessments of metabolic variables. The prospective Effects of Diabetes on Tuberculosis Severity study compared adults with pulmonary TB in Chennai, India, who were classified as having either diabetes or a normal glucose tolerance at enrollment.

Methods: Baseline TB severity, sputum conversion, and treatment outcomes (cure, failure, death, or loss to follow-up) were compared between groups with respect to glycemic status and body mass index (BMI).

Results: The cohort of 389 participants included 256 with diabetes and 133 with a normal glucose tolerance. Low BMIs (<18.5 kg/m2) were present in 99 (74.4%) of nondiabetic participants and 85 (33.2%) of those with diabetes. Among participants with normal or high BMIs, rates of cure, treatment failure, or death did not vary by glycemic status. Participants with low BMIs had the highest radiographic severity of disease, the longest time to sputum culture conversion, and the highest rates of treatment failure and death. Among participants with low BMIs, poorly controlled diabetes (glycohemoglobin [HbA1c] ≥8.0%) was unexpectedly associated with better TB treatment outcomes. A high visceral adiposity index was associated with adverse outcomes and, despite an overall correlation with HbA1c, was elevated in some low-BMI individuals with normal glucose tolerance.

Conclusions: In this South Indian cohort, a low BMI was significantly associated with an increased risk for adverse TB treatment outcomes, while comorbid, poorly controlled diabetes lessened that risk. A high visceral adiposity index, either with or without dysglycemia, might reflect a novel TB susceptibility mechanism linked to adipose tissue dysfunction.

Keywords: body mass index; diabetes; treatment outcomes; tuberculosis; undernutrition.

Figures

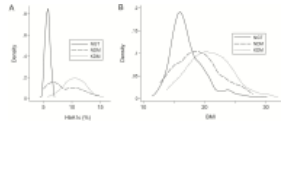

Figure 1. Distribution of (*A*)...

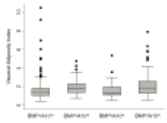

Figure 2. Visceral Adiposity Index (VAI), stratified...

Related information

MedGen

LinkOut - more resources

Full Text Sources

Europe PubMed Central
Ovid Technologies, Inc.
PubMed Central
Silverchair Information Systems