Posttraumatic Stress Disorder after Acute Coronary Syndrome or Cardiac Surgery; Underestimated Reality

SAŽETAK: Osim somatskih posljedica akutnoga koronarnog sindroma u obliku različitog stupnja in-tolerance naropa, radne nesposobnosti, simptoma kroničnog srčanog zatijavanja, angina pektoris, pojave različitih antrijma i sl., mogu se veći u ranoj subakutnoj fazi u obojlih osoba razvoj niza psihosomatkih i psihičkih poremećaja, koji, ako se ne prepoznaju navrijeme i aktivno ne liječe, mogu pronijeti nepovoljnom ishodu i povećanoj smrtnosti takve skupine bolesnika. Osim povezanosti akutnoga koronarnog sindroma i kroničnog stresa, anksioznosti i depresije, on može biti "okidač" za razvoj kasnijega posttraumatitskoga sindrom poremećaja (PTSD) sa stopom prevalencije od prosječno 15-ak posto među bolesnicima sa simptomima PTSD-a povezanog s prethodnim akutnim koronarnim sindromom, napose oni neliječeni, imaju povećanu smrtnost i veću stopu reinfarakta miokarda. Budući da PTSD povezan s akutnim koronarnim sindromom ili kardijal-krirškom operacijom zna biti zanemaren i podcijenjen, svrha ovog rada podi-zanje svijesti o ovom problemu u svakodnevnoj kliničkoj praksi.

SUMMARY: In addition to the somatic consequences of acute coronary syndrome (ACS) that include different levels of intolerance to exertion, incapacity for work, symptoms of chronic heart failure, angina pectoris, the manifestation of various arrhythmias, etc., the development of a whole range of psychoso-matic and mental disorders is also possible already in the early subacute and chronic phases of the disease, and if these mental disorders are not actively treated in a timely fashion they can contribute to unwanted outcomes and increased mortality in this group of patients. ACS is associated with chronic stress, anxiety, and depression and can be a trigger for later development of posttraumatic stress disorder (PTSD) with an average prevalence rate of 15% in patients with ACS. Several studies have shown that patients with symptoms of PTSD associated with ACS, especially if untreated, have increased mortality and higher rates of myocardial reinfarction. Since PTSD associated with ACS or cardiac surgery can be neglected or underestimated, the aim of this review was to raise awareness about this issue that is present in everyday clinical practice.

KLJUČNE RIJEČI: posttraumatic stress disorder, akutni koronarni sindrom, kardijalna kirurgija.

KEYWORDS: posttraumatic stress disorder, acute coronary syndrome, cardiac surgery.

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Koronarna bolest srca (KBS) glavni je uzrok smrti i invaliditeta u razvijenim zemljama. Iako se stopa smrtnosti od KBS-a u svijetu stalno smanjuje tijekom posljednjih četiri desetljeća, ona je i dalje odgovorna za otprilike trećinu svih smrtnih slučajeva u osoba starijih od 35 godina. Procjenjuje se da će se broj umrlih od srčanožilnih bolesti u svijetu do 2030. godine povećati sa sadašnjih 17,5 milijuna na oko 23 milijuna.

Coronary heart disease (CHD) is the main cause of mortality in developed countries. Although the global mortality rate from CHD has been in a downward trend over the last four decades, CHD is still responsible for approximately one third of all deaths in persons above the age of 35. It is estimated that the global number of deaths from cardiovascular diseases will increase from the current 17.5 million to about 23 million by 2030.
Povezanost koronarne bolesti srca i kroničnoga stresa te anksioznosti

Osim somatskih posljedica akutnoga koranarnog sindroma (AKS) u obliku različitog stupnja intolerancije napora, radne nesposobnosti, simptoma kroničnoga srčanog zatajivanja, angine pektoris, pojave različitih aritmija i sl., moguće je već u ranoj subakutnoj te u kroničnoj fazi razvoj niza psihosomatkih i psihičkih poremećaja oboljelih osoba što, ako se ne prepozna navijem i aktivno ne lijeće, može pridonijeti nepočetkom izhodu i povećanoj smrtnosti te skupine bolesnika.

