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Review

The effect of chinese herbal medicine Banxia Baizhu Tianma Decoction for the treatment of vertebrobasilar insufficiency vertigo: A systematic review and meta-analysis of randomized controlled trials☆

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ABSTRACT

Objectives: Banxia Baizhu Tianma Decoction (BBTD) is widely used to treat vertebrobasilar insufficiency vertigo (VBIV) in China, but its efficacy remains largely unexplored. We systemically summarized relevant evidence from randomized controlled trials (RCTs) to assess the therapeutic effect of BBTD.
Methods: Seven electronic databases were searched for relevant electronic studies published before July 2016. We evaluated RCTs that compared BBTD, anti-vertigo drugs and a combination of BBTD and anti-vertigo drugs. We performed a meta-analysis in accordance with the Cochrane Collaboration criteria. The outcomes were clinical efficacy (CE), blood flow velocity of the vertebrobasilar artery by transcranial Doppler (TCD), and adverse effects.
Results: Twenty-seven studies with a total of 2796 patients were identified. Compared with anti-vertigo drugs, BBTD showed slight effects on CE (n = 350; RR, 1.09; 95% CI, 1.01–1.18; $p = 0.03$; $I^2 = 0\%$); however, BBTD plus anti-vertigo drugs (BPAD) significantly improved the clinical efficacy (n = 2446; RR, 1.20; 95% CI, 1.16–1.24; $p < 0.00001$; $I^2 = 0\%$) and accelerated the blood flow velocity of the left vertebral artery (LVA) (n = 1444; WMD, 5.21 cm/s; 95% CI, 3.72–6.70 cm/s; $p < 0.00001$; $I^2 = 91\%$), the blood flow velocity of the right vertebral artery (RVA) (n = 1444; WMD, 5.45 cm/s; 95% CI, 4.02–6.88 cm/s; $p < 0.00001$; $I^2 = 89\%$), and the blood flow velocity of the basilar artery (BA) (n = 1872; WMD, 5.20 cm/s; 95% CI, 3.86–6.54 cm/s; $p < 0.00001$; $I^2 = 90\%$). Adverse effects were mentioned in six studies.
Conclusions: The current evidence indicates that BPAD is effective for the treatment of VBIV, but the efficacy and safety of BBTD is uncertain because of the limited number of trials and low methodological quality. Hence, high-quality and adequately powered RCTs are warranted.

Contents

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1. Introduction

Vertebrobasilar insufficiency (VBI) is a rare hemodynamic posterior circulation transient ischaemic attack (TIA); it is induced by head rotation or extension that impairs the flow through the vertebral or basilar arteries, resulting in ischaemia of the brain-stem, cerebellum, thalamus and occipital lobes.[1–3] In general, posterior circulation strokes represent 20–30% of all intracranial stokes.[4,5] As VBI is a clinical syndrome, it can develop into vertigo, syncope, sudden sensorineural hearing loss, and cerebral or brain stem ischaemia, leading to severe morbidity or even death.[6–8] However, vertigo caused by VBI is usually accompanied by other neurological disturbances that inconvenience a patient's life and work.[9] To rule out other diseases that can cause vertigo similar to VBIV, such as multiple sclerosis, brain tumors and Meniere's disease, a doctor may order a magnetic resonance imaging (MRI) scan or a computerized tomography (CT) scan to assess possible problems of the brain or inner ear.[10,11] The highest incidence of VBIV occurs among the middle and older-aged persons who have suffered from severe vertigo and dizziness that affects their quality of daily life, particularly among females older than 60 years old.[12–14]

Treatment options include medical therapy such as antithrombotic agents, intracranial and extracranial angioplasty and stenting, and surgical revascularization.[15,16] Unfortunately, many medications for the treatment of VBIV have direct vestibulotoxicity, especially caffeine and nicotine, which can have wide rang of autonomic effects that may exacerbate vestibular symptoms. However, complications of vascular surgery, such as plaque disruption, may result in distal emboli and arterial vasospasm and have limited the utility of this practice; moreover, drugs, such as antithrombotic agents, could lead to a high risk of fatal or disabling strokes.[17–20] In contrast, complementary and alternative medicine (CAM), such as traditional Chinese medicine (TCM), can effectively alleviate the symptoms of dizziness and reduce adverse reactions and complications. Currently, many clinicians do not hesitate to recommend herbs or herbal products to their patients for the effective treatment of vertigo diseases.

BBTD is widely used in clinical settings and is a famous prescription of TCM that contains Pinellia ternata, Atractylodes macrocephala, Gastrodia elata, tangerine peel, Poria cocos, Glycyrrhiza, ginger, and red jujube as recorded in *Medical Insights* during the Qing dynasty.[21] It has been generally used to treat VBI-related symptoms in clinical practice for centuries in China.[22,23] This prescription primarily treats symptoms of dizziness, headaches and abnormal sensations, which are cause by blood deficiency and stagnation and turbid phlegm, leading to a loss in brain nourishment.[24–26] In addition, according to TCM theory, this prescription utilizes mechanisms that maybe strengthen the spleen, supplement Qi and promote blood circulation to remove obstructions; furthermore, in accordance with the Treatise on Cold Pathogenic Diseases, BBTD utilizes mechanisms that treat the six climatic conditions in excess as pathogenic factors for a lesser yang disease pattern.[25] Recently, modern pharmacological studies and long-term clinical observations have shown that BBTD dilates cerebral vessels, increases vertebrobasilar artery volume, reduces blood viscosity, and improves microcirculation and haemodynamics.[27,28] Zoopery results confirmed that BBTD caused the positive effect of contraction on cerebral vasospasm and promoted the reduction of cerebral vascular resistance, achieving anti-platelet aggregation and anti-vertigo effects. Biochemically, BBTD could improve the ability of scavenging, oxygen-derived free radicals and reduce the damage of free radicals to the human body; thus, it could effectively improve the haemodynamic stability of the vertebrobasilar artery and play a role in the prevention of vertigo and sedation.[29–31]

However, individual studies have yielded inconsistent or conflicting findings, possibly caused by limitation associated with an individual study.[32] Therefore, we performed a meta-analysis of published studies to shed light on these contradictory results,