

## Case Report

# Sudden elevation of blood pressure resulting from syndrome differentiation faults: A case report

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### Highlights

This paper analyzed a misdiagnosed case with sudden elevation of blood pressure resulting from syndrome differentiation faults of traditional Chinese medicine.

### Editor's Summary

This study proposed the usage note of Fuzi (*Radix Aconiti Carmichaeli*) in clinic use.

Prescriptions	Chinese herbal medicine
The first prescription	Guizhi ( <i>Ramulus Cinnamomi</i> ) 10g, Fangfeng ( <i>Radix Saposhnikoviae</i> ) 15g, Chaobaizhu ( <i>Rhizoma Atractylodis Macrocephalae</i> ) 15g, Zhifuzi (Prepared <i>Radix Aconiti Lateralis Preparata</i> ) 10g, Taoren ( <i>Semen Persicae</i> ) 10g, Jixueteng ( <i>Caulis Spatholobi</i> ) 30g, Baishao ( <i>Radix Paeoniae Alba</i> ) 30g, Zhimu ( <i>Rhizoma Anemarrhenae</i> ) 15g, Ganchao ( <i>Radix Glycyrrhizae</i> ) 10g
The second prescription	Dangshen ( <i>Radix Codonopsis</i> ) 15g, Maidong ( <i>Radix Ophiopogonis</i> ) 10g, Wuweizi ( <i>Fructus Schisandrae Chinensis</i> ) 10g, Shanyao ( <i>Rhizoma Dioscoreae</i> ) 30g, Shihu ( <i>Herba Dendrobii</i> ) 15g, Wumei ( <i>Fructus Mume</i> ) 10g, Taoren ( <i>Semen Persicae</i> ) 10g, Danpi ( <i>Cortex Moutan Radicis</i> ) 10g, Yejiaoteng ( <i>Caulis Polygoni Multiflori</i> ) 30g, Jili ( <i>Fructus Tribuli</i> ) 15g.

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## Abstract

A 71-year-old woman suffered the pains from her finger joints, arms, shoulders and neck. The first prescription was the add and subtract of Guizhishao yao zhi mu decoction, which could warm Yang via Fuzi (*Radix Aconiti Carmichaeli*). After three oral doses of medication, she felt sleepy with a blood pressure of 180/60 mmHg. The second prescription was the add of Shengmai Powder which could nourish Yin. The next day, her blood pressure was reduced to 130/65 mmHg.

**Keywords:** Traditional Chinese medicine, Fuzi, Misdiagnosis, Elevation of blood pressure

### 摘要

患者，女，71岁，双手手指关节、双臂、双肩及颈部疼痛。初次就诊予桂枝芍药知母汤加减，用附子温阳。服药三剂后，出现头晕，血压 180/60 mmHg。再次就诊予加味生脉散，滋阴养阴。第二天，患者血压降到了 130/65 mmHg。

**关键词：**中药；误诊；血压升高

**Competing interests:** The authors declare that there is no conflict of interests regarding the publication of this paper.

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## Case presentation

A 71-year-old woman suffered the pains from her finger joints, arms, shoulders and neck from the autumn of this year. The growing pains often woke her up during the night, and she had to take pain-killers when the pains were severe. She also had general fatigue, which made it difficult for her to support her body even after sitting for a short while. Her diets, urine and stool were normal.

The first prescription of patient is presented in Table 1. After two oral doses of medication, the patient called to report that she felt dizzy, sweaty, and her scalp was itchy. Her pains were not relieved. After one more dose, the patient called again to report that her symptoms were not relieved, and she felt sleepy, with the BP of 180/60 mmHg. Then I asked the patient to stop the medicine.

**Table 1 Prescription of traditional Chinese medicine treatment**

Prescriptions	Chinese herbal medicine
The first prescription	Guizhi ( <i>Ramulus Cinnamomi</i> ) 10g, Fangfeng ( <i>Radix Saposhnikoviae</i> ) 15g, Chaobaizhu ( <i>Rhizoma Atractylodis Macrocephalae</i> ) 15g, Zhifuzi (Prepared <i>Radix Aconiti Lateralis Preparata</i> ) 10g, Taoren ( <i>Semen Persicae</i> ) 10g, Jixueteng ( <i>Caulis Spatholobi</i> ) 30g, Baishao ( <i>Radix Paeoniae Alba</i> ) 30g, Zhimu ( <i>Rhizoma Anemarrhenae</i> ) 15g, Ganchao ( <i>Radix Glycyrrhizae</i> ) 10g
The second prescription	Dangshen ( <i>Radix Codonopsis</i> ) 15g, Maidong ( <i>Radix Ophiopogonis</i> ) 10g, Wuweizi ( <i>Fructus Schisandrae Chinensis</i> ) 10g, Shanyao ( <i>Rhizoma Dioscoreae</i> ) 30g, Shihu ( <i>Herba Dendrobii</i> ) 15g, Wumei ( <i>Fructus Mume</i> ) 10g, Taoren ( <i>Semen Persicae</i> ) 10g, Danpi ( <i>Cortex Moutan Radicis</i> ) 10g, Yejiaoteng ( <i>Caulis Polygoni Multiflori</i> ) 30g, Jili ( <i>Fructus Tribuli</i> ) 15g.

