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DEPRESSION AND IT'S EFFECTIVE MANAGEMENT IN CARDIOVASULAR DISEASE

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ABSTRACT

Nowadays Cardiovascular disease (CVD) and Depression are unsavory in this entire world. Patient's with CVD have more depression than the general population. Approximately (20%) of patients with (CHD) have major depression and (20%) have minor depression at any given point in the course of their illness. Depression causes significant physiological and social morbidity, and is a risk factor for the further cardiac morbidity and mortality. Studies have shown that increased platelet activation and endothelial dysfunction have been implicated as a potential pathophysiological pathway linking depression and cardiovascular diseases. Numerous agents are found to be effective in treating depressive symptoms such as tricyclic anti-depressants, selective serotonin reuptake inhibitors(SSRIs) and psychotherapies. This review briefly focuses on the prevalence of depression in patients with CVD, the physiological links between depression and CVD as well as the treatment targets in depressed patient with cardiovascular disease.

KEYWORDS: Cardiovascular disease, Depression, Tricyclic anti-depressants, Selective serotonin reuptake inhibitors, Psychotherapy.

INTRODUCTION

Cardiovascular disease (CVD) and depression are the two common cause of ailment in high-income countries. The key health system and economic indicators that are relating to CVD and depression give out rising medical costs, increased health service utilization. The prevalence of obscure depression in cardiac patients has been esteemed for more than 40 years.[1] Rates of major depressive disorder of around 15% have been revealed in patients after myocardial infarction (MI) or post coronary artery bypass grafts (CABG).[4] Depression in patients with Cardiovascular Disease(CVD) is extremely common,with a prevalence of 31.45%.[5]

CARDIOVASCULAR DISEASE

Cardiovascular disease refers to a number of illness that affect your heart and nearly blood vessels and covers all diseases that affect the heart and circulatory system of the body, including coronary heart disease(angina and heart attack), hypertension (high blood pressure), stroke and peripheral vascular disease (PVD-any disease of the circulatory system outside the brain and heart).[10]

During this time, heart's blood supply is being reduced by a buildup of fatty substances known as atheroma in the coronary arteries (the heart's own blood supply) and many other arteries in the body. This process commonly known as "hardening"of the arteries.

When CVD affects the heart, it can lead to attacks of angina(chest pain) or even heart attack. If CVD affects the brain, it can result in stroke. Peripheral vascular disease (PVD) commonly affects the legs but it can also affects the arms and kidneys.[10]

Depression

Depression is a noteworthy benefactor to the global burden of disease and it affects people in all communities across the world. Today, depression is estimated to affect 350 million people, Depressive disorders often start at a young age, they can reduce people's functioning and often they are recurring. For these reasons, depression is the leading cause of disability.[7]

WHAT IS DEPRESSION?

Depression is a common mental disorder that presents with depressed mood, loss of interest or pleasure, feelings of guilt or low self-worth and even poor concentration. Additionally, depression often comes with symptoms of anxiety. These problems can even become chronic or recurrent and assist to substantial impairments in an individual's ability to carry out his or her day-to-day responsibilities. At its inferior, depression can lead to suicide.

Depressive episode involves symptoms such as depressed mood, loss of interest and enjoyment, and increased fatigability. Depending on the number and

severity of symptoms, a depressive episode can be categorized as mild, moderate or severe.

Bipolar affective disorder generally consists of both manic and depressive episodes separated by periods of normal mood. Manic episodes involves, elevated mood and increased energy, resulting in over-activity, and decreased need for sleep.[7]

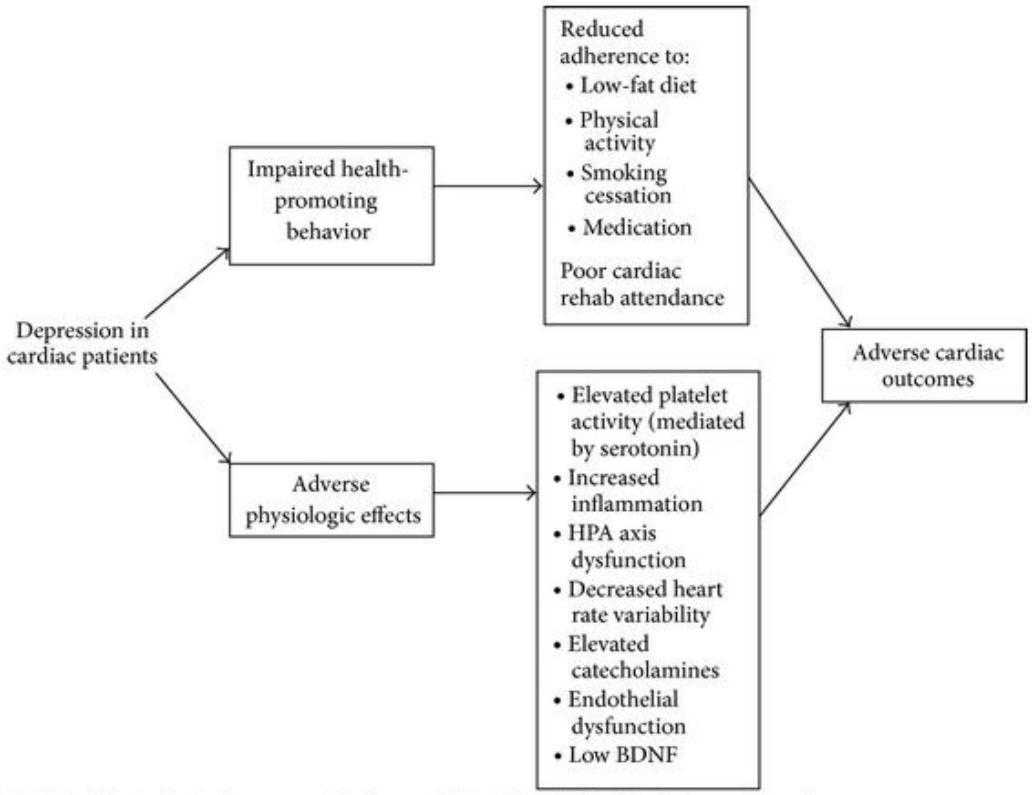
Risk Factors For Depression In Cardiac Patients