Akutni i kronični stres te anksioznost odavno su prepoznati te danas jasno etablirani rizični čimbenici za razvoj akutnog infarkta miokarda (AIM). Primjerice, u istraživanju INTERHEART izvori kroničnoga stresa bili su podijeljeni na stres na poslu, u obiteljskom domu te na stres vezan za financije i egzistencijalne probleme. Bolesnici s prvim AIM-om prijavili su mnogo više stresa u svakoj od tih kategorija u usporedbi s kontrolnom skupinom.

Nadalje, tijekom dvogodišnjega praćenja gotovo trideset četiri tisuće muških zdravstvenih djelatnika u Sjedinjenim Američkim Državama u dobi od 42 do 77 godina, koji su u početku bili bez dijagnosticirane bolesti, relativni rizik od pojave fatalne SŽB bio je trostruko veći za one s najvišim razinama anksioznosti u usporedbi s ispitanicima s najnižim razinama.

Povezanost koronarne bolesti srca i depresije

Širok spektar dokaza podupire depresiju kao snažan čimbenik rizika od SŽB-a, a da je riječ o osobama bez manifestne ili o onima s već dokazanom KBS. Pregledom 53 istraživanja i četiriju metaanaliza koji je provela American Heart Association (AHA) utvrđeno je da je depresija nakon akutnoga koranarnog sindroma čimbenik rizika za nepovoljne ishode, uključujući povećanu smrtnost bilo koje uzroka, kao i kardiovaskularnu smrtnost.

Predloženo je nekoliko potencijalnih patofizioloških mehanizama povezane smrtnosti i depresije: hipotalamo-hipofizno-adrenalne osi, upalne i protrombotičke promjene, niske razine omega-3 masnih kisela, smanjenu varijabilnost sinusne frekvencije i dr. uz nesudobnost bolesnika u liječenju. Najveća analiza povezanosti depresije i AIM-a vezana je za istraživanje provedeno u više od 93.000 žena u postmenopauzi u dobi od 50 do 79 godina koje su sudjelovale u studiji Inicijative za zdravlje žena. Najvećenim čimbenicima povezanosti depresije i AIM-a su: depresija, depresija pre nego je došla do početka bolesti, zdravlje žena, žena s većanjem anksioznosti podiak na prethodnoj depresiji. U četiri godine praćenja bolesnice s trenutačnom ili prijašnjom depresijom imale su mnogo više stope kardiovaskularne smrti i ukupne smrtnosti neovisno o uzroku u usporedbi s onima bez depresije.

Although a continuous positive trend of reduced mortality from cardiovascular diseases (CVD) has been observed in Croatia over the last 15 years, with an even greater improvement for cerebrovascular diseases, they are still the top cause of mortality. There were 23,190 deaths from CVD in Croatia in 2016, which is 45% of total deaths. With a standardized mortality rate of 314/100,000, Croatia is among the European countries that have a moderately high mortality rate.

The association between coronary heart disease and chronic stress and anxiety

In addition to the somatic consequences of acute coronary syndrome (ACS) that include different levels of intolerance to exertion, incapacity for work, symptoms of chronic heart failure, angina pectoris, the manifestation of various arrhythmias, etc., the development of a whole range of psychosomatic and mental disorders is also already possible in the early subacute and chronic phases of the disease, and if these mental disorders are not actively treated in a timely fashion they can contribute to unwanted outcomes and increased mortality in this group of patients.

Acute and chronic stress and anxiety have long been recognized and are now clearly established as risk factors for the development of acute myocardial infarction (AMI). For instance, the INTERHEART study divided sources of chronic stress into stress at work, stress at home, and stress related to financial and existential issues. Patients with first AMI reported significantly more stress in all of these categories in comparison with the control group.

Furthermore, two-year follow-up of almost 34 thousand male healthcare workers in the USA aged between 42 and 77 that initially had no disease diagnosis found that relative risk for fatal CVD was three times higher for those with the highest levels of anxiety in comparison with participants with the lowest levels of anxiety.

