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Special Article

The Value of Using the Entire New York Heart Association's Classification of Heart and Vascular Disease

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Summary: The New York Heart Association functional classification is commonly used because the value of its determination is generally appreciated. The other four parts of the classification (etiology, anatomy, physiology, and objective assessment) are used less often. The purpose of this paper is to point out the value of using the entire New York Heart Association classification.

Key words: New York Heart Association classification

Introduction

Trainees and practitioners of medicine will not continue to do anything unless they perceive the value of doing it. This ranges from such simple acts as weighing a patient to the use of a uniform method of classifying disease.

In 1921, Dr. Paul Dudley White, the father of American academic cardiology, working in Boston, and a group of physicians working independently in New York created what must have been the first classification of heart disease.[1] The criteria committee of the New York Heart Association (NYHA) produced the 9th edition of the book *Nomenclature and Criteria for Diagnosis of the Heart and Great Vessels* in 1994.[2]

Most authors of medical and surgical scientific articles about the heart use the NYHA classification for heart failure, but usually ignore the other four parts (etiology, anatomy, physiology, and objective assessment) of the classification. The assumption is that they understand the value derived by identifying the functional classification for heart failure, but may not perceive the value of identifying and recording the other four parts of the classification.

Accordingly, the purpose of this communication is to comment on the value of each of the five parts of the NYHA's classification of heart and blood vessel disease.

The entire five-part classification of the NYHA should be listed in a "complete problem list" created for each patient.[3] Even this act deserves a comment. A trainee or practicing physician should identify all of the patient's problems in a numbered list. The wise trainee and practitioner then determine the relationship of the problems to one another.

Smart doctors do not treat heart disease, liver disease, lung disease, brain disease, and so forth, the same way in every patient. Their treatment is always tempered by the patient's other health problems. For example, good doctors do not consider the use of coronary artery surgery for functional class 2 stable angina pectoris in an 85-year-old man with advanced cancer of the prostate and early signs of Alzheimer's disease.

The Entry "Heart Disease"

The heading "Heart Disease" in the problem list indicates that the physician has found evidence of heart disease. The first three entries under the heading should display the evidence used to state there is heart disease and should reveal the etiologic, anatomic, and physiologic abnormalities that have been found.

Etiology

The disease process that created the cardiac abnormalities should be listed under etiology. This would include entries such as coronary atherosclerotic heart disease; hypertensive heart disease; rheumatic heart disease, including the involved valve; dilated, hypertrophic, or restrictive cardiomopathy; calcific aortic stenosis of the elderly; pericarditis; myocarditis; etc. When a rhythm disturbance such as atrial fibrillation is present but no cause is found, lone atrial fibrillation would be listed. A list of accepted etiologies may be found in Reference 3.

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Many trainees do not understand the difference between an etiology and the effect of an etiology. They may state that the patient has mitral valve disease, which simply designates the location of the damage, but does not indicate the etiology. A true teacher should correct them. In addition, trainees commonly state the etiology of the heart disease is coronary artery disease. Again, the true teacher must correct them because such an entry only indicates there is something wrong with the coronary arteries. It is not wise to simply assume that atherosclerosis is the only cause of coronary artery disease. A seasoned physician also thinks of, and looks for, clues for nonatherosclerotic coronary disease. Also, since most Americans have some degree of nonobstructive coronary atherosclerosis, the smart physician lists "coronary atherosclerotic heart disease" to designate that a patient's angina pectoris or infarct is caused by atherosclerotic plaques that are obstructive to coronary artery blood flow.

A trainee or practitioner may state that the patient has hypertension, but not state whether the etiology of the hypertension is essential or due to one of the several secondary causes. In other words, the examiner may not realize the vast difference in stating the physical finding of hypertension and stating the etiology of the hypertension.

The identification of symptoms, physical findings, and abnormal laboratory data should stimulate a thought process. When no cause (etiology) of an abnormal finding is apparent, it is useful to draw an arrow after the entry to indicate that a differential diagnosis must be created.

Anatomy

The first entry listed under anatomy should be the heart size. It is not sufficient for the examiner to simply state the heart is large; it is necessary to determine which chambers are larger than normal. The trainee or practitioner determines this by precordial palpitation and by interpreting the chest x-ray film and the electrocardiogram. It is amazing to discover occasionally that these assessments, as well as the results of the echocardiogram, have been made but the examiner seems to do nothing with the information. The examiner, of course, must determine whether the etiology he or she has listed can cause the anatomic abnormalities that have been found.

Other anatomic abnormalities are listed after the entry regarding heart size. These include the location of a myocardial infarction, the presence of pericardial effusion, the location of valve disease, and the results of echocardiography and coronary arteriography if they have been done. The date the procedures were performed must always be listed.

In brief, trainees or practitioners should list under anatomy all anatomic abnormalities that they believe a pathologist inspecting the heart would identify. Furthermore, to restate for emphasis, the examiner must know whether the etiology that has been listed can cause the anatomic abnormality that has been identified. For example, if the etiology is listed as rheumatic heart disease with mitral stenosis, but there is left ventricular hypertrophy, then something is wrong because mitral stenosis does not cause left ventricular hypertrophy.