There are several established risk factors for depression in cardiac patients. Most studies have found that younger patients, women and patients with premorbid histories of depression are more likely to have depression in the condition of CVD. Among patients suffering from acute coronary syndrome (ACS), social isolation, and comorbid diabetes may also increase depression risk.

Among CABG patients, depression pre-CABG is more predicted by females, younger age, and less education, depression has been independently associated with the development and progression of CAD and with CVD-related mortality. Depressed patients with unstable CAD appear to be at greater risk for poor cardiacoutcomes. The presence of post-MI depression predicts recurrent cardiac events(60), cardiac-related death (60-63) and all cause mortality (60,64).[5]

Potential Mechanisms Linking With Depression and Cardiovascular Disease

There are number of mechanisms that are potentially exposing in the connection between depression and cardiac disease. Depression also has been linked to increased levels of cytokines (CRP, IL-1, and IL-6), both in patients with or without history of cardiac disease.[5]



BDNF = brain-derived neurotrophic factor; HPA = hypothalamic-pituitary-adrenal

Treatment Targets In Depressed Patients With Cardiovascular Disease

There are five mechanisms involved in the development and progression of cardiac disease in depressed patients: endothelial dysfunction, immune activation, disturbances in platelet activation mechanisms, hyperactivity of hypothalamic-pituitary-adrenal-axis and alteration in the autonomous nervous system activity.[11] Each of these areas act as therapeutic targets for the improvement of outcomes in cardiovascular disease.[11]

Numerous agents are found to be effective in treating depressive symptoms. However, while choosing the treatment for depressed -patients with cardiac disease, the clinician must think about the underlying cardiovascular condition.[11]

Tricyclic Anti-Depressants

Old generation tricyclic anti-depressants (TCAs) are associated with severe adverse reactions such as increased heart rate, orthostatic hypotension etc. Hence, treatment of depression with TCAs during the first 2-3 months following an MI is not advisable. However, it is

the time when incidence of depression in CAD patients increases to its peak with effect on morbidity and mortality.[11]

Selective Serotonin Reuptake Inhibitors

A class of Selective Serotonin Reuptake Inhibitors (SSRIs) are demonstrated to be effective for the treatment of depressed patients with underlying cardiovascular disease and present with less incidence of cardio toxicity as because they lack anti-cholinergic effects.[11]

SSRIs are a group of antidepressants that include fluoxetine, paroxetine, fluvoxamine, citalopram, sertraline and citalopram; all of which have the same property of inhibiting the re-uptake of serotonin, and thereby increasing the synaptic availability of this neurotransmitter. Increased serotonin levels in specific regions of the brain result in the therapeutic effects of the SSRIs as anti-depressants. Although the SSRIs share a common mechanism of action, they differ in their chemical structure, metabolism and pharmacokinetics.[11]

Other Antidepressants

This category consists of selective serotonin/norepinephrine reuptake inhibitors (SSNRIs) such as venlafaxine and duloxetine, as well as bupropion (whose pharmacological mechanism of action remains unclear), mirtazapine, trazodone, nefazodone, vilazodone, and monoamine oxidase inhibitors (MAOIs). These have been less studied than both SSRIs and TCAs in terms of their cardiovascular effects.[6]

Psychotherapies

The two major psychological therapies that have been studied in cardiac patients are CBT and IPT. CBT focuses on altering cognitions and behavioral activation whereas, IPT is more focused on resolving interpersonal issues related to one's depression. Both are effective treatments for depression and in cardiac patients, with no significant cardiovascular side effects. Social support interventions and cardiac rehabilitation programs are also found to be effective.[6]

CONCLUSION

In patients with cardiovascular disease (CVD), depression is common, persistent and associated with worse health related quality of life, recurrent cardiac events and mortality. Both physiological and behavioral factors including endothelial dysfunction, platelet abnormalities, inflammation, autonomic nervous system dysfunction and reduced engagement in health-promoting activities may link depression with adverse cardiac outcomes.

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CONFLICT OF INTEREST

There is no conflict of interest between the authors.

ABBREVIATIONS

CVD: Cardiovascular disease
MI: Myocardial Infraction
CABG: Coronary artery bypass grafts
PVD: Peripheral vascular disease
ACS: Acute coronary syndrome
CAD: Coronary artery disease
TCAs: Tricyclic Anti-depressants
SSRIs: Selective Serotonin Reuptake Inhibitors
SSNRIs: Selective serotonin/norepinephrine reuptake inhibitors
MAO: Monoamine oxidase inhibitors
CBT: Cognitive behavioral therapy
IPT: Interpersonal Psychotherapy

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