

Comprehensive Treatment of Hypertension Associated with Depression and Anxiety

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Abstract: Hypertension is a common chronic disease with a high global incidence. According to statistics, the current prevalence of adult hypertension in China is 23.2%, with more than 200 million people suffering from the disease. In addition to genetic factors, poor lifestyle and excessive mental stress are important causes of hypertension. In recent years, studies have found that patients with depression-anxiety-associated hypertension are very common in clinical practice, and their treatment effects are not ideal and difficult to treat. This paper reviews the pathogenesis, clinical manifestations, treatment status and comprehensive treatment measures of depression-anxiety-associated hypertension, to provide references for the treatment of depression-anxiety-associated hypertension so that it can be better treated and controlled and the prognosis can be improved. At the same time, it can also further promote the basic and applied research in related fields and improve the clinical diagnosis and treatment plan, to improve the treatment of depressive-anxiety hypertension.

Keywords: Depression-anxiety-associated hypertension; Pathogenesis; Clinical manifestations; Current status of treatment; Comprehensive treatment

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1. Introduction

Depression-anxiety-associated hypertension is a subtype of hypertension that is characterised by depression and anxiety as the main symptoms. In China, about 25%–40% of patients with hypertension are comorbid with depression or anxiety disorders. There is a known strong link between hypertension and psychosocial factors, and patients with depression, anxiety disorders and other psychiatric disorders have a significantly higher risk of developing hypertension. The results of a large number of clinical studies have shown that patients with hypertension and depression/anxiety disorders are more likely to experience cardiovascular events which leads to an increased risk of death^[1–3]. At the same time, depression and anxiety can also lead to poor control of blood pressure, further aggravating the condition. Therefore, aggressive therapeutic interventions for this population are particularly important. However, the current prevention and treatment measures for depression and anxiety hypertension are still incomplete, and the treatment means are relatively limited. This paper reviewed the relevant literature, the pathogenesis, clinical manifestations, treatment status and comprehensive treatment

measures of depression-anxiety-associated hypertension, analysed its pathogenesis, elaborated on the treatment status, and put forward a comprehensive treatment strategy, to provide a theoretical basis and practical guidance for clinical treatment.

2. Pathogenesis

Depression-anxiety-associated hypertension is a psychosomatic problem that develops on top of hypertension. Studies have shown that depression and anxiety can increase the risk of cardiovascular events in hypertensive patients ^[4]. Besides, some scholars also believe that there is a causal relationship between the two ^[5]. However, the pathogenesis is still inconclusive and may involve a combination of mechanisms.

2.1. Psychological influences

Psychological factors play an important role in the development of depression-anxiety-associated hypertension. Chronic stress, emotional distress, and poor coping mechanisms can lead to an increase in blood pressure. Depression and anxiety put the body in a state of stress and activate the stress response system in the body, which in turn triggers an increase in blood pressure.

2.2. Neurotransmitter changes

Depression and anxiety can lead to changes in neurotransmitters within the brain, particularly imbalances in the levels of neurotransmitters such as 5-hydroxytryptamine and norepinephrine, which play a key role in regulating mood and behaviour, and whose levels may directly or indirectly affect blood pressure regulation mechanisms.

2.3. Increased sympathetic nerve activity

Depression and anxiety activate the sympathetic nervous system and increase its activity. Overactivity of the sympathetic nervous system leads to physiological responses such as increased heart rate and vasoconstriction, which in turn triggers an increase in blood pressure.

2.4. Vasoconstriction and increased resistance

In the presence of depression and anxiety, vascular smooth muscle cells may become dysfunctional, leading to vasoconstriction and increased vascular resistance, which can further elevate blood pressure levels.

2.5. Genetic factors and lifestyle

Genetic factors influence the development of hypertension. Also, poor lifestyle such as an unbalanced diet, lack of exercise and smoking may aggravate depression-anxiety-associated hypertension.

2.6. Vicious cycle and disease exacerbation

A vicious circle may develop between depression, anxiety and hypertension. High blood pressure may aggravate depression and anxiety; while depression and anxiety may further increase blood pressure, thus worsening the condition.

