

# PERSPECTIVES IN HYPERTENSION

## Clinical diagnosis and treatment of paroxysmal hypertension

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Paroxysmal hypertension (PH) represents a common clinical phenomenon encountered by practitioners. However, as hypertension specialists, we were astonished to find that when confronted with a sudden and significant elevation in blood pressure (BP), clinicians demonstrate inadequate consideration, confining their differential diagnosis to pheochromocytoma or psychiatric disorders.

In reality, in clinical practice, PH is closely associated with a variety of underlying diseases, physiological stressors, and environmental factors. It may present as either a physiological stress response or a clinical manifestation of critical illness. The interaction between psychological factors and elevated BP often forms a vicious cycle, complicating clinical identification. Moreover, acute hemodynamic changes resulting from abrupt rises in BP can exacerbate target organ damage and may even induce severe cardiovascular and cerebrovascular events.

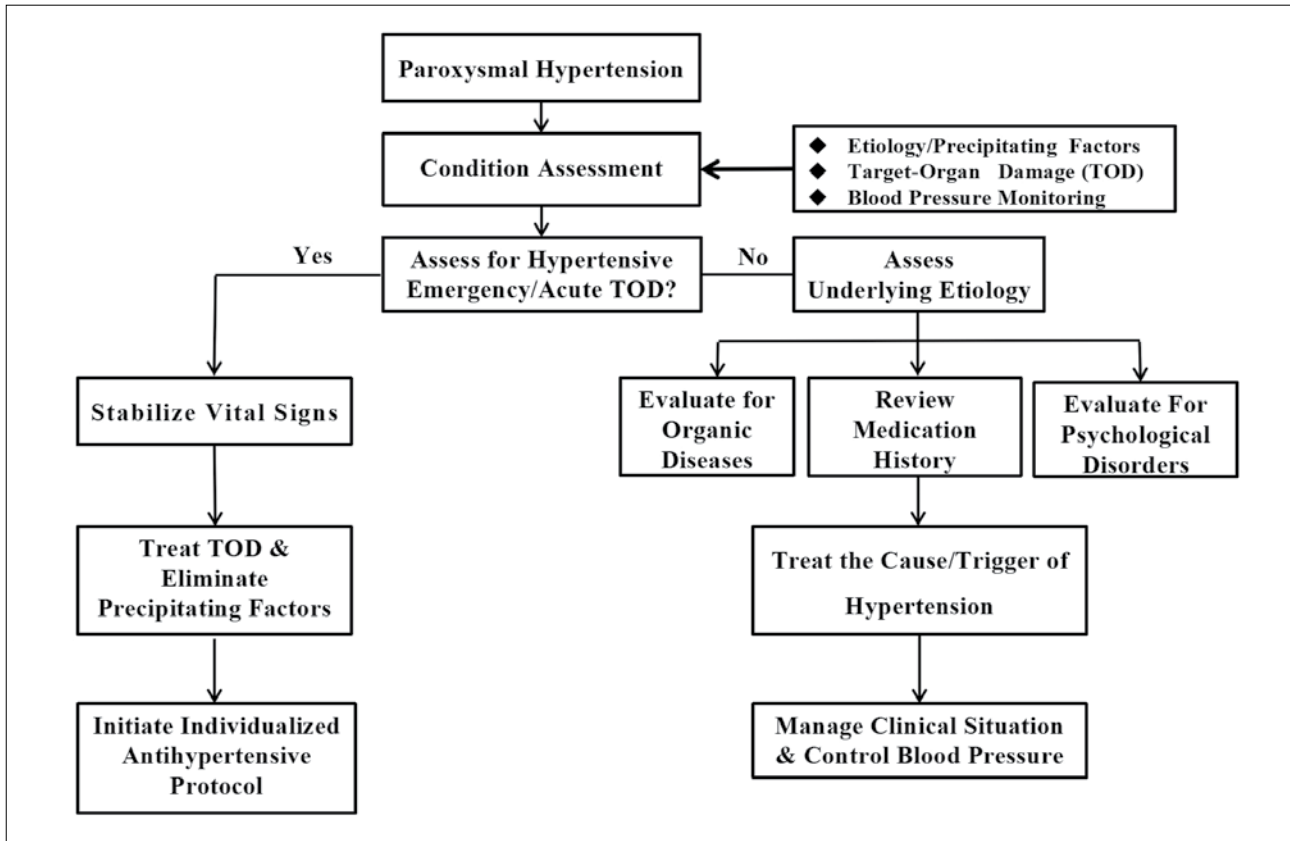
Therefore, to improve understanding of this condition, and avoid both underdiagnosis and overtreatment, we have briefly summarized the diagnosis and management of PH to guide clinical practice. The cases of PH should be categorized into the following three scenarios, based on the underlying causes:

