Ali Reza Khoshdel et al., J Nephrol Ther 2014, 4:4
http://dx.doi.org/10.4172/2161-0959.S1.016

OMICS Group Conferences
Accelerating Scientific Discovery

3rd International Conference on
Nephrology & Therapeutics
June 26-27, 2014 Valencia Conference Centre, Valencia, Spain

Hemodynamic response to exercise predicts the development of severe renal failure: Revealing a cardio-renal secret cross talk

Ali Reza Khoshdel[1,2], Shane Carney[2], Saxon White[2] and Alastair Gillies[2]
[1]AJA University of Medical Sciences, Iran
[2]The University of Newcastle, Australia

Background: Renal Failure, even at an early stage, increases the risk of developing and exacerbating cardiovascular (CV) disease. The corollary of that observation should be that CV disease would not only increase the risk of renal function deterioration, but also cause renal damage, a concept not previously proposed.

Aim: Evaluate renal function after follow-up in different levels of hemodynamic response to exercise stress test, as an index of CV function.

Method: The hemodynamic response to a graded exercise stress test was measured in 70 candidates to evaluate the association of heart rate and blood pressure change (ΔHR and Δ SBP), heart rate reserve (HRR), chronotropic incompetence (% in achievement of maximal predicted heart rate-%MPHR), and circulatory power (CirP) with the development of severe renal failure (eGFR<30) during a 123 (33-179) month follow-up period.

Results: Survival analysis methods demonstrated that the probability of severe renal failure development was greater in subjects with lower levels of ΔHR, HRR, %MPHR and CirP (Log-rank test, P=0.002, 0.01, 0.02, 0.008 respectively). These effects remained significant after multivariate adjustment for age, resting pulse pressure (rPP), hypertension, diabetes and exercise test result using a cox-proportional hazard analysis (Hazard Ratio= 5.9, 2.9, 3.3, 2.9, respectively; all P<0.05). Having an rPP ≥60 was accompanied by 7.4 (95% CI: 1.8-30.9) times greater risk of developing severe renal failure, independent of age and resting SBP (P=0.006). However the data did not show a significant association between Δ SBP and development of severe renal failure.

Conclusion: The hemodynamic responses to a standard graded exercise stress test independently predicted the development of severe renal failure. While rPP, an indirect measure of arterial compliance, was a strong predictor for developing severe renal impairment, arterial stiffness may also be a factor linking ventricular and kidney function. The results also suggest that the early diagnosis of kidney disease should include a CV assessment and vice versa.

Biography

Ali Reza Khoshdel graduated as a Medical Doctor in 1994 and completed his PhD in 2007 from the University of Newcastle, Australia. He did his postdoctoral studies in chronic kidney diseases, diabetes and hypertension as well as renal replacement therapies and is expert in arterial stiffness studies. He is working as an Associate Professor in clinical epidemiology and is the director of the Modern Epidemiology Research Centre, and is currently the Dean of education in his affiliated university. He has published more than 80 papers and book chapters in reputed journals and serving as an editorial board member and of several international journals.

alikhoshdel@yahoo.com