3. Clinical manifestations

Depression-anxiety-associated hypertension is a common type of hypertension, whose clinical manifestations

include depressed mood, sleep disorders, loss of appetite and palpitations as the main symptoms. Since there is no specific drug that can effectively treat this disease, the treatment effect is poor and the recurrence rate is high. Clinical observation found that patients with depression-anxiety-associated hypertension are often accompanied by obvious somatic symptoms, such as chest tightness, breathlessness, palpitations and so on, and these symptoms will affect the quality of life of patients ^[6]. With the prolongation of the disease, patients may also experience autonomic dysfunction, which may lead to an increase in blood pressure. The anxiety will be regulated through the sympathetic nervous system, causing vasoconstriction and heart rate to accelerate, thus promoting the development of hypertension.

Meanwhile, it has been found that peripheral sympathetic tone is increased under anxiety-depressive state, while norepinephrine (NE) is the main effector mediator of sympathetic activity, which is directly involved in the diastolic and contractile processes of the heart and blood vessels. In addition, under the state of anxiety and depression, due to the elevated peripheral sympathetic tone, the release of catecholamines increases, which promotes the proliferation of vascular smooth muscle cells and the deposition of collagen fibres, leading to atherosclerosis and myocardial hypertrophy. Therefore, depression-anxiety-associated hypertension is difficult to treat only with pure antihypertensive drugs and needs to be combined with anxiolytic and antidepressant drugs.

4. Status of treatment

Depression-anxiety-associated hypertension is a common pattern of pathogenesis in a variety of disorders, and therefore treatment requires consideration of several factors. Currently, depression-anxiety-associated hypertension is treated with medication, psychotherapy, and lifestyle interventions.

4.1. Pharmacological treatment

In terms of pharmacological treatment, studies have shown that beta-blockers and calcium channel blockers are effective in the treatment of hypertension combined with anxiety and depression, but they have poor control of patients' blood pressure and are prone to cause adverse reactions ^[7]. Therefore, to improve the therapeutic effect, antidepressants should be combined with standardised antihypertensive drugs to improve patients' quality of life and long-term efficacy.

4.2. Psychotherapy

In terms of psychotherapy, studies in recent years have found that cognitive behaviour therapy (CBT) can effectively improve anxiety and depressive symptoms, lower blood pressure levels, and reduce the risk of cardiovascular events in patients with hypertension and that Morita therapy, as a non-pharmacological treatment, also has good therapeutic effects ^[8].

4.3. Lifestyle intervention

In terms of lifestyle intervention, quitting smoking, limiting alcohol, eating a balanced diet, having a balanced work and rest schedule, and exercising in moderation are very important measures for patients with depression-anxiety-associated hypertension. Studies have confirmed that these measures can effectively reduce patients' blood pressure levels and reduce the probability of cardiovascular diseases ^[9].

5. Comprehensive treatment measures

For patients with depression-anxiety-associated hypertension, they should be treated comprehensively with

medication, psychotherapy, and lifestyle interventions.

5.1. In terms of medication

Pharmacological treatment of depression-anxiety-associated hypertension is a comprehensive process aimed at simultaneously controlling blood pressure and relieving symptoms of depression and anxiety.

5.1.1. The choice of antihypertensive drugs

Calcium channel blockers such as nifedipine extended-release tablets inhibit the inflow of calcium ions into the myocardium or smooth muscle, causing vasodilatation, thereby lowering blood pressure. β -adrenergic receptor blocking drugs such as metoprolol tartrate tablets can attenuate the role of catecholamines, effectively lowering blood pressure ^[10]. Vasodilators such as captopril tablets can reduce blood pressure by lowering peripheral vascular resistance. In addition, depending on the patient's specific situation, the doctor may also recommend other antihypertensive drugs, such as furosemide and valsartan.

5.1.2. Application of antidepressant and anxiolytic drugs

Selective 5-hydroxytryptamine reuptake inhibitors (SSRI) such as fluoxetine, paroxetine, and so on, are the first choice of drugs for the treatment of depression, which can effectively alleviate the patient's symptoms of depression. Benzodiazepines, such as diazepam, eszopiclone, and others, have the characteristics of rapid onset of the effect of anti-anxiety and can be used to alleviate the symptoms of anxiety ^[11]. Other anxiolytic drugs, such as zolpidem and zopiclone, have good effects on difficulty in falling asleep and can improve the quality of sleep of patients.

5.1.3. Adjunctive medications

In addition to antihypertensive and antidepressant-anxiety medications, the doctor may recommend adjunctive medications such as sedative medications, such as alprazolam, clozapine, and so on to further relieve the patient's tension and anxiety.

