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Research Article

TREATMENT MANNERS, GLYCEMIC CONTROL, AND C - REACTIVE PROTEIN IN PATIENTS RECEIVING ANTIDIABETIC OR ANTIDIABETIC WITH ANTIHYPERTENSIVE DRUGS IN BASRA

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ABSTRACT

Objective: This study aimed at investigating the relationship between treatment manners, glycemic control, and C-reactive protein (CRP) serum level in patients receiving antidiabetic drugs (ADM) alone or ADM with antihypertensive (AHT) drugs in Basra.

Methods: Patients receiving ADM or ADM with AHT drugs, not suffering from complications, were recruited from Al-Mawanee General Hospital in Basra. Socioeconomic characteristics, blood pressure (BP), and treatment plans were recorded. Blood samples were obtained to measure glycated haemoglobin (HbA1c), lipids profile, and high sensitive (hs-CRP).

Results: A total of 26 men and 50 women were involved. Lower mean HbA1c was found in patients receiving ADM with AHT drugs compared with those on ADM drugs only (p=0.0013). Lower mean systolic BP (p<0.0001) and diastolic BP (p=0.0078) were found in patients receiving ADM drugs only compared with those receiving ADM with AHT drugs. Lower mean hs-CRP was found in women receiving ADM with AHT drugs compared with those on ADM drugs only. Treatment manners had no effect on mean hs-CRP in men and women receiving ADM with AHT drugs; however, there was a significant direct correlation of hs-CRP with HbA1c (p=0.002) and triglycerides (p=0.009), but inversely with high-density lipoprotein cholesterol (p=0.011) in women receiving ADM drugs only.

Conclusion: High levels of hs-CRP are associated with poor glycemic control and dyslipidemia, therefore, consequently increased cardiovascular risk. Due to its value as a risk predictor, hs-CRP should be included in routine monitoring of Type-2 diabetic patients.

Keywords: Antidiabetic drugs, Antihypertensive drugs, C-reactive protein.

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INTRODUCTION

In Iraq, the high rate of incidence of diabetes and hypertension has been documented. Diabetes and hypertension are the two main risk factors in the development of ischemic heart disease, cardiac hypertrophy, and cardiac failure. Cardiovascular diseases are the most common causes of mortality over the world. Previous studies have demonstrated that individuals with diabetes [1] and hypertension [2,3] have higher levels of C-reactive protein (CRP) compared with individuals without these conditions in the general population. Increased risk of cardiovascular disease has also been associated with increased levels of CRP [4,5]. CRP synthesis and secretion are mainly in hepatic cells [6]. It is regulated by the action of many activated cytokines such as interleukin-6 (IL-6), IL-1, and tumor necrosis factor-alpha [7]. CRP is a sign of systemic inflammation in blood [8]. The normal plasma level of CRP in a healthy population without evidence of acute inflammation is 2 mg/L or less [9]. There is a rapid rise in the circulating CRP by as much as 3000-fold in response to inflammation, infection or acute tissue injuries, which drop rapidly when inflammation or injury is resolved [10]. Many studies are focused on the association of chronic elevation of CRP with an increased risk of cardiovascular disease and atherosclerosis [11-14]. If CRP is concerned in the pathophysiology of cardiovascular disease, it could be accepted that lowering CRP levels would reduce the progress of the disease and its complications. CRP causes atherosclerosis by various mechanisms, such as the release of reactive oxygen species (ROS), CRP increases the generation of ROS by monocytes and neutrophils [15,16] directly. ROS have been concerned in the beginning and continuation of atherosclerosis [17]. Furthermore, CRP increases the expression of adhesion molecules [18]. Furthermore, CRP has been concerned in the destabilization of atherosclerotic plaques [19]. Moreover, CRP can mediate the uptake of LDL into macrophages to form foam cells [20].

The aim of this study was to investigate the association between drug treatments, glycemic control, and serum level of CRP in Iraqi patients receiving antidiabetic drugs (ADM) drugs or ADM with antihypertensive (AHT) drugs.

METHODS

This study was conducted during the period from February to May, 2018, and the patients were selected during their visit to Diabetes Endocrine and Metabolism Centre in Al-Mawanee General Hospital in Basra. Institutional Ethical Committee approved the study, and informed consent was obtained from the subjects. Patients receiving ADM drugs or ADM with AHT drugs, not suffering from complications, were recruited. A total of 76 diabetic patients aged between 42 and 67 years were included in this study 50 patients were females and 26 were males. 42 patients using ADM with AHT drugs, from which 30 were females and 12 were males. The other 34 patients were using ADM drugs only. Patients were excluded from the study if they were Type1 diabetic patients or if they have any cognitive problems. Socioeconomic characteristics, blood pressure (BP), and treatment plans were recorded. Fasting blood samples were obtained to measure glycated hemoglobin (HbA1c), lipids profile, and high sensitive (hs-CRP). HbA1c up to 7% reflected adequate glycemic control, while HbA1c >7% reflected poor glycemic control, as recommended by the American Diabetic Association guidelines [21]. Hypertension was defined as a systolic BP >140 mmHg or diastolic BP >90 mmHg, or current use of AHT drug treatment [22].

Laboratory investigations

HbA1C was measured by D-10 Dual Program Bio-Rad Laboratories, Inc., Hercules, CA 94547, 220-020, California, USA. D-10 Dual Program is