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Concomitant administration of anti-tuberculosis medication and antidiabetic drugs; a drug-drug interaction study

Won Sriwijitalai[1*], Viroj Wiwanitkit[2]

[1]RVT Medical Center, Bangkok, Thailand
[2]Honorary professor, dr DY Patil University, Pune, India

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ABSTRACT

Diabetes mellitus is a common medical problem seen in around the world. There is a chance that diabetes might co-occur with other medical diseases. The concomitant occurrence between diabetes and tuberculosis is possible and needs good clinical management. Here, the authors use a standard bioinformatics study to assess and predict drug-drug interaction due to concomitant administration of anti-tuberculosis and anti-diabetic drugs. According to the study, there is no serious drug-drug interaction from concomitant use of anti-tuberculosis and anti-diabetic drugs. Nevertheless, there are several possible non-severe interactions that lead to the necessity for a practitioner to carefully monitor the concomitant use of anti-tuberculosis and anti-diabetic drugs.

Brief Report

Core tip: The concomitant occurrence between diabetes and tuberculosis is possible and needs good clinical management.

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Introduction

The co-occurrence of two diseases is possible in clinical practice. This situation is usually complex and difficult for clinical management. The chance of co-occurrence of common medical problems is not low. Tuberculosis is a common medical disease affecting numerous patients around the world. This mycobacterium infection is still the global public health threat. Tuberculosis might co-occur with other diseases such as HIV infection (1).

There is a chance that tuberculosis might concomitantly occur with common metabolic disease (2). The co-occurrence between tuberculosis and diabetes is interesting and is hereby specifically focused. Hall noted that the tuberculosis patient with diabetes usually has more clinical problems than one without diabetes (3). In addition, in the management of both disease, the standard medications for each disorder is required and it is no doubt that the patient with concomitant tuberculosis and diabetes mellitus has to intake several kinds of drugs.

Objectives

Taking several drugs is considered a risk in clinical practice. The chance of adverse effect due to drug-drug interaction is possible. Here, the authors use a standard bioinformatics study to assess and predict drug-drug interaction due to concomitant use of anti-tuberculosis and anti-diabetic drugs.

Materials and Methods

This work is a bioinformatics study. The authors used standard bioinformatics tool namely Drug Interaction Checker (https://www.webmd.com/interaction-checker) for prediction of drug-drug interaction among common anti-tuberculosis and anti-diabetic drugs. The interaction is predicted and the severity of interactions is also predicted. The research followed the Tenets of the Declaration of Helsinki.

Results

The results from drug-drug interaction analysis are presented in Table 1. According to the study, there is no serious drug-drug interaction from concomitant use of anti-tuberculosis and anti-diabetic drugs.

Discussion

There is a chance that diabetes might occur with tuberculosis.

*Corresponding author: Won Sriwijitalai, Email; wonsriwi@gmail.com

Table 1. Predicted possible drug-drug interaction between anti-tuberculosis drug and antidiabetic drug

Severity degree	Pair of drugs
Don't use together	-
Serious	-
Monitor closely	Rifampicin +Glimepiride, rifampicin + glipizide, rifampicin + insulin
Minor	isoniazid + acarbose, isoniazid +Glimepiride, isoniazid + glipizide, isoniazid + insulin

Al-Rifai et al noted that "DM is associated with a two- to four-fold increased risk of active TB (2)". The proper parallel management for both diseases in anyone with two diseases is needed. The use of both anti-tuberculosis and anti-diabetic drugs is required. It is noted that there must be the adjustment of the drug dosage in different individual patients (3). An important consideration is on the possible unwanted effect in concomitant use of anti-tuberculosis and anti-diabetic drugs.

Based on the present assessment, there is no predicted serious interaction confirming that the concomitant use of anti-tuberculosis and anti-diabetic drugs is possible. However, there are many identified interactions. Based on the derived prediction, several anti-diabetic drugs have interactions with anti-tuberculosis drugs. Nevertheless, the drug that is considered to be safe to use for management of a diabetic patient with tuberculosis is metformin. In fact, this prediction is concordant with a recent trial result performed by Padmapriyadarsini et al (4).

Conclusion

Although there is no predicted severe interaction, there are several possible non-severe interactions that lead to the necessity for a practitioner to carefully monitor the concomitant use of anti-tuberculosis and anti-diabetic drugs.

Authors' contribution

Both authors wrote the manuscript equally.

Conflict of interests

The authors declared no competing interests.

Ethical considerations

Ethical issues (including plagiarism, misconduct, data fabrication, falsification, double publication or submission, redundancy) have been completely observed by the authors.

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