UNIVERSITI TEKNOLOGI MARA

A COMPARISON OF THE INCIDENCE AND HAZARD RATIO OF TYPE II DIABETES MELLITUS AMONG STATIN USER GROUPS IN A MALAYSIAN HEALTHCARE SETTING

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MSc

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AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Background. As the usage of certain conventional medications are becoming increasingly common among the current generation, their previously unexplored side effects and long-term effects have started to become a subject of scrutiny, and the link between these medications and long-term effects is starting to be explored. Recently, there has been a massive discovery in terms of the possible contribution of statins in the development of Type II Type II diabetes mellitus (T2DM). This discovery has led to many subsequent debates or uncertainties over the safety and necessity of statins. As the discovery of the relationship between statins and diabetes is still relatively new, there has yet to be extensive research exploring on the more specific details of the association. The individual risk of statin types has been explored but not extensively, among the Malaysian population.

Objectives. To investigate the incidence of new-onset Type II diabetes mellitus and to compare the risk of development of new-onset Type II diabetes mellitus among different statin user cohorts in a Malaysian healthcare setting

Research Design. This was a retrospective cohort study

Methods. 507 patients without Type II diabetes mellitus who were given statin treatment in Hospital Sungai Buloh were retrospectively enrolled and subsequently divided into four cohorts according to the types of statin given.

Results. The mean duration of this study was 32.5 months ($\pm$18.1) while the median duration was almost the same at 31.0 months ($\pm$26.3). The minimum duration of study was 2.9 months, while the maximum duration was 87.9 months. Between the three main cohorts, the incidence of T2DM was found to be highest in the simvastatin user group (20 of 114: 17.5%), followed by the mixed statin user group (35 of 213: 16.4%), and lastly the lovastatin group (28 of 172: 16.3%), p=0.956. As the p value was >0.05, it was found that there was no significant difference in the incidence of T2DM among the three statin user cohorts. Meanwhile, the risk of T2DM was found to be significantly higher in the lovastatin and simvastatin user groups compared to the mixed statin user group, with a hazard ratio of 1.88 (p=0.017) for lovastatin compared to the mixed statin user cohort, and a hazard ratio of 1.87 (p=0.029) for simvastatin compared to the mixed statin user cohort.

Conclusions. The risk of new-onset T2DM from lovastatin alone or simvastatin alone was significantly greater than that of mixed statin users, in which the statin type was switched at least once throughout the study. The risk of new-onset T2DM posed by lovastatin and simvastatin was almost the same. There was no significant difference in the incidence of T2DM among the three statin user cohorts.

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