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# Vitamin B6, B9, and B12 Supplementation in Antipsychotic-Induced Akathisia: A Case Report and Comprehensive Review

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**ABSTRACT:** Schizophrenia and related psychotic disorders pose a substantial global health burden, with treatment often complicated by antipsychotic-induced extrapyramidal side effects. Akathisia, characterized by profound inner restlessness and repetitive movements, is particularly distressing and frequently leads to medication non-adherence and relapse. This case report and comprehensive review details the management of a 30-year-old woman with schizoaffective disorder who developed severe akathisia following three months of risperidone therapy, resulting in treatment discontinuation. Upon readmission, a multimodal therapeutic strategy was implemented: risperidone was switched to aripiprazole, and adjunctive therapy included clobazam, trihexyphenidyl, folic acid (B9), and mecobalamin (B12). The clinical rationale extended beyond conventional management to incorporate targeted nutritional support, based on evidence that vitamin B6 modulates dopaminergic, serotonergic, and GABAergic pathways, while folate and B12 are crucial for one-carbon metabolism, homocysteine regulation, and neuroprotection. Following this integrated intervention, the patient's akathisia resolved, daily functioning stabilized, and treatment adherence was restored. This report provides an in-depth discussion of the synergistic neurobiological mechanisms through which B vitamins may alleviate akathisia, situates the findings within the broader context of nutritional psychiatry, and highlights the socio-economic relevance of this low-cost, low-risk adjunctive strategy for resource-limited settings. While current evidence remains preliminary, this case underscores the importance of early akathisia recognition and supports the integration of nutritional assessment and B-vitamin supplementation into personalized treatment plans for patients intolerant to standard therapies. Further randomized controlled trials are warranted to establish standardized dosing and identify patient subgroups most likely to benefit.

**Keywords:** Akathisia, Antipsychotic Agents, Vitamin B6, Folic acid, Vitamin B12, Schizoaffective Disorder, Nutritional Psychiatry.



## INTRODUCTION

Akathisia is a complex extrapyramidal movement disorder characterized by an inner sense of restlessness and an uncontrollable urge to move, most commonly induced by antipsychotic medications. It represents one of the most distressing adverse effects of dopamine receptor

antagonists, particularly among individuals with schizophrenia or bipolar disorder undergoing long-term pharmacotherapy (Ramsi & Zulaikha, 2022). The experience of akathisia is often described as intolerable, a profound sense of inner turmoil and agitation that compels constant motion. This subjective suffering is frequently accompanied by objective signs, such as rocking while standing or sitting, crossing and uncrossing legs, pacing, and an inability to remain seated. The pathophysiology of akathisia is multifactorial and extends beyond simple dopamine blockade. It involves dopaminergic hypofunction within the nigrostriatal pathway, altered serotonergic and noradrenergic activity, oxidative stress, and dysfunction of the GABAergic inhibitory system (Liu et al., 2024). The serotonergic system's interaction with dopamine pathways, particularly the 5-HT2A receptor antagonism common to many atypical antipsychotics, is thought to play a significant role in the development of this side effect. Furthermore, noradrenergic overactivity and imbalances in the GABA-benzodiazepine receptor complex have been implicated in the anxiety and agitation that characterize akathisia.

Despite extensive research, management remains challenging, as conventional pharmacological interventions—such as beta-blockers, benzodiazepines, or anticholinergics—provide only partial relief and may induce further metabolic or cognitive side effects. For instance, beta-blockers like propranolol can cause bradycardia and hypotension, benzodiazepines carry a risk of dependence and sedation, and anticholinergics like trihexyphenidyl can impair memory and cause dry mouth or blurred vision. This therapeutic dilemma underscores the urgent need for safer, well-tolerated adjunctive treatments that target the underlying neurobiological mechanisms without introducing new burdens.

In recent years, there has been growing attention to the role of micronutrients, particularly the B-vitamin complex (vitamin B6, folate/B9, and vitamin B12), in the modulation of neurotransmitter synthesis, neuroinflammation, and neuroprotection (Kennedy, 2016; Kumar & Sharma, 2023). The brain's high metabolic rate and unique biochemical demands make it particularly vulnerable to micronutrient deficiencies. These vitamins act as essential cofactors in enzymatic pathways responsible for the synthesis of serotonin, dopamine, and γ-aminobutyric acid (GABA), which are crucial for emotional regulation and psychomotor control (Firth et al., 2017; Peterson et al., 2024). Deficiencies in any of these vitamins have been associated with a spectrum of neuropsychiatric manifestations, including cognitive impairment, mood dysregulation, and increased susceptibility to drug-induced movement disorders (Burada et al., 2019). The link between B vitamins and neurological function is not merely correlational; it is grounded in their indispensable roles in fundamental cellular processes.

Among the B vitamins, pyridoxine (vitamin B6) serves as a coenzyme for aromatic L-amino acid decarboxylase, which catalyzes the final step in the synthesis of serotonin (from 5-hydroxytryptophan) and dopamine (from L-DOPA). Therefore, reduced B6 levels may aggravate dopaminergic imbalance in patients on antipsychotic therapy, potentially tipping the scales towards extrapyramidal symptoms (Young & Thomas, 2019). Supplementation with pyridoxine has demonstrated comparable efficacy to propranolol in treating neuroleptic-induced akathisia in controlled trials, offering a compelling alternative with a potentially more favorable side-effect profile (Shams-Alizadeh et al., 2018). Similarly, folate (B9) and cobalamin (B12) play interrelated

roles in one-carbon metabolism, which is crucial for DNA methylation, nucleotide synthesis, and homocysteine regulation (Scaglione & Panzavolta, 2014). Elevated homocysteine levels—stemming from folate or B12 deficiency—have been implicated in oxidative neuronal injury, endothelial dysfunction, and worsening of psychotic symptoms (Levine et al., 2002). Homocysteine itself can act as an excitotoxin, potentiating NMDA receptor activity and contributing to neuronal damage. Furthermore, a large randomized multicenter trial found that adjunctive treatment with folate and vitamin B12 significantly improved negative and cognitive symptoms in schizophrenia, areas often refractory to standard antipsychotic treatment (