5.2. In the area of psychotherapy

Some patients with depression-anxiety-associated hypertension may have mental disorder symptoms such as depression and anxiety, which need to be improved by psychotherapy. Cognitive behavioural therapy, interpersonal psychotherapy, and so on are recommended, together with appropriate physical exercise to improve the quality of life of patients. Psychotherapy is mainly to improve the patient's cognition, emotion and behaviour through psychological intervention. Two common methods are supportive psychotherapy and cognitive behavioural therapy.

5.2.1. Supportive psychotherapy

Supportive psychotherapy refers to a psychotherapeutic method of maintaining a good relationship with the patient, emphasising the treatment of the patient as an independent individual, respecting their human dignity, and letting the patient feel accepted, which is conducive to restoring the patient's confidence in life. The therapy includes listening, encouraging, empathising, and explaining, through which the patient is helped to build up confidence in facing the problem and alleviate the depression ^[12].

5.2.2. Cognitive behavioural therapy

Cognitive behavioural therapy, also known as behavioural activation therapy (BAT), is mainly used to change

the patient's behavioural pattern by changing their cognition to deepen the patient's understanding of their disease and to build up confidence in overcoming the disease. Studies have shown that cognitive behavioural therapy can significantly reduce the degree of anxiety and improve the level of blood pressure control in hypertensive patients, but the effect on the control of depressive symptoms is poor ^[13]. Therefore, care should be taken to use both therapies at the same time, rather than using one of them selectively. There have been many studies confirming that psychological intervention can effectively improve the condition of depressed and anxious hypertensive patients, reduce their pain and improve their quality of survival.

5.3. In terms of lifestyle interventions

Patients are advised to take measures such as low-salt and low-fat diets, limiting alcohol consumption, avoiding a sedentary lifestyle, and ensuring sufficient sleep time to actively change bad habits and reduce the occurrence of hypertension. At the same time, patients should strengthen self-management, monitor their blood pressure regularly, and seek timely medical attention so that doctors can adjust the dosage of medication or change the medication.

Lifestyle interventions include a reasonable diet, moderate exercise, reducing smoking and alcohol consumption. Numerous studies have shown that adherence to a healthy lifestyle can significantly lower blood pressure, improve levels of blood lipids, blood glucose and body mass index (BMI), and reduce the risk of cardiovascular diseases ^[14]. Therefore, health education for hypertensive patients is very necessary.

Some studies have shown that in the first 10 weeks of treatment, patients using lifestyle interventions can reduce diastolic blood pressure by more than 9 mmHg and systolic blood pressure by more than 7 mmHg compared with patients using only medication ^[15]. The effect of lowering blood pressure is more lasting with better medication adherence. However, some studies concluded that the use of lifestyle intervention did not significantly improve the antihypertensive effect of depression-anxiety-associated hypertension ^[16]. The reason for this may be that the sample sizes of different studies are different, or the basic conditions of the included patients are different, and further research is needed to explore the specific reasons.

The current treatment for depression-anxiety-associated hypertension is mainly pharmacological, and although various treatment measures have their advantages and disadvantages, a combination of them can achieve a better therapeutic effect. More clinical studies are needed to determine more effective treatment options in the future.

6. Conclusion and outlook

In summary, depression-anxiety-associated hypertension is the result of the interaction between hypertension and psychosomatic disorders caused by a variety of factors. At present, clinical treatment mainly focuses on the integrated treatment of hypertension and psychosomatic disorders such as depression and anxiety, including the combination of antidepressants, anxiolytics, and lifestyle interventions. Although research on depression-anxiety-associated hypertension has made some progress in recent years, there are still many unresolved problems, such as the lack of standardised treatment guidelines, the lack of an objective and effective evaluation system, and difficulties in drug selection and dose adjustment. Therefore, it is necessary to further strengthen basic and applied research, and continuously explore new treatment methods to improve treatment effects. At the same time, multi-centre randomised controlled trials should also be conducted to compare and analyse the efficacy of different therapeutic measures, to determine the optimal treatment plan and provide better medical services to patients. There is also a need to strengthen the training and education of healthcare professionals so that they can better understand the pathogenesis of depression-anxiety-associated hypertensive patients and

master the corresponding diagnosis, treatment and follow-up skills. Only in this way can more professional and comprehensive diagnostic and treatment services be provided to patients with depression-anxiety-associated hypertension and help them recover their health as soon as possible.

Disclosure statement

The author declares no conflict of interest.

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