I reflected on the patient's condition. Although the autumn carries some Qi of the Lesser Cold, the pathogenic dryness should be the dominant feature in the autumn. Also, the patient had general fatigue. Therefore, her major problem should be the deficiency of both Qi and Yin. However, the previous prescription contained Fuzi (*Radix Aconiti Carmichaeli*, RAC) with the function of warming Yang. After taking the medicine, the patient felt dizzy, which implying the elevation of BP. This was because RAC consumed too much Yin of the patient, resulting in the disturbing-up of Yang. The second prescription of patient is presented in Table 1.

The next day, the BP of this patient was reduced to 130/65 mmHg, and the dizziness was slightly relieved. After 7 days of medication, her dizziness was completely lifted, with her pains and itchy scalp slightly relieved.

## Discussion

Traditional Chinese medicine find that RAC is in function of Yang and warming Yang could expel cold and relieve pain. The research by Shorong-Shii Liou, *et al.* showed us that RAC possesses analgesic effects probably via the mechanism involving central opioid  $\mu$ -receptor [1]. In treating osteoarthritis of knee joint, Gancaofuzi decoction has the function of warming Yang, expelling wind and eliminating dampness, which help to remove swelling, relieve pain and improve joints function [2]. Therefore, the first treatment of patient was the add and subtract of Guizhishaozhimu decoction, first appeared in *Shanghanlun*, which published in the third century (Eastern Han Dynasty of China).

However, the patient felt dizzy with the BP of 180/60 mmHg after taking the medicine due to the false differentiation of symptoms. RAC consumed too much Yin of the patient, resulting in the disturbing-up of Yang. Modern research found that RAC has the bidirectional regulation to the BP. A study by Lin JS *et al.* showed us that RAC had better effect on ameliorating the systemic arterial hypotension than propranolol in portal vein ligation rats. It also obviously reduced the elevated portal pressure [3]. Higenamine is the active component obtained from RAC. Ingestion of a higenamine-based dietary supplement can moderately increase the heart rate to 3 bpm and systolic BP to 12 mmHg [4]. After ingestion of prescription containing RAC, the patient felt sleepy with a BP of 180/60 mmHg. Then, the second prescription was the add of Shengmai Power and reduced the BP to 130/65 mmHg. Shengmai Power, with the function of nourishing Yin, is first appeared in *Danxinfa*, which published in the 1481 A.D. (Yuan Dynasty of China). Therefore, the right differentiation of syndromes of Yin and Yang is very important when using Chinese herbal medicine.

RAC, the lateral root of Chinese herb Wutou (*Aconitum carmichaeli* Debx), was first recorded in the book *Shennongbencaojing*, which dates to a period around 200 B.C. - 200 A.D. It contains highly toxic C19 diterpenoid alkaloids of aconitine, mesaconitine and hypaconitine. After ingestion of unprocessed RAC, patients may present the typical signs and symptoms of aconitine poisoning. Aconitine, the main component of RAC, could cause arrhythmia or cardiac depression [5-7]. It is characteristic with the symptom of heart slowing, heart conduction block or tachycardia, *et al.* Many cases of aconitine poisoning have been reported [8-10]. The unprocessed RAC are toxic [11]. After right procession, RAC is called prepared RAC, in which the content of aconitine deceased while LD50 value of that increased remarkably [1]. Then after right decoction, the toxicity of prepared RAC further decreased [12]. Therefore, the right procession and decoction of RAC is the key to prevent poisoning. Besides, researchers also found the acute toxicity of RAC can be greatly reduced when combined with *Radix Glycyrrhizae* or *Zingiberis Rhizoma* [13]. Therefore, as shown in the first prescription, prepared

RAC was selected and used in combination with Ganchao (*Radix Glycyrrhizae*).

In addition to correct syndrome differentiation, understanding the toxicity and side effects of RAC and the underlying mechanism is essential for its safe use. Firstly, doctor should select prepared RAC with decreased toxicity. Because most of the patients receiving the therapy of TCM are outpatients, it is important to tell patients to decocted RAC for 1 hour before adding other herbs as well as observe the beginnings of aconitine poisoning, such as palpitation, twitch, blurred vision. Besides, when administrated as the drug to relieving pain, the side effect of RAC, such as the elevation of BP usually present. The patient would present the symptoms including dizziness, sleepy, nausea, vomiting, and so on. Therefore, the correct syndrome differentiation and the usage note of RAC in clinic use should be enough concerned.

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