The association between heart disease and depression

A wide spectrum of evidence indicates depression as a strong risk factor for CVD, both in persons without manifested CHD or with previously established CHD. A review of 53 studies and 4 meta-analyses by the American Heart Association (AHA) found that depression after acute coronary syndrome constitutes a risk factor for adverse outcomes, including increased all-cause mortality and cardiovascular mortality.

Several potential pathophysiological mechanisms of association between depression and AMI have been suggested, including dysfunction of the hypothalamic-pituitary-adrenal axis, inflammatory and prothrombotic changes, low levels of omega-3 fatty acids, low sinus frequency variability, etc., as well as lack of treatment compliance. The largest analysis of the association between depression and AMI is related to a study conducted on more than 93,000 postmenopausal women aged 50 to 79 that participated in the Women’s Health Initiative study. At baseline, 16% of participants reported depression and 12% had previous depression in their medical history. In four years of follow-up, patients with current or previous depression had significantly higher rates of cardiovascular mortality and total mortality from all causes compared with participants without depression.
Unatoč nedostatu uvjerljivih i nedvojbenih dokaza da liječenje depresije poboljšava preživljavanje nakon AKS-a, AHA je ipak zaključila i preporučila da je potrebno razmotriti sve čimbenike, odnosno može biti povećani u razini norepinefrina u središnjem živčanom sustavu s “down” regulacijom adrenergičkih receptora, kronično da određena genska predispozicija može pridonijeti osjetljivosti i depresiji, on, baš kao i različite druge navedene pogrešnosti. Mali su podaci o posljednjem liječenju uključuju afektivne i bihevioralne reakcije na podražaje koji izazivaju "flashbacks", tešku tjeskobu i hiperekscitaciju, kao i intruzivno sjećanje i izbjegavanje iskustava koja uzrokuju simptome.

Diagnoza PTSD-a može biti izazovna zbog heterogenosti prezentacije i otpora obojelog da raspravlja o prošloj traumi. Različiti oblici trauma mogu uzrokovati pojavu PTSD-a, poput najrazličitijih oblika seksualnog zlostavljanja, raste braka, povrijedbi, smrti bliske osobe, aktivnog sudjelovanja u ratnim operacijama itd., a često se pojavljuje i među civilima u ratnim zonama, u izbjeglicu, tijekom prirodnih katastrofa i sl.12

Ukupna prevalencija PTSD-a bilo kojeg uzroka kreće se od 6 do 9 % u nacionalnim uzorcima opće populacije u srednje razvijenim zemljama. WHO i Sjedinjene Američke Države i u Kanadi u odnosu na China posljednja prevalencija PTSD-a iznosi oko 2 %, a u drugim razvijenim zemljama nešto niža od 6 do 9 %. Prevalencija PTSD-a u nacionalnim uzorcima opće populacije u Sjedinjenim Američkim Državama i u Kanadi u odnosu na China posljednja prevalencija PTSD-a iznosi oko 2 %, a u drugim razvijenim zemljama nešto niža od 6 do 9 %.

Posttraumatski stresni poremećaj (PTSP) je čest entitet u psihijatrijskoj praksi koji je definiran kao složeni sindrom i kardiokirurškom operacijom. Posttraumatski stresni poremećaj (PTSP) je relativno čest entitet u psihijatrijskoj praksi koji je definiran kao složeni sindrom i kardiokirurškom operacijom.

Osim opisane povezanosti AKS-a i kroničnoga stresa, anksioznosti i depresije, on, baš kao i različite druge navedene akutne traume, može biti „okidač” za razvoj kasnijeg PTSD-a, a to se odnosi najčešće na prošlost stemiranju PTSD-a. PTSD-a može biti zaboravljeno kao i razloge za razvoj PTSD-a. PTSD-a može biti zaboravljeno kao i razloge za razvoj PTSD-a.

Značajne značajke PTSD-a su obuhvaćenje procjene koronarnih bolesnika i liječenje klinički značajne ili trajne depresije9. Osmo obraćanje PTSD-a i kroničnoga stresa, anksioznosti i depresije, on, baš kao i različite druge navedene akutne traume, može biti „okidač” za razvoj kasnijeg PTSD-a, a to se odnosi najčešće na prošlost stemiranju PTSD-a. PTSD-a može biti zaboravljeno kao i razloge za razvoj PTSD-a.

