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Biological factors linking depression and anxiety to cardiovascular disease

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Introduction: Depression and anxiety has been related to a higher risk of developing coronary heart disease, but the mechanism that accounts for this association is unclear. Recent advances in biological psychiatry have included the discovery of numerous neurochemical, neuroendocrine, and neuroanatomic alterations in depression and anxiety disorder. The aim of our study was to investigate the association between history of depressive episode and anxiety and presence of high cholesterol as well as C-reactive protein (CRP) level in patients with aorto-coronary bypass graft surgery and coronary angioplasty. Methods: The research was performed in n=70 patients. Research group was divided into two groups. The first was angioplasty group (n=35 patients) and the second was aorto-coronary bypass graft surgery group (n=35 patients). Investigation was made in pre-and postoperative periods of coronary angioplasty and aorto-coronary bypass graft surgery. To evaluate depression we used Beck depression scale. Anxiety was assessed by the Spilberger State-trait anxiety scale.

Results: Our study demonstrated strong association between depression, state anxiety and increased total cholesterol level in pre and post-operative periods (after 6 months) of coronary angioplasty (r=0.6498; p<0.001. r=0.4867, p<0.001). It was also revealed correlation between depression, state and trate anxiety and increased total cholesterol level in pre and post-operative periods (up to 1 year) of aorto-coronary bypass graft surgery group (r = 0.66252 p<0.001; r = 0.56865 p=0.003; r=0.4767, p<0.001). All these patients in postoperative periods received anti-ischaemic treatment (β-blockers, statins, antithrombotics, etc.). Results show that increased level of c-reactive protein was majority discovered in aorto-coronary bypass graft surgery group n=28 (70%), in angioplasty group c-reactive protein was elevated in n=12 (30%); p = 0.012. In angioplasty group patients had increased level of CRP had high degree of depression p=0.001. In these group was revealed high degree of trait anxiety too p<0.001. In aorto-coronary bypass surgery group elevated level of CRP was associated with high degree of depression p=0.00.

Conclusions: In this study of patients with documented coronary artery disease It was revealed strong association between moderate and high level of depression and anxiety and total cholesterol level in both groups. Our study also demonstrated association between depression, anxiety and increased c-reactive protein level. Inflammation, the key regulator of CRP synthesis, plays a pivotal role in cardiovascular disease. These results may have important implications in explaining the pathophysiological mechanisms linking depression and anxiety to cardiovascular disease. Greater attention to depression and anxiety in patients may allow physicians to provide more appropriate and cost-effective care for them and avoid complications.