Editorial

New frontiers in nuclear cardiology

The field of cardiovascular disease diagnosis and management is moving at a very rapid pace. Different diagnostic tools have been invented, some of them measuring the same thing using different physiologic principles and technology. As such, scientists are continuously looking for new applications for already available diagnostic tools. Thanks to that pursuit led by restless investigators, we can now have more sensitive and specific stress tests with the use of myocardial perfusion imaging. In this number of *Medicina Universitaria* there are two articles addressing new uses of nuclear cardiology imaging. One study[1] addresses the clinical relevance of ST depression in the electrocardiogram in the recovery phase of an exercise stress test by assessing perfusion abnormalities in subjects undergoing a nuclear stress test to diagnose myocardial ischemia. ST depression during the recovery phase has been considered by some as a sign of myocardial ischemia and for others a mere paraphenomenon without clear clinical significance. In this study by De La Peña-Almaguer et al, the prevalence of abnormalities suggesting ischemic changes or fixed defects suggesting old myocardial infarction was elevated, suggesting that ST depression during recovery may not be considered a benign finding. It is not clear if that high prevalence of nuclear isotope uptake abnormalities was higher, lower or the same than the prevalence found in patients with ST depression during exercise. More importantly, it is not clear if the prevalence of such abnormalities was higher in the study group than in those subjects with a high pretest probability of CAD but had no ECG changes at all. Further investigation is needed to clarify the relative importance of the findings by Dr. De La Peña.

The second study assessed the diagnostic value of myocardial perfusion tests, specifically using Tc-99 tetrofosmin-gated SPECT, to detect left ventricular hypertrophy.[2] The results were not very encouraging. The sensitivity of this myocardial perfusion test was too low to guarantee any clinical value, despite the excellent specificity of the test to detect hypertrophy. The results were not necessarily surprising. Images derived from nuclear perfusion scans have a low resolution with a discriminatory power in the range of 5-10 mm, much lower than echocardiography where the resolution is in the range of 2 mm. Furthermore, is it unlikely that clinicians suspecting left ventricular hypertrophy would request a nuclear scan to diagnose it. However, patients without a medical history of hypertrophy, particularly those with no previous echocardiogram who are found to have hypertrophy in a nuclear scan may need further cardiac evaluation. As noted in the manuscript, the presence of left ventricular hypertrophy increases the risk for cardiovascular events. Patient with this abnormality require an aggressive management of risk factors, tight blood pressure response if hypertension was the cause of the hypertrophy, or further cardiac evaluation if the hypertrophy occurs in the absence of hypertension. Hypertrophic cardiomyopathy would be a disease to rule out, as some patients with this condition are at high risk for sudden death.

Dr. De La Peña deserves to be congratulated for publishing these two clinical studies that will help us clarify the expanded utility and limitations of nuclear cardiology.

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2. De la Peña-Almaguer E, Desai MY, Mannting F. Detection of left ventricular hypertrophy by Tc-99 tetrofosmin gated-SPECT. Medicina Universitaria 2009;11:30-36.