ABSTRACT

ANALYSIS OF HMGB-1 LEVEL BEFORE AND AFTER PROVIDING ATORVASTATIN STANDARD THERAPY IN CORONARY ARTERY DISEASE PATIENTS WITH DIABETES MELLITUS TYPE-2 COMPARED TO WITHOUT DIABETES MELLITUS TYPE-2

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Background: Coronary artery disease (CAD) is one of the leading causes of mortality in cardiovascular diseases. Atherosclerosis is the reason. Over time, plaque hardens and narrows your arteries. This limits the flow of oxygen-rich blood to the heart. Atherosclerosis can lead to heart attack. The narrowing of the arteries then makes blood flow more difficult to the heart. When the plaque was ruptured, the heart attack occurred. The vascular smooth muscle cells release danger-associated molecular patterns (DAMPs) that induce or escalate inflammation. These DAMPs include high-mobility group box-1 (HMGB1). Pleiotropic effect of atorvastatin as an anti-inflammatory is one of the target drugs for HMGB-1. Several studies have shown the clinical relationship between HMGB-1 and atorvastatin as an anti-inflammatory agent in CAD. Several clinical studies have shown serum HMGB-1 level significantly higher in CAD patients with diabetes mellitus than without diabetes mellitus.

Objectives: This prospective observational study was aimed to analyze the effect of atorvastatin on serum HMGB-1 levels in CAD with type-2 diabetes mellitus and without type-2 diabetes mellitus from HMGB-1 when patients entered and left the hospital.

Methods: Samples were collected from prospective observation pre-post study in May-July 2018 with consecutive sampling method. Serum HMGB-1 levels were measured in patients with CAD who were given atorvastatin for CAD with type-2 diabetes mellitus compared without type-2 diabetes mellitus in a patient ward. Blood was collected on admission day and before the patient left the hospital. After centrifugation, serum samples were stored at -80°C before measurement. We used an ELISA Kit (IBL International) to determine HMGB-1 concentrations. This research protocol has been approved by the Ethical Committee of Dr Soetomo General Hospital Surabaya.

Results: We enrolled 38 patients and divided them into two groups which 19 patients on CAD with type-2 diabetes mellitus and 19 patient without type-2 diabetes mellitus. Serum HMGB-1 levels in CAD with type-2 diabetes mellitus were increased significantly ($p=0.049$) and not significantly decreased in CAD with no type-2 diabetes mellitus ($p=0.480$). The HMGB-1 level was not significantly different between the two groups ($p=0.210$).

Conclusions: HMGB-1 levels after providing atorvastatin in coronary artery disease with type-2 diabetes mellitus significantly increased meanwhile, in CAD without type-2 diabetes mellitus did not significantly decrease. The HMGB-1 level was not significantly different between the two groups. Longer time and more point for collected sample needed for futher research.

Keywords: Coronary artery disease, Diabetes Mellitus, Atorvastatin, HMGB1, Inflammatory marker.