CHAPTER 1

HOW RELIABLE HBA1C IS IN ANEMIC PATIENTS? TWO DIFFERENT PERSPECTIVES

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INTRODUCTION

Diabetes Mellitus (DM) is one of the most vital health issues worldwide. It is responsible for most of the mortality, morbidity, microvascular and macrovascular complications that develop in the long term in diabetic patients. Prevention of the development and progression of these complications is also associated with glycemic control. Glycolyzed proteins are used as indicators of glycemic control in diabetic patients. Glycosylated hemoglobin (HbA1c) is the most commonly used glycosylated protein and is known to be associated with chronic complications. HbA1c used in the diagnosis and follow-up in DM (1).

Anemia is a worldwide public health problem, affecting approximately 1.62 billion patients, or about a quarter of the world's population, in both developed and developing countries. There exist many different types of anemia, and the most common of these is iron deficiency anemia (IDA). IDA accounts for one-third of anemia cases Worldwide (2). Furthermore, menstruating women lose iron in each menstrual period, so IDA is more common in women of this age group (3).

Glucose 6 Phosphate Dehydrogenase (G6PD) enzyme deficiency is X-linked inherited. In G6PD deficiency, erythrocytes cannot be protected from oxidant damage and hemolysis occurs. The most common erythrocyte enzyme deficiency. The prevalence of G6PD deficiency ranges from 15-25% in parts of Africa and the Middle East, and 3% in North America and Europe (4). Falsely high HbA1c levels

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this to contribute to clinicians". In their study with the diabetic patient population with IDA, they found that 2.2 mg/dL increase in Hb value after iron treatment in patients with IDA caused a 0.4% decrease in HbA1c level (10). Again, in their study in the non-diabetic patient group, it was determined that each 0.94 g/dL Hb increase provided by Vit B12 replacement in patients with megaloblastic anemia corresponds to a 0.24% HbA1c decrease (11). In these 2 studies, they argued that these rates would shed light on other multicenter studies with much higher patient participation, and perhaps contribute to the inclusion of an appropriate rate determined in the future in DM diagnosis and follow-up guidelines.

The main purpose of making these case reports is to doubt how accurate it is to make a diagnosis and follow-up decision by looking at HBA1c in DM patients. The International Expert Committee has warned clinicians to be aware of any situation that may affect the turnover of RBCs in the follow-up of diabetic patients (12). The American Diabetes Association (ADA) recommended not using HBA1c as a diagnosis criterion for diabetes in patients with IDA but only using plasma glucose criteria (13).

Considering the hematological parameters before making any diagnosis or treatment decision according to the HbA1c level will prevent patients from being misdiagnosed or not, and will also ensure that diabetic patients are followed up on their diabetes treatment more appropriately.

Conflict of interest

The authors have declared that they have no significant relationships with or financial interests in any commercial company.

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