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Features of acute coronary syndrome associated with anxiety and depression disorders

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Cardiovascular Diseases (CVDs) are a leading cause of death, with the highest mortality rates observed during exacerbations of Coronary heart disease (CHD). A high incidence of affective disorders has been demonstrated in patients after acute coronary syndrome (ACS), both in the inpatient and outpatient settings.

The aim of this review is to present and analyze data from national and international studies on the features of ACS, associated with anxiety and depression disorders, published between 2016 and 2024.

Methods. The review was prepared using materials from peer-reviewed articles published on PubMed, eLIBRARY.RU, cyberleninka.ru, and the other resources from 2016 to 2024 were used.

Results. Along with well-established cardiovascular risk factors (RFs), such as arterial hypertension,

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smoking, and obesity, stress, anxiety, and depression are also recognized as risk factors. Due to hemodynamic disturbances in ACS, ischemic brain injuries may occur. These can lead to severe conditions, such as vascular delirium, as well as less severe disorders manifesting as cognitive impairment, sleep disorders, anxiety and/or depression.

Conclusion. To date, there are no clear, joint cardiology and psychiatry guidelines on diagnosis and management of psychiatric disorders in patients with ACS. Psychological and pharmacological interventions can have a positive effect and should be considered for ACS patients with depression, anxiety, and stress. Prior to discharge, all patients should be screened for mental disorders using validated questionnaires and, if necessary, a psychiatric consultation.

Keywords: Acute coronary syndrome, myocardial infarction, stress, anxiety, depression, risk factors, delirium, sudden cardiac death, antidepressants.

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Introduction

Cardiovascular diseases (CVDs) remain a leading cause of death, with the highest mortality rates observed during exacerbations of coronary heart disease (CHD) [1]. A high incidence of affective disorders has been demonstrated in patients after acute coronary syndrome (ACS), both in the inpatient and outpatient settings [2, 3]. Experts of the European Society of Cardiology (ESC) and the American Heart Association have noted an increasing impact of psychosocial factors, such as stress, depression, and anxiety on the development and progression of CVDs [4-6]. Due to hemodynamic disturbances in ACS, ischemic brain injuries may occur. These can lead to severe conditions, such as vascular delirium, as well as less severe disorders manifesting as cognitive impairment, sleep disorders, anxiety and/or depression [7-9].

The aim of this review is to present and analyze data from national and international studies on the features of ACS, associated with anxiety and depression disorders, published between 2016 and 2024.

Methods

The review was prepared using materials from peer-reviewed articles published between 2016 and 2024 on databases such as PubMed, eLIBRARY.RU, CyberLeninka, and other relevant scientific platforms.

Results

Along with well-established cardiovascular risk factors (RFs), such as arterial hypertension, smoking, and obesity, stress, anxiety, and depression are also recognized as risk factors [10]. However, to date, there are no clear, joint cardiology and psychiatry guidelines on diagnosis and management of psychiatric disorders in patients with ACS. Thus, an update to the ESC guidelines on ACS from 2023 [10] contains only one paragraph dedicated to mixed anxiety–depressive disorder (MADD) in ACS (13.2.4. Psychological considerations), reflecting the correlation between depression, anxiety, and stress and worse outcomes. Psychological and pharmacological interventions may have a positive effect and should be considered for ACS patients with depression, anxiety, and stress. Prior to discharge, all patients should be screened for mental disorders using validated questionnaires and, if necessary, a psychiatric consultation [5, 10].

The incidence of stress, anxiety and depression disorders in cardiovascular disease

The meta-analysis of 15 international clinical studies revealed that anxiety, depression, and psychosocial stress was associated with a 28% CVD risk increase [11]. MADD was most frequently observed in patients after acute myocardial infarction (AMI), with chronic heart failure (CHF), after cerebral strokes, in patients with atrial fibrillation (AF), as well as following advanced treatment procedures: coronary artery bypass graft (CABG) surgeries and implantations of cardioverter-defibrillators [12-14]. Chronic depression symptoms were identified in 65% of individuals with AMI, with every fifth of them diagnosed with an MADD [15]. According to research data [16], in pa-

tients with AMI, symptoms of anxiety, depression, and post-traumatic stress disorder (PTSD) occur in 9–60%, 11–20%, and 12–19% of cases, respectively. Stress, anxiety, and depression precede the development of AMI in 6–25% of cases [17]. Thus, ESC experts concluded the negative impact of anxiety, depression, and PTSD in patients with CVDs [18]. Derisi M.M. et al. mention in their work a 25.55% increase in the frequency of mental disorders among patients with coronary heart disease (CHD) from 2000 to 2021 compared to the period 1984–2000 [19]. Stress, anxiety, and depression are found in 58%, 33%, and 31% of patients with CVD, respectively [20, 21].

Stress, anxiety, depression, and the risk of adverse cardiovascular complications

A meta-analysis of 17 prospective studies, which analyzed the condition of 39,038 patients with ACS, found a 25% increased risk of adverse cardiovascular events (CV events) in patients with ACS associated with anxiety. However, after adjustment for depression, anxiety was not statistically significantly associated with mortality risk (p=0.37) [22]. Possible reasons for the link between depression and increased frequency of adverse CV events included lack of adherence to a healthy lifestyle (smoking, low physical activity, etc.), medication and rehabilitation non-adherence. ACS can cause post-traumatic stress, and PTSD triggered by ACS, in turn, can increase the risk of subsequent adverse CV events and mortality in patients. Clinically significant symptoms of ACS-induced PTSD are associated with a doubling of the risk of death and/or ACS recurrence (relative risk 2.00; 95% confidence interval (CI) 1.69–2.37) in patients with ACS who have clinically significant PTSD symptoms compared to patients without PTSD symptoms [22].

