Prevalence of diabetes type-2 and pulmonary tuberculosis in Filipinos and treatment outcomes: A surveillance study in eastern Saudi Arabia

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Abstract

Objective: To study prevalence of diabetes type-2 and pulmonary tuberculosis among Filipino patients and treatment out comes. Tuberculosis centre of Dammam medical complex (MOH) is a referral centre for the Eastern Saudi Arabia where patients from all government and private hospitals having open pulmonary tuberculosis are admitted for isolation till they are rendered noninfectious. All patients are treated for 6 months under DOTS strategy with 4 drugs (2HRZE) for 2 months as initial intensive phase and 2 drugs (HR) for 4 months as continuation phase. Method & Material: We retrospectively reviewed clinical records of 1388 patients admitted with open pulmonary tuberculosis between Jan-2003 and June-2010. Result: Among 1388 patients, 39% (n=542) were Saudis and 61% (n=846) were non-Saudis. Among these 12.39% (n=172) were Filipinos, 153 males and 19 females, respectively. Out of 1388 patients, 114 (7.17%) were found to have diabetes type-2. Among these diabetics, majority n=91 (79.82%) were Filipinos. Sputum conversion was late in diabetic patients resulting in relatively longer hospital stay compared to fellow patients having only tuberculosis. Conclusion: Our study has shown that one possible risk factor for tuberculosis is diabetes. Majority of TB patients having diabetes type-2, 79.82% (n=91) were Filipinos. Their sputum conversion was relatively late and their hospital stay was longer than their fellow patients having only tuberculosis. Our findings are in agreement with the current literature on the correlation of diabetes and tuberculosis.

Currently, non-communicable diseases (NCDs) are a growing worldwide epidemic that disproportionately affects low- and middle-income countries (LMIC) where, concomitantly, the burden of infectious diseases is high. The prevalence of NCDs in low-income countries in 1990 was reported to be 47%, but it is projected to rise to 69% by 2020 and NCDs will likely exceed cases of communicable diseases by 2030 [1]. Advancing industrialization and urbanization have contributed to lifestyle changes, primarily in dietary habits, leading to increased rates of obesity and Type II diabetes mellitus (DM). Globally, there are approximately 422 million adults living with DM of which about 80% of cases reside in LMIC [2,3,4], where concomitantly communicable diseases, such as tuberculosis (TB), are often endemic [5]. Type 2 DM accounts for about 90% of the diabetes with even higher prevalence in urban and aged populations [6].

The dual burden of communicable and non-communicable epidemics facing Sub-Saharan Africa (SSA) further complicates the experiences and implications of these diseases. There are known negative impacts in co-morbid cases [7]. Some studies showed that DM and TB are the two interlaced diseases [8, 9]. This strong correlation is especially, accentuated in LMIC, where almost 95% of the world's population with TB and 70% with DM live [10]. Different studies conducted elsewhere disclosed that presence of DM increases the life time risk of developing TB by three-folds [8, 11, 12]. The physiologic association between the two diseases is not fully explored, but studies suggested that DM weakened the immune response, which, in turn, enhances the infection of Mycobacterium tuberculosis and/or progression from latent to active disease state [13]. Alternately, TB can temporarily cause impaired glucose tolerance and might predispose patients to DM [14]. Moreover, chronic infections such as TB are associated with idiopathic hyperglycemia, which occurs due to increased production of counter-regulatory stress hormones such as epinephrine, glucagon, cortisol, and growth hormone which act synergistically [15].

In SSA, study findings regarding the prevalence of DM among TB patients differ by geographical region and the background characteristics of the study participants [9, 16,17,18,19,20,21,22,23,24,25,26,27,28,29,30]. These studies reported that the prevalence of DM among TB patients in SSA ranged from 1.9% in Benin [30] to 38% in Nigeria [22]; however, in SSA there was no regional-based study, which considers the prevalence of DM among TB patients. Therefore, the aim of this systematic review and meta-analysis was to estimate the pooled prevalence of DM among TB patients in SSA. The findings of this systematic review and meta-analysis will highlight the prevalence of DM among TB patients in SSA with implications to improve health care workers' interventions, to ensure their cost-effectiveness, and accelerate the reduction of the DM prevalence among TB patients.

Biography

Liaqat Ali Chaudhry is the Head of Pulmonology department as well as a Consultant Pulmonologist of King Salman Armed Forces Hospital.