The location of peripheral arterial obstruction is listed under anatomy.

Physiology

The physiologic consequences of heart disease should be listed under physiology. These include heart failure, stable angina pectoris, unstable angina pectoris, cardiac syncope, circulatory shock, areas of dyskinesis found on physical examination and echocardiography, ejection fraction (with the date) found on echocardiogram or angiography, the physiologic findings of cardiac catherization, and the location of intermittent claudication.

Murmurs due to stenosis and regurgitation should be listed under physiology, as should electrophysiologic conditions noted on the electrocardiogram.

Nascent trainees seldom appreciate the physiologic consequence of disease of the heart and peripheral arteries and veins. An abnormal physiologic phenomenon must never be written as an isolated entry in the medical record. It is much wiser to indicate the etiologic and anatomic context in which the physiologic abnormality occurs.

Functional Status

This important assessment of a patient's ability to work and play is the most commonly used part of the NYHA classification. The other four parts of the classification are also important if one wishes to understand the abnormal heart and its complications.

The New York Heart Association classification for heart failure should be used for assessing functional status.[2] For assessment of stable angina pectoris the Canadian Classification and for assessment of unstable angina pectoris the Braunwald Classification are currently recommended.[5]

Objective Assessment

The entry "objective assessment" is probably the least well understood part of the classification.

This entry indicates that the examiner understands that symptoms due to heart disease do not always parallel the seriousness of disease as determined by objective data. The functional classification of heart failure and stable or unstable angina is a symptom-limited assessment and, when used alone, does not predict outcome as accurately as objective data. For example, four-chamber enlargement, an ejection fraction of 10 percent, a systolic pulmonary blood pressure in the pulmonary artery of 100 mmHg, left main or triple-vessel disease of the coronary arteries, and so forth, indicate a poor outlook, even if the functional classification is 2. These findings would be graded D in a classification using a possible A, B, C, or D.

We in the profession understand that an asymptomatic colon cancer found on colonoscopy is viewed as serious and should be removed surgically. Here there is an obvious divergence between symptoms and objective findings—but it has been more difficult for trainees and practicing physicians to

understand that the same divergence exists in patients with heart disease.

For an example of a "complete problem list," see Table I.

TABLE I "Complete Problem List"

June 2, 2005	Mrs. Jane Doe (age 38)
1. Heart Disease	
Etiology:	Rheumatic heart disease (mitral stenosis)
Anatomy:	Slight right ventricular hypertrophy
	Left atrial enlargement
	Mitral valve calcification
Physiology:	Mitral valve stenosis
	Congestive heart failure
	Atrial fibrillation (apical rate 160 beats/min)
	Pulmonary hypertension
Functional:	Class 3
Objective Assessment: C	
2. Cancer left breast (operated June 2003)	
3. Essential hypertension (controlled with therapy)	
4. Anxiety	

General Comments

The classification of disease is one of the great advances of medicine. An effort is currently being made to classify most diseases because it is now commonly realized that there are clinical subsets of a disease process and that some subsets respond to modern treatment while others do not.

Summary

The NYHA classification should be used for all patients who have heart disease, peripheral arterial disease, and venous disease. The classification demands a type of thinking that pulls together all of the data that are germane to the subject—and all the data must fit. The functional and objective assessment of the disease indicates how sick the patient is and what the future holds.

- Those who use the NYHA classification and produce a complete problem list for every patient learn to view the cardiac diagnosis within the context of the patient's other problems. This is the first step in exercising judgment in the care of the patient. In addition, it prevents the improper use of certain drugs given for one disease, but contraindicated in another disease.
- The complete NYHA classification for heart disease demands that the examiner knows, and has the skill to discover, the signs and symptoms produced by heart disease.
- The examiner should be able to identify the etiology of the heart disease in most patients. The altered cardiac anatomy and physiology must be characteristic of the stated etiology. For example, a patient with rheumatic mitral stenosis should not have left ventricular hypertrophy. This reverse correlation is one of the most important ways of preventing diagnostic errors.
- The physiologic complications of heart disease include heart failure, stable and unstable angina, arrhythmias, syncope, cardiogenic shock, and electrocardiographic abnormalities. The physiology entry prevents the examiner from listing heart failure or angina pectoris as an isolated event without identification of the etiology.
- The physiologic entry demands considerable thought and forces the examiner to understand that symptoms, such as angina, or signs, such as an elevated blood pressure, are not diagnoses. The classification forces the user to differentiate between the etiology of heart disease and symptoms and signs of heart disease.
- The functional classification of heart failure and stable and unstable angina pectoris indicates how much a patient with heart disease can do without symptoms. This allows the sensitive physician to know how much the patient's disease has interfered with his or her life style. The functional classification does not always parallel the prognosis of the disease process. For example, a patient with class 2 stable angina may have a myocardial infarct or may die suddenly.
- The objective assessment of the patient requires the examiner to use objective data such as a huge heart, signs of severe valve disease, the location and severity of coronary artery obstruction, and the pulmonary artery pressure to judge the seriousness of the disease and the prognosis of a patient.

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