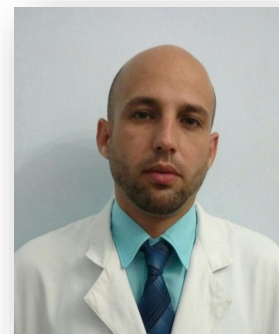


Renal Function in Patients with Acute Myocardial Infarction: A Current Perspective.

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Ischemic heart disease is one of the most prevalent diseases in Western societies, rising, along with other vascular diseases, as the leading cause of death in the developed world. Its presentation as an acute coronary syndrome (ACS) is of particular importance, both because of its morbidity and mortality and because of the high amount of economic, human and healthcare resources it carries [1].

In the United States, almost 600,000 patients are hospitalized every year with a primary diagnosis of ACS. The figure exceeds one million patients if it is included as a secondary diagnosis [2,3]. In Cuba, in 2017, cardiovascular disease (CVD) remained the leading cause of death with 27 176 deaths, among which 7 982 represented acute myocardial infarction (AMI) with a rate of 71 per 100 000 inhabitants [4].

There are several factors that have been

related to an unfavorable prognosis in patients with CVD. One of these factors is renal function, which in recent decades has become more evident the importance of its correct evaluation, especially as a result of studies that have shown that this direct relationship between renal function and cardiovascular events already appears in phases of moderate renal dysfunction, and even, mild [5]. It is currently proposed that this dysfunction occurs in approximately 30-40% of patients with ACS and is associated with a worse prognosis and an increased risk of hospital complications, sometimes due to differences in the presentation of the clinical picture (less frequently chest pain or typical signs on the electrocardiogram), so the diagnosis may be delayed [6].

Accurate evaluation of renal function therefore allows early identification of patients at high risk of cardiovascular events, in order to improve their prognosis through early intervention in diagnosis and

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treatment. In addition, it enables the close monitoring of certain interventions such as the adjustment of drugs and the prevention of nephrotoxicity by various agents in high-risk patients. A poor estimate of renal function can lead to a patient not receiving cardioprotective treatment appropriate to their risk, which leads to an increase in mortality [5].

In the ACTION registry (Acute Coronary Treatment and Intervention Outcome Network), 57 700 patients with ACS were evaluated; approximately 1 in every 6 patients with AMI presented acute kidney injury. Patients with ACS type ST without renal dysfunction had a mortality of 2% compared to 32% observed in patients with severe renal failure [7].

Creatinine has been classically the most used endogenous substance for the evaluation of renal function. However, the creatinine concentration is affected by several factors (muscle mass, sex, race, type of feeding), in addition to others related to the creatinine filtration itself, such as tubular secretion, production and extra renal excretion. Given the disadvantages of plasma creatinine as a marker of renal deterioration, there have been multiple proposed methods to understand renal function, within which the formulas for estimating glomerular filtration are the most commonly used in routine clinical practice because of their relative simplicity [5].

There are different formulas to estimate the glomerular filtration in a certain patient. All of them incorporate a series of variables that try to solve the deficiencies of plasma creatinine as the only marker of renal function [5].

According to a series of studies found in the literature reviewed, the increase in serum creatinine concentrations or the decrease in glomerular filtration rate estimated in patients with a diagnosis of AMI are associated with increased mortality in the ICU.

In the study Valsartan in Acute Myocardial Infarction Trial (VALIANT) that included patients with ventricular dysfunction or heart failure after an acute myocardial infarction. All major cardiovascular events, such as total cardiovascular mortality, myocardial infarction, heart failure and stroke, were closely related

to the degree of renal dysfunction. The incidence of these events doubled or tripled in patients with glomerular filtration $<45 \text{ mL / min / } 1.73\text{m}^2$ compared to those with a glomerular filtration rate $> 75 \text{ mL / min / } 1.73\text{m}^2$ [8].

Gutiérrez HB and colleagues in a study conducted with 295 patients admitted with a diagnosis of AMI, found that the distribution of serum creatinine was significantly higher in the group of patients who died compared to the group of survivors. On the other hand, the estimated glomerular filtration rates were significantly lower among those who died in relation to those who did not die. When they compared the cardiovascular prognostic variables with the renal function variables, a better risk stratification was observed in the latter [9].

Taking this into account, it is important to point out that stratification predicts precociously after a coronary syndrome, only renal function is evaluated as a risk factor in the GRACE study model [10] and in the risk score of the CADILLAC study [11], while in others very used as the TIMI scale [12] no reference is made.

Conclusion

In conclusions, we have that the assessment of renal function through the determination of creatinine and the estimation of glomerular filtration provide useful and valuable information for the evaluation of patients with acute myocardial infarction.

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