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Research Letter

Association of testosterone, inflammation with the severity of first acute ST-elevation myocardial infarction

Men with ischemic heart disease (IHD) are found to have low serum testosterone concentration and it is associated with chronic vascular and systemic inflammation. However, the findings are conflicting and warrant further investigations.[1,2] Our aims were to find out whether serum total testosterone (TT) and high sensitivity C-reactive protein (hs-CRP) differ between men with and without acute ST-elevation myocardial infarction (STEMI) and to find out, if TT and hs-CRP are associated with the severity of STEMI.

This study was conducted from January 2010 to December 2011. One hundred and three males with first acute STEMI and 103 male controls without a history of IHD in the age range of 30–70 years were studied. Serum TT and hs-CRP concentrations were estimated. Severity of STEMI was determined by clinical risk assessment tools; TIMI (Thrombolysis In Myocardial Infarction) score, GRACE (Global Registry of Acute Coronary Events) score and modified QRS scoring system based on electrocardiographic findings.[3] Ethical clearance was obtained from the local Ethical Review Committee and data collection was done after the informed written consent of the study subjects.

Mean basal on-admission serum TT (11.5 ± 3.2 vs. 18.1 ± 7.2 nmol/L, $p = 0.001$) was significantly lower and hs-CRP concentration (3.7 ± 0.84 vs. 1.7 ± 0.6 mg/L, $p = 0.001$) was significantly higher in STEMI patients compared to controls. A significant negative correlation ($r = -0.640$, $p = 0.001$) was observed between hs-CRP and testosterone concentrations. Severity of STEMI graded by clinical risk scores showed no correlation with the TT concentration, but significant positive correlations were observed with hs-CRP concentration [(TIMI score; $r = 0.226$ ($p = 0.022$), GRACE score; $r = 0.361$($p = 0.001$), ECG score; $r = 0.314$($p = 0.001$)].

Our findings are in line with previous literature where some investigators have shown low testosterone and high hs-CRP in patients with IHD and negative correlation between TT and hs-CRP and a significant positive correlation between hs-CRP and indicators of severity of myocardial infarction.[4,5] The novelty of our study is that confirmed cases of first acute STEMI patients were taken as the cases and the association between hs-CRP and the severity of myocardial infarction were explored where there is a gap of knowledge in the literature.

In conclusion, elevated serum hs-CRP and low total testosterone concentrations are associated with acute ST-elevation myocardial infarction. Severity of myocardial infarction determined by the clinical risk scores does not show any relationship with the serum TT concentration, but serum hs-CRP showed a significant positive correlation.

Conflict of interest

Authors declare that they have no conflict of interest.

References

1. Ruige JB, Mahmoud AM, De Bacquer D, et al. Endogenous testosterone and cardiovascular disease in healthy men: a meta-analysis. *Heart*. 2011;97(11):870–875.
2. Fonseca FA, Izar MC. High-sensitivity C – reactive protein and cardiovascular disease across countries and ethnicities. *Clinics (Sao Paulo)*. 2016;71(4):235–242.
3. Wagner GS, Freye CJ, Palmeri ST, et al. Evaluation of a QRS scoring system for estimating myocardial infarct size I. Specificity and observer agreement. *Circulation*. 1982;65(2):342–347.
4. Hu X, Rui L, Zhu T, et al. Low testosterone level in middle-aged male patients with coronary artery disease. *Eur J Intern Med*. 2011;22(6):e133–e136.
5. Rashidinejad H, Hosseini SM, Moazenzadeh M, et al. Relationship between serum level of High-sensitive C-reactive protein and extension of myocardial involvement in patients with acute myocardial infarction. *Rom J Intern Med*. 2012;50(3):211–215.

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