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VIEWPOINT

Heart Failure

TNM-Like Classification

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Staging of heart failure represents a major issue in clinical practice. In this setting, the MOGE(S) classification was designed to be similar to the TNM classification used in oncology. Nevertheless, MOGE(S) nosology differs greatly from the key elements of the TNM classification, as well as its simplicity and clinical applicability. In fact, MOGE(S) acronym stands for morphofunctional characteristics (M), organ involvement (O), genetic or familial inheritance pattern (G), etiological information (E), and functional status (S). Recently, a new TNM-like classification for heart failure was proposed. This classification, named HLM, refers to heart damage arising from an initial stage of impaired systolic or diastolic function, without structural injury, to an advanced stage of biventricular dysfunction (H), different stages of lung involvement (L), and malfunction of peripheral organs such as the kidney, liver, and brain (M). HLM classification was influenced by the key elements of TNM staging: simplicity, clinical usefulness, efficacy for planning a therapeutic strategy, and ability to determine patient prognosis. HLM classification seems to be easily applied in the real world and valuable for balancing economic resources with the clinical complexity of patients. (J Am Coll Cardiol 2014;63:1959–60) © 2014 by the American College of Cardiology Foundation

Recently, an interesting nosology, the MOGE(S) classification, was published (1) that addresses the different characteristics of cardiomyopathies. It associates morphofunctional characteristics (M), organ involvement (O), genetic or familial inheritance pattern (G), and etiological (E) information on a genetic defect or underlying disease/cause (i.e., viral, autoimmune, toxicity); it also provides data on the functional status (S) using the American College of Cardiology/American Heart Association (ACC/AHA) stage and New York Heart Association (NYHA) functional classes. We read with interest the article by Arbustini et al. (1) that describes cardiomyopathies as "disorders characterized by morphologically and functionally abnormal myocardium in the absence of any other disease that is sufficient, by itself, to cause the observed phenotype." However, as the authors assumed, the MOGE(S) classification could be complex in the beginning, mostly in clinical practice. In fact, the MOGE(S) example $M_{D[AVB]}$ O_H $G_{AD}E_G$-*LMNA [p.Arg190Trp]* should be interpreted as the classification for a patient presenting with an early hypertrophic cardiomyopathy with heart involvement, autosomal dominant transmission, genetic etiology, caused by the *p.Arg403Glu* mutation of the *MYH7* gene, with the ACC/AHA stage A and NYHA functional class I. We agree with the commentary of Elliott (2), which stated that "the concept of 'stage' is difficult to translate from the cancer context. In the grading of tumors, staging is used to plan treatment and to indicate prognosis," referred to the Arbustini et al. (1) classification. In fact, we believe that MOGE(S) nosology differs greatly from the key elements of TNM classification, as well as its simplicity and clinical applicability. We believe that the values of the TNM classification are simplicity, clinical usefulness, efficacy for planning a therapeutic strategy, and skill in determining a patient's prognosis. Having these goals in mind, we proposed a staging system for heart failure (HF) similar to the TNM classification used in oncology (3). It aimed to grade heart failure in order to plan treatment and evaluate prognosis in a very simple way as well as with the TNM. In our proposed HLM classification, the first step, where "H" for heart, may be analogous with "T" in the TNM classification. The second step in this HF staging is the assessment of lung involvement "L". For the functional and anatomic proximity of the lungs to the heart, they may be indeed considered, continuing the analogy, as a lymph node station. Finally, remembering the etymological meaning of "metastasis," which in Ancient Greek meant "what is beyond there," similar to the concept used in oncology for metastasis, the "malfunction" of peripheral organs such as the kidney, liver, and brain may represent the final step "M" (Fig. 1).

In conclusion, the MOGE(S) nosology represents a translation link between basic science and clinical medicine. However, this classification differs greatly from the goals of TNM, as we trust that it seems to be too complex to be used in the clinical practice. On the other hand, our classification

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Heart	Lung	Malfunction of Other Organs
H-1: impaired systolic or diastolic function of LV without structural damage	**L-0:** no lung involvement **L-1:** Hemodynamic congestion **L-2:** Clinical congestion **L-3:** Cardiac lung*	**M-0:** no malfunction of other organs **M-1:** single organ damage due to HF **M-2:** double organ damage due to HF **M-3:** multiple organ damage
H-2: LV with systolic or diastolic dysfunction and structural damage (hypertrophy, previous myocardial infarction)		
H-3: systolic and diastolic dysfunction (and/or EF< 35%) with left ventricular remodeling	**Parameters of pulmonary damage:** -Precapillary pulmonary hypertension (mPAP > 25mmHg ; PAWP < 15mmHg) -Post-capillary pulmonary hypertension (mPAP > 25mmHg; PAWP > 15mmHg) -Pleural effusion -Pulmonary edema	**Other Organs:** - Kidney - Liver - Central nervous system
H-4: biventricular systolic and diastolic dysfunction		

Figure 1 **HLM Classification**

In each column, different stages of heart (H-1 to H-4), lung (L-0 to L-3), and peripheral organ involvement (i.e., kidney, liver, and brain [M-0 to M-3]) are shown. *The Cardiac Lung is the arterialization of precapillary and postcapillary pulmonary vasculature and it is easy to imagine how this condition maximally compromises the respiratory function. EF = ejection fraction; HF = heart failure; LV = left ventricle; mPAP = mean pulmonary arterial pressure; PAWP = pulmonary artery wedge pressure. Adapted with permission from Fedele et al. (3).

seems to be easily applicable in the real world and would deserve the adjective "TNM-like." Nevertheless, further clinical and scientific validation is needed.

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