

Parma 20 March, 2018

Cardio-renal crosstalk: Chronic kidney disease per se can cause cardiac impairment

Heart failure is a common comorbidity in chronic kidney disease (CKD) and is associated with high mortality in CKD patients. It has been believed that the development of heart failure in these patients was the “by-product” of common CKD comorbidities, such as diabetes or ischemic heart disease. Now, for the first time, a study in the current issue of NDT [1] indicates that CKD itself might cause cardiac impairment.

The interaction of heart and kidney interaction is a bidirectional organ crosstalk, several types of cardiorenal syndromes have already been described. Chronic kidney disease is common in heart failure – and vice versa. Both conditions share many risk factors such as diabetes, hypertension, and coronary artery disease. But is every kidney patient per se a cardiac patient? Or does it need a “bridging” comorbidity as cardiac disease or diabetes? This was the question a study, which has now been published in the March issue of NDT, aimed to analyse.

70 male CKD patients without any known cardiac disease (ischemic, arrhythmic or valvular) were recruited. The study population was limited to male gender only in order to minimise confounders (e.g. due to the effect of gender and body composition). In this study, their peak cardiac power output (CPO_{max}) was measured non-invasively during a cardiopulmonary exercise test (CPX). Physical exercise was used to drive the heart to its peak performance. CPO_{max} defines cardiac pumping capability that the heart achieves during maximal stimulation. The increase in power output is referred to as the cardiac reserve. Results showed a graded decline in CPO_{max} across the CKD study groups. Compared to healthy controls, CKD patients had a significantly lower CPO_{max} and cardiac reserve declined according to severity of kidney impairment. The authors of the study pointed out that this is the first study that demonstrated an impaired cardiac functional reserve in CKD patients without any known underlying cardiac disease. They suggest that a failing myocardium in CKD might be the underlying cause of cardiac impairment.

“According to this study, every kidney patient is per se a cardiac patient. This is an interesting theory that has to be further investigated”, explains Professor Denis Fouque,

Lyon/France, NDT editor-in-chief. "Any new insight into the etiology of cardiac impairment in CKD is vital and might lead to new and promising therapeutic strategies. This is important, because cardiovascular disease is still by far the leading cause of morbidity and mortality in CKD patients."

[1] <https://academic.oup.com/ndt/article/33/3/450/3835850>

About ERA-EDTA

With more than 7,500 members, the ERA-EDTA ("European Renal Association – European Dialysis and Transplant Association") is one of the biggest nephrology associations worldwide and one of the most important and prestigious European Medical Associations. It supports basic and clinical research in the fields of clinical nephrology, dialysis, renal transplantation and related subjects. It also supports a number of studies as well as research groups and has founded a special "Fellowship Programme" for young investigators as well as grant programmes. In order to involve young nephrologists in all its activities ERA-EDTA has created the "Young Nephrologists' Platform" (YNP), a very active committee whose board includes members who are 40 years old or younger. In addition, it has established various working groups to promote the collaboration of nephrologists with other medical disciplines (e.g. cardiology, immunology). Furthermore, a "European Renal Best Practice" (ERBP) advisory board was established by the ERA-EDTA to draw up and publish guidelines and position statements. Another important goal of the ERA-EDTA is education: The series of CME-courses combined with the annual congress offer an attractive scientific programme to cover the need for continuous medical education for doctors working in the fields of nephrology, dialysis and transplantation. The association's journals, NDT (Nephrology, Dialysis, Transplantation) and CKJ (Clinical Kidney Journal), are currently the leading nephrology journals in Europe; furthermore NDT-Educational is the online educational journal of the society, with free access for all users, as well as being a very important and useful feature of NDT-Educational "Literature Review". The ERA-EDTA Registry is a large epidemiologic database comparing countries by assessing nephrology practices throughout Europe. ENP, the European Nephrology Portal, is the latest new initiative of ERA-EDTA: here all those interested in the activities of the Society can find everything that is happening, all in one place! Finally, ERA-EDTA is a member of the European Kidney Health Alliance (EKHA), a consortium of patients, nurses and foundations all related to renal issues that actively interacts with the European Parliament. For more information, please visit www.era-edta.org