



The Thiamine Crisis: Understanding Wernicke-Korsakoff Syndrome and Related Disorders

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Abstract

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Introduction

In the intricate web of human health, few nutrients play as crucial a role as thiamine, also known as vitamin B1. Yet, despite its importance, thiamine deficiency is a common and often overlooked condition. This deficiency can lead to a range of neurological disorders, most notably Wernicke-Korsakoff Syndrome (WKS), a condition characterized by a triad of symptoms—confusion, ataxia, and ophthalmoplegia. The pathophysiology of WKS stems from the deleterious effects of thiamine deficiency on neuronal metabolism and integrity. Thiamine serves as a cofactor for several enzymes involved in energy metabolism, particularly in glucose utilization. In thiamine-deficient states, impaired glucose metabolism leads to a shortfall in ATP production, rendering neurons vulnerable to oxidative stress, excitotoxicity, and ultimately cell death. Moreover, thiamine deficiency disrupts neurotransmitter synthesis and impairs myelin integrity, further contributing to neurological dysfunction.

Diagnostic Challenges

Diagnosing WKS can be challenging due to its varied clinical presentation and lack of specific biomarkers. Moreover, symptoms may be attributed to other neurological or psychiatric conditions, delaying recognition and treatment. Clinicians must maintain a high index of suspicion, particularly in individuals with risk factors such as chronic alcoholism, malnutrition, gastrointestinal disorders, or bariatric surgery [6]. Neuroimaging findings, including characteristic changes on MRI such as symmetric hyperintensities in the periventricular regions and mammillary bodies, can support the diagnosis, but