

Hypertensive Heart Disease: a Proposed Clinical Classification

Dear Editor:

Hypertension is highly prevalent¹⁻³ and it is the cause of numerous complications, the most common and important of which are of cardiac origin.³⁻⁵ In spite of this, no practical classification of hypertensive heart disease (HHD) is available. We present a new trichotomous classification of HHD, similar to the tumor, node, and metastasis (TNM) classification used for cancer.

Hypertension causes both structural and functional changes in the heart that affect both the atrial and the ventricular myocardium, as well as the epicardial and intramural coronary arteries.⁶⁻¹³ These changes give rise to the three main types of heart disease associated with hypertension: heart failure, myocardial ischemia, and atrial fibrillation, which may arise independently or in combination, and involve different degrees of severity and different phases of evolution.

However, the definition and classifications of HHD so far published do not always agree nor do they include all the possibilities. The first classification, proposed by the New York Heart Association, equated HHD to heart failure in a patient with hypertension.¹⁴ Later, the definition of HHD was limited to the presence of hypertensive, left ventricular

hypertrophy¹⁵ or, at most, diastolic dysfunction¹⁶ or other purely hemodynamic abnormalities.¹⁷ The various classifications of HHD proposed (Table 1) all suffer from the same lack of detail,¹⁸⁻²² in spite of the importance given by the clinical practice guidelines to the detection of hypertension-associated complications when planning treatment.²³

We propose the term “hypertensive heart disease” to encompass the complex and variable set of effects that cause the chronic increase in blood pressure in the heart of a patient with hypertension. This nomenclature would therefore include the presence of anatomic¹⁶ or biochemical signs^{17,24} of left ventricular hypertrophy or ventricular dysfunction, be either diastolic or systolic, of myocardial ischemia and rhythm abnormalities.

As a consequence, we propose a trichotomous classification of HHD that contemplates the three main manifestations indicated previously. This type of classification is very common. The most historic is the TNM classification, which has been in use in oncology for over 50 years. Each one of the 3 headings is subsequently assigned a score of 0 to 3 (from the mildest or early forms to the most severe or advanced forms), also of current use in cardiology.

Table 2 summarizes the proposed classification. The denomination “VIA” refers to the three main components: ventricle, ischemia, and arrhythmia. With regard to ventricular involvement, the 3 categories selected correspond to the three phases of the old “hypertensive heart disease:” left ventricular hypertrophy (diagnosed by electrocardiogram, echocardiogram or biochemical markers); diastolic dysfunction, with or without heart failure; and systolic dysfunction, either asymptomatic or symptomatic. The ischemia in patients with hypertension is often due to microvascular dysfunction; in more advanced

TABLE 1. A Few Proposed Classifications of Hypertensive Heart Disease*

Criteria	Authors, Year	Reference	Characteristics
Clinical	WHO/ISH (1993)	18	Three groups of HHD according to the organic lesion, including the heart (1=no; 2=signs of involvement; 3=clinical complications)
Anatomic	Framingham Study (1987)	19	Three groups according to LVH (1=disproportionate septal hypertrophy; 2=concentric LVH; 3=excentric LVH [3a, dilated; 3b, non dilated])
	Frohlich et al (1989)	20	Four degrees according to LVH (1=no; 2=initial; 3=established; 4=heart failure)
	Ganau et al (1992)	21	Four groups according to LVH (1=LV normal; 2=concentric LV remodeling; 3=concentric LVH; 4=excentric LVH)
Functional	Iriarte et al (1993)	22	Four groups according to the physiological involvement (1=diastolic dysfunction; 2=LVH (2a, with normal FC; 2b, with reduced FC); 3=heart failure with normal EF; 4=heart failure with reduced EF)

*FC indicates functional capacity; HHD, hypertensive heart disease; EF, ejection fraction; LVH, left ventricular hypertrophy; LV, left ventricle.

TABLE 2. Clinical Classification (“VIA”) of Hypertensive Heart Disease*

Ventricle	Ischemia	Arrhythmia
0: Normal	0: Not clinically apparent	0: No or banal extrasystole
1: Left ventricular hypertrophy	1: Angina/microvascular ischemia	1: Paroxysmic AF
2: Dysfunction or diastolic HF	2: Angina / macrovascular ischemia	2: Permanent AF
3: Dysfunction or systolic HF	3: Acute coronary syndrome	3: AF and embolism

*AF indicates atrial fibrillation; HF, heart failure.

cases the epicardial coronary vessels may be affected and an acute coronary syndrome may appear. Finally, atrial fibrillation is the most common arrhythmia in hypertension; although a certain degree of overlapping may exist, it usually starts by being paroxysmic and finishes by being permanent, and, in certain cases, can be complicated by an embolic event.

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