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Serum levels profile of pentraxin-3 and high sensitivity C-reactive protein in patients with chronic kidney disease treated with or without hemodialysis

El Attar H A, Abaza M M, Gaber E W and **El sharkawy R M**
University of Alexandria, Egypt

Background: The first cloned long pentraxin is Pentraxin 3 (PTX3) and C-reactive protein is a human short pentraxin. Pentraxin 3 has a bigger molecular size (40.6 KDa) compared to CRP (21.5 KDa).The long PTX3 is produced by diverse cell types in response to primary inflammatory signals and specific neutrophil granules store PTX3.

Aim: Evaluation of serum levels of long Pentraxin 3 and high sensitivity C-reactive protein in patients with chronic kidney disease treated with or without hemodialysis.

Methods: The study included 75 subjects, 25 healthy controls (group1), 50 patients without cardiovascular disease subdivided into: 25 patients with chronic kidney disease (CKD) on conservative therapy (group 2a) and 25 CKD patients on maintenance hemodialysis (group 2b). To all the studied subjects, the following was done: Electrocardiography, carotid intima media thickness, fasting serum glucose, renal, liver and lipid profiles, high-sensitivity C-reactive protein (hsCRP) and PTX3 by ELISA.

Results: There was a significant decrease in the mean levels of albumin in all the studied chronic renal failure patients when compared to controls. Hypoalbuminemia is due to malnutrition and inflammation in CKD patients. There was a significant increase in hsCRP in patients on hemodialysis therapy when compared to both controls and patients on non-dialytic therapy. The circulating value of CRP reflects ongoing inflammation and/or tissue damage. There was a significant increase in PTX3 in patients on hemodialysis therapy as compared to controls. PTX3 levels may directly reflect the inflammatory status. Since a state of persistent low-grade inflammation is a common feature in hemodialysis patients so PTX3 increased in such patients. There were no correlations between PTX3 and hsCRP in the studied groups. By drawing the ROC curve for hsCRP and PTX3 in patients on non-dialytic therapy (Group 2a), the area under the curve was 0.545 (p=0.594) and 0.653 (p=0.073), respectively. In patients on hemodialysis therapy (Group 2b), the area under the curve was 0.735 (p=0.006) for hsCRP and 0.765 (p=0.002) for PTX3. By using the best cut off values, it was found that high sensitivity C-reactive protein showed a better specificity and positive predictive value than PTX3 while PTX3 showed a better sensitivity than hsCRP in the studied 2 groups of patients.

Conclusion: It could be concluded that using both hsCRP and PTX3 complement each other to give better specificity and sensitivity as predictors of inflammation in chronic kidney disease patients.

Recommendation: Study of PTX3 and hsCRP on a large number of chronic kidney disease patients with cardiovascular disease.

Biography

Hoda EL-Attar has completed her MBBS in 11/1979, MS in Chemical Pathology 4/1987 ,MD in Chemical Pathology in 4/2001. She worked as an assistant Professor in Chemical Pathology from 28/8/2006 .Now She is working as a professor in Chemical Pathology since 30/8/2011 in Alexandria University Egypt. She is a member of the European Society of Cardiology (ESC): Working Group on Atherosclerosis and Vascular Biology. She has published 27 papers.

hoda.ali55151@yahoo.com

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