

Cardiovascular research in pathology: where are we now?

Editorial

Cardiovascular disease, whatever approach of study has been conducted – and there are a large number as epidemiological, pathological, clinical, therapeutic, prognostic, and so on – clearly shows morphological and ultrastructural patterns carefully identified, to whom the clinical signs of a specific disorder are met.¹ In addition, cardiovascular diseases still are one of the most prevalent causes of morbidity and mortality in the western countries.^{2,3}

It is worth noting that a medical research recognizes several steps to provide reliable data with regard to a studied topic. In addition, there is evidence that when the result of an opinion poll is announced the sample size of the studied parameter should be given.⁴

The first step to be conducted is analyzing the characteristics of a disease in a single individual and, then, in a large number of subjects affected by the same disorders (sample size). When a common occurrence of observations can be noted in almost all individuals we can conclude the second step (statistical opinion) consisting of the assessment of the type and outcome of the analyzed disorder.

The third step allows to classify the symptoms and basic alterations, which accompany the disease studied (analysis of the results).

Finally, a fourth phase of the research conducted permits to group all diseased subjects showing the same disorders in the context of the specific disease (standardized results).

Following this pattern, it is worthy of mention the degree now reached by the cardiovascular research. The observations related to the ischemic heart disease allow establishing that 3 factors of pathology have been clearly demonstrated by the findings on the subject: atherosclerotic coronary occlusion with or no complications, types of necrosis observed in the acute myocardial infarction as coagulative, colligative and myocytolysis, and no or minimal morphological alterations of the myocardium when an individual meets sudden cardiac death.⁵⁻⁸

Morpho-pathological alterations of hypertension can be minimal or absolutely absent unless a thickening of the arterial wall. On the contrary, when elevated blood pressure associated with microvascular pathology and organ damage, severe lesions, which depend on both degree of hypertension and altered function of body organs affected, are clearly seen with a significant impact to determine the prognosis of the individuals showing these disorders.⁹⁻¹¹ Heart, brain, and, often, kidney are the pathological targets in the subjects suffering from severe and malignant hypertension. Artery vessel occlusion at great arteries and microcirculation can be identified as the most severe alterations able to cause organ damage in those individuals with complicated hypertension.

With regards to the morpho-pathological alterations of the congenital malformations of the heart and great vessels, valvular disorders, and pericardial disease, there is evidence that well

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established pathology has been described in the past¹² similar to that of the current observation.

A different approach requires the pathology of heart muscle, primarily myocarditis and hypertrophic cardiomyopathy.^{13,14}

Myocarditis is an inflammatory disease of the myocardium with a wide range of clinical presentations, from subtle to devastating results that can also cause death as a final result. On the contrary, hypertrophic cardiomyopathy does not show inflammatory patterns, but is an inherited intrinsic disease of the myocardium characterized by left ventricular hypertrophy without chamber dilatation in the absence of either a systemic or other cardiac disease. There is evidence that this field of cardiac pathology still requires further studies to clarify the true significance and extent of these diseases.

Conclusion

From the described observations, it is worth noting that the knowledge of cardiac pathology follows two clearly defined ways. The first, mainly related to valvular components of the heart, hypertension, and ischemic heart disease, is characterized by histopathologic patterns completely acquired, while continuously newer results update the alterations of myocardial cells when cardiac muscle is primarily involved with non-vascular mechanisms. For example, genetic pathology of the heart is a very encouraging field of investigations, which promise a more significant approach to define cardiac alterations.

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