Mujkanovic J. et al. studied all cases of death among residents of Denmark aged 18 to 90 years in 2010 by analyzing death certificates and autopsy protocols: out of 4.3 million residents, the authors analyzed 45,703 death cases, of which 6,002 were caused by sudden cardiac death (SCD) [23]. The incidence of SCD was 1.79–6.45 times higher among patients with mental disorders than in the general population and was statistically significantly dependent on age ($p < 0.001$ in all age groups). In analyzing all death certificates and autopsy reports, the authors paid special attention to the medications that had been prescribed to the deceased[1].

Delirium and adverse outcomes in acute myocardial infarction

Delirium is an acute condition characterized by confusion, acute disturbances in attention, consciousness, or thinking, developing over several hours or days due to an underlying illness or medication side effects. Delirium cannot be explained by an alternative diagnosis or a comatose state [24].

Forms, key signs, and symptoms of delirium

There are three forms of delirium: hypoactive, hyperactive, and mixed. The key signs and symptoms of delirium include impaired attention (97%), long-term memory deterioration (89%), short-term memory deterioration (88%), disorientation (76%), reduced visuospatial abilities (87%), speech disturbances (57%), and disturbances of perception (50%) [25]. The Montreal Cognitive Assessment (MoCA) and the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU) are used for the detection of delirium. The incidence of delirium in patients with AMI ranges from 1.4% to 11%. Delirium not only prolongs hospitalization but also increases in-hospital mortality by 1.4–1.9 times [26, 27].

Risk factors for delirium development

Predisposing factors for delirium include: advanced age, male sex, central nervous system disorders (dementia, stroke, Parkinson's disease), visual or hearing impairments, alcohol intoxication, immobilization, and alcoholism accompanied by dehydration [24, 25, 27].

Initiating factors for delirium development include: use and/or withdrawal of narcotic, toxic, and other psychotropic substances; severe acute illness; urinary tract infection; hypoxemia; hyponatremia; shock; anemia; pain syndrome; bladder catheterization; surgical interventions; admission to the intensive care unit (ICU); and a high number of medical procedures. Pharmacological risk factors for delirium development include: narcotic analgesics (primarily morphine); psychotropic drugs (benzodiazepines, tri-

[1] Mujkanovic J, Warming PE, Kessing LV et al. Use of antidepressant medication linked to substantial increase in risk of sudden cardiac death. https://www.escardio.org/The-ESC/Press-Office/Press-releases/Use-of-antidepressant-medication-linked-to-substantial-increase-in-risk-of-sudden-cardiac-death

cyclic antidepressants, haloperidol, phenothiazines, Belladonna-derived drugs, antiparkinsonian agents); drugs with anticholinergic activity; certain antibiotics; codeine; cimetidine; captopril; dipyridamole; hypothiazide; digoxin; furosemide; isosorbide dinitrate; nifedipine; prednisolone; theophylline; and other drugs such as antihistamines, laxatives, non-steroidal anti-inflammatory drugs, H2-histamine receptor blockers, and anticoagulants.

The incidence of delirium can range from 5.7% in AMI patients admitted to the ICU to 40% in patients who have undergone open-heart surgery. Delirium, as a clinical manifestation of acute brain dysfunction syndrome occurring against the background of myocardial infarction (MI), is a serious complication of the underlying disease with an unfavorable prognosis.

Efficacy and safety of antipsychotic drugs in patients with delirium and myocardial Infarction

The efficacy and safety of antipsychotic drugs (neuroleptics) in patients with delirium and MI have not been sufficiently studied to date. An analysis of nine observational studies found that the odds of developing AMI were 1.88 times higher (odds ratio [OR] 1.88, 95% CI 1.39, 2.54) in users of antipsychotics compared to individuals who did not take antipsychotics. A subgroup analysis revealed an OR of 2.48 (95% CI 1.66, 3.69) among patients with schizophrenia and an OR of 2.64 (95% CI 2.48, 2.81) among short-term (<30 days) antipsychotics users. The authors of this meta-analysis confirm an increased risk of MI in users of antipsychotic drugs, demonstrating an elevated and more pronounced risk of AMI in short-term users [28]. In a number of studies, male sex, a diagnosis of schizophrenia, and antipsychotic exposure periods of < 60 days were associated with a higher risk of MI [29]. In a large nationwide cohort of patients admitted to the hospital, Park Y. et al. found a slight increase in the risk of death within one week of initiating treatment with haloperidol compared to atypical antipsychotics [30]. The increased risk was noted within the first four days and was no longer apparent by the 5th day of observation. These findings are consistent with a large body of data from previous outpatient studies demonstrating a higher risk of mortality associated with the initiation of typical versus atypical antipsychotics [30]. The results of this study suggest that atypical antipsychotics may be a less harmful treatment option for elderly patients with AMI [30].

Conclusion

CHD and mental disorders are leading causes of morbidity and mortality not only in Russia but worldwide. Due to the high prevalence of depression and mortality from MI and CHD globally, the observed association between depression, MI, and SCD has significant public health implications. Psychological and pharmacological interventions may have a positive effect and should be considered for patients with ACS associated with depression, anxiety, and stress. Prior to discharge, all patients should be screened for mental disorders using validated questionnaires and, if necessary, a psychiatric consultation. The timely detection, treatment, and prevention of anxiety and depression can significantly reduce the risk of MI and SCD. However, to date, there are conflicting data regarding the efficacy and safety of antipsychotic drugs in patients with AMI and delirium. In the future, there is a critical need to develop national guidelines for the diagnosis and treatment of comorbid mental disorders in patients with CVD for cardiologists, internists, general practitioners, psychiatrists, and other specialists.

Conflict of interest: none declared.

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