### 1. Emergencies and PH

Emergencies causing PH include acute coronary syndrome, acute left heart failure, acute aortic dissection, acute stroke, hypertensive encephalopathy, acute severe bronchial asthma, status epilepticus, etc.<sup>1-6</sup> For patients presenting with acute hypertensive surges, prompt identification of any underlying conditions carrying a risk of severe adverse outcomes is paramount. Clinicians must rapidly assess the patient's clinical status through targeted history taking, physical examination, and essential auxiliary investigations to recognize critical cases. The key to treatment lies in the stabilization of vital signs and aggressive treatment of the primary disease. The targets for antihypertensive treatment, the rate of BP lowering, and the principles of pharmacotherapy vary across different critical conditions. Consequently, we believe that effective BP management is contingent upon a timely and accurate diagnosis and comprehensive assessment.

### 2. Diseases and PH

The key diagnostic and therapeutic approach involves actively evaluating, screening and identifying the clinical context and precipitating factors of PH. Targeted control of the primary disease and elimination of triggers represent effective strategies to prevent recurrence.



**Figure 1.** Clinical Diagnostic and Management Flowchart for Paroxysmal Hypertension

**2.1 Organic diseases and PH:**

- i. Endocrine disorders:<sup>7</sup>  
It mainly elaborates on pheochromocytoma, adrenal medullary hyperplasia, primary aldosteronism, hypercortisolism (Cushing's syndrome), and thyrotoxic crisis.
- ii. Obstructive sleep apnea (OSA).
- iii. Renal diseases and hemodialysis:  
renal artery stenosis, chronic kidney disease (CKD), and hemodialysis.<sup>8</sup>
- iv. Other organic diseases affecting multiple systems and organs can also lead to paroxysmal hypertension, e.g., chronic coronary syndrome, intracranial space-occupying lesions, autonomic dysfunction, sympathetic cervical spondylosis, insulinoma, hyperparathyroidism, and acute high-altitude hypertension.

**2.2 Psychological factors:**

- i. Psychiatric disorders:<sup>9</sup>  
panic disorder, post-traumatic stress disorder (PTSD), catatonia, bipolar disorder - manic episode, generalized anxiety disorder (GAD), etc.
- ii. White-coat effect and menopausal syndrome.

PH related to mental and psychological disorders is more common, emphasizing the importance of early diagnosis and treatment to stabilize BP by improving psychological status.

**3. Drug-induced PH**

This pertains to improper medication use and/or adverse reactions of some agents. Medications affecting BP include:<sup>10</sup> ephedrine-containing compounds, thyroid hormones, beta-agonists, novel targeted anticancer agents, anesthetics (e.g., Ketamine), central nervous system stimulants, antidepressants, and some traditional chinese medicines, etc. The emphasis lies in recognizing the relationship between the medication or method of administration and BP elevation, understanding its mechanism, and selecting appropriate antihypertensive measures.

To present the diagnostic and therapeutic process of PH more explicitly, we designed a flow chart (Figure 1).

## Management of patients with PH

- i. Acute phase management:  
Quickly assess the condition through multi-dimensional monitoring indicators, identify high-risk patients, give priority to dealing with life-threatening conditions, reasonably select antihypertensive drugs, and reduce BP to a safe range. For patients with non-acute PH, control BP fluctuations, pay attention to etiological investigation, prevent target organ damage, and avoid excessive medical intervention.
- ii. Long-term management:  
Actively intervene in the etiology, avoid inducing factors, establish a scientific follow-up protocol, and prevent recurrence.

## Summary

PH represents a distinct phenomenon within the hypertension spectrum. The distinctive nature necessitates systematic differential assessment across multiple dimensions – trigger tracing, pathological mechanism, and clinical phenotype – to achieve precise management.

- PH caused by critical illness: prioritise early recognition and stabilisation of vital signs; blood pressure management should proceed only after thorough assessment of the critical condition.
- PH secondary to organic disease: focus on identifying the underlying cause, delivering cause-specific treatment, and preventing recurrence.
- Drug-induced PH: emphasise clarification of the relationship and mechanism between the medication (or dosing regimen) and blood-pressure elevation, followed by selection of appropriate antihypertensive interventions.
- Paroxysmal hypertension associated with mental health disorders: highlight early diagnosis and treatment, aiming to stabilise BP through improvement of psychological status.

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