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## Diabetes mellitus and its relation to cardiovascular disease

### *La diabetes mellitus y su relación con las enfermedades cardiovasculares*

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### To the Editor:

According to the World Health Organization, cardiovascular disease is a major public health problem in the world, and the leading cause of mortality as it causes 17 million deaths per year, accounting for half of all deaths in the United States and other developed and developing countries<sup>1</sup>.

Although estimates of life expectancy reflect how old a person expects to live, they do not specify the "expected" health status during life, given the mor-

tality rates of certain environments. Mortality statistics by themselves are not enough to describe and compare the health status of different populations because they underestimate the serious health problems caused by chronic diseases.

The number of cardiovascular events in a year is much higher in patients who have already developed one or more forms of atherosclerotic disease (cerebral, coronary or peripheral artery disease) than in those with a high risk profile but who have not developed any disease expression<sup>2,3</sup>.

Diabetes mellitus (DM) is a chronic disease, whose long-term morbidity and mortality are mainly derived from the development of atherosclerotic vascular diseases.

Ischemic heart disease is the leading cause of death in patients with type II DM. There is evidence that patients with diabetes have the same risk of having an acute coronary syndrome than non-diabetic patients with ischemic heart disease<sup>4</sup>.

Diabetes is also a major risk factor for cardiovascular mortality in patients with impaired left ventricular function due to ischemic heart disease<sup>5</sup>.

Prevalence of cardiovascular diseases is higher and has a poorer prognosis in diabetic patients than in the general population. Diabetic cardiomyopathy and autonomic neuropathy are other cardiac problems, which can cause heart failure, silent ischemia and an increased risk of ventricular arrhythmias. For this reason, DM is not considered a simple independent risk factor but a true cardiovascular disease which causes high use of health care resources in developed and developing countries<sup>6</sup>.

Excess body weight suggests the presence of insulin resistance, whereas weight loss suggests a progressive reduction in the production of this hormone. Although insulin resistance may improve with weight loss and glycemic control, it rarely returns to normal; the risk of developing type II DM increases with age, the presence of obesity and physical inactivity, and its prevalence is more frequent in women with previous gestational diabetes, people with hypertension and individuals with dyslipidemia.

Three quarters of deaths due to atherosclerosis are caused by coronary artery disease, which is the main cause of death for diabetics. Painless ischemic episodes are more frequent in these patients and even they benefit from thrombolytic therapy, in case of ST segment elevation infarction, their mortality is twice that of non-diabetic patients<sup>4</sup>.

There is a reciprocal relationship between the possibilities of developing hypertension and DM. It is claimed that the incidence of DM among hypertensive patients is 29.1 per 1,000 individuals per year, versus 12 per 1,000 among normotensive individuals. From the other point of view, hypertension occurs in 20-40% of patients with impaired glucose tolerance, in 30-50% of type 2 diabetic patients and in 40% of type 1<sup>7,8</sup>.

Hypertension is a major risk factor in the development of cardiovascular disease, especially in patients

with type 2 DM. Tight control of blood pressure results in a significant reduction in mortality risk, and complications associated with DM. In the Steno-2 study, intensive control of multiple cardiovascular risk factors, including hypertension, in patients with type II DM and microalbuminuria, resulted in a 50% reduction in the appearance of macro and microvascular events<sup>7,8</sup>.

In Cuba, DM has an increasingly relevant place, and type II is the most common, with greater predominance in women<sup>9</sup>.

Each November 14, the World Diabetes Day is celebrated. Many have been the efforts of the scientific community to identify, educate, and guide about the linking of this endocrine-metabolic disorder with cardiovascular disease. However, greater efforts on the State's side are needed to promote more effective policies to reduce the occurrence of cardiovascular disease in diabetic patients.

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