Failure to Isolate Patients with Tuberculosis as a Patient Safety Issue: A Retrospective, case control, multicenter study in 4 South Texas centers

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INTRODUCTION

• Despite advances made in control and prevention TB is a major patient safety issue in the US.
• Texas and three other states account for over half of the country’s reported cases.
• Healthcare associated TB exposure cohorts continue to occur despite implementation of the CDC’s recommendations for infection prevention, and are frequently not recognized.
• Delay in isolation (defined as isolation not ordered during the first encounter with a licensed provider), can result in TB exposure cohorts, increasing risk of transmission in healthcare settings.
• Data on clinical features from TB cases leading to exposure cohorts should be researched in order to predict risk factors related to delay on isolation.
• A safer environment in any medical-related facility must be priority for all providers and is the main reason for this study.

METHODS

• This was a retrospective, case control, multicenter study investigating the cases of TB resulting in exposure (TB exposure cohorts) at four healthcare systems in Texas over 8 years.
• Includes: 2 county university affiliated hospital and 2 VA systems.
• Definitions (Patient diagnosed with TB during those years):
  • Case: TB patients with a microbiological diagnosis, resulting in potential exposure, and a TB exposure cohort.
  • Control: TB patients with a microbiological diagnosis, not resulting in a potential exposure cohort.
  • TB positive diagnosis = positive AFB cultures.
• Demographic, clinical and epidemiological features of cases were compared to those of controls.
• Cases and controls were contrasted with regard to binary outcomes with Fishers Exact Test and an adjusted contrast of cases and controls was carried out with a logistic regression model.

RESULTS

• From 01/2005 to 12/2012, 342 active TB infections were diagnosed (six were excluded from the study, due to lack of documentation).
• Parkland represented the major number (N=171, 51%), followed by UH San Antonio (N=132, 39.4%), STVHCS (N=22, 6.5%) and Central Texas VA (N=10, 2.8%).
• All 336 TB cases were grouped: cases (N=199) or controls (N=137).
• The number of controls by locations was variable, STVHCS 68%, UHS 53.3%, Parkland 28.6%, and Central Texas VA 10%.
• The mean number of people potentially exposed by cases was 28 vs. 0.2 for controls (p<0.01).
• The mean time until isolation for cases was variable 13.33±12.36 hours vs. 1.95±4.7 hours for controls (p<0.01).
• Cases were less likely to be admitted by teaching service (78% vs. 88% P value <0.01).
• Case and controls were not significantly different in regards use of alcohol, tobacco nor illicit drug use, history of latent TB treated.
• Patients with typical TB CXR findings were more likely to result on TB exposure cohorts.
• Patients with extrapulmonary compromise were possibly isolated earlier because they were sicker, with possible multi-organ involvement and/or the diagnosis was strongly suspected since admission.
• Delay in isolation (defined as isolation not ordered during the first encounter with a licensed provider), can result in TB exposure cohorts, increasing risk of transmission in healthcare settings.
• Healthcare associated TB exposure cohorts continue to occur despite implementation of the CDC’s recommendations for infection prevention, and are frequently not recognized.
• Delay in isolation (defined as isolation not ordered during the first encounter with a licensed provider), can result in TB exposure cohorts, increasing risk of transmission in healthcare settings.
• Data on clinical features from TB cases leading to exposure cohorts should be researched in order to predict risk factors related to delay on isolation.
• A safer environment in any medical-related facility must be priority for all providers and is the main reason for this study.

CONCLUSIONS

• Despite decreasing incidence of TB cases, TB exposure cohorts continue to be common in academic centers in Texas.
• Neither age, smoking, IVDA, alcohol abuse, comorbidities (except HIV, diabetes and history of transplant) or length of symptoms duration are predictors of resulting on a TB exposure cohort in healthcare settings.
• In our study protective risk factors for TB exposure cohorts were admission to a teaching service, hispanic race, known history of previously treated TB and extra-pulmonary TB compromise.
• Patients with extrapulmonary compromise were possibly isolated earlier because they were sicker, with possible multi-organ involvement and/or the diagnosis was strongly suspected since admission.
• Surprisingly, patients with typical TB findings on chest X rays were more likely to result on TB exposure cohorts.

TABLES/ GRAPHS

Table 1. Univariable analysis

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Table 2. Logistic Regression Analysis

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References