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Metaanaliza 24 opservacijska istraživanja koja je uključivala 2383 koronarna bolesnika dokazala je stopu prevalencije PTSP-a povezanog s AKS-om od 12%. Nadalje, podaci iz triju istraživanja provedenih u 609 pacijenata koji su zadovoljili kriterije kvalitete za metaanalizu pokazali su da su pacijenti s PTSP-om nakon akutnog koronarnog sindroma imali dvostruko rizik od recidiva infarkta miokarda ili nagle smrti u usporedbi s onima koji nisu imali simptome PTSP-a. Također je više drugih istraživanja pokazala da bolesnici sa simptomima PTSP-a povezanog s prethodnim AKS-om, posebice oni - osim oboljelog, nerijetko i cijela obitelj trpi određene posljedice takvoga stanja oboljelog člana.

**Iskustva s bolesnicima uključenima u program kardiovaskularne rehabilitacije**

Iskustvo u liječenju i rehabilitaciji bolesnika koji su imali AIM ili su bili podvrgnuti kardiokirurškom zahvatu pokazuje da, unatoč gore navedenim činjenicama, postoji potrebna daljna liječenja i psihološka potpora. Pacijenti će potom, dugo i dugoročno, potrebno je uspostaviti regularnu i dugoročnu liječenju i psihološku podršku za pacijente povezanih s PTSD asocijiranim s AKS-om.

**Zaključak**

Svrha je ovog rada bila podizanje svijesti kardiologa o problemu svakodnevnog kliničkog praksa. Integrativni i nezavisni dio svakog običnog šireg "Heart Team", osim kardiologa, anesteziologa i kardijalnog kirurga, trebaju biti psiholog i psihijatar. Takav, snažni pristup potiče, da bi među pacijentima s PTSD asocijiranim s AKS-om ili kardiokirurškom operacijom ostaje neprepoznat i neliječeni u subakutnoj i kroničnoj fazi bolesti koja vodi do kaskade daljnjih prethodno opisanih nepovoljnih događaja i ishoda.

**Experience with patients included in the cardiovascular rehabilitation program**

Experience in the treatment and rehabilitation of patients who had AMI or underwent a cardiac surgery procedure shows that despite the abovementioned facts and data from the literature, at least a portion of patients with symptoms of PTSD associated with ACS or cardiac surgery is not recognized and remain untreated in the subacute and chronic phase of the disease, which leads to a cascade of the previously described adverse events and outcomes.

It is a common occurrence in clinical practice for a previously "healthy" person who has not had any experience of hospital treatment to develop ACS. Rapid onset of the symptoms, emergency hospitalization, urgent interventional and sometimes surgical treatment, staying in an intensive care unit, early complications that can include malignant arrhythmias and resuscitation procedures ("proximity to death"), copious amounts of newly-introduced medications, sudden (temporar) incapacity for work, worrying about future existential needs, etc., can of course lead to a varied spectrum of psychogenic manifestations such as acute anxiety and depression. Depending on various factors and predispositions, personality traits, previous illnesses, compensation mechanisms, family support, etc., some of these patients will gradually adjust to their new state, but some of them will develop symptoms of PTSD associated with ACS. This group of patients is less cooperative in further treatment and less motivated for regular, long-term medication treatment andcardiological controls, has a lower quality of life, and the whole family of the patient often suffers from some of the consequences of the patient’s condition.

In the Krapinsko Toplice rehabilitation center (and in two other Croatian rehabilitation centers), the psychologist is an important and integral part of the team, so we fairly often successfully discover elements of PTSP after ACS or heart surgery. Unfortunately, the hospital in Krapinsko Toplice does not have regular psychiatric consultations available. After completion of their rehabilitation program we therefore refer these patients to a clinical psychiatric evaluation and further treatment as well as psychosocial support.

**Conclusion**

The aim of this review was to raise the awareness of cardiologists regarding this issue in everyday clinical practice. In addition to a cardiologist, anesthesiologist, and cardiac surgeon, a psychologist and psychiatrist should be an integral part of every serious wider "Heart Team". Such a holistic approach would achieve the desired effect not just on the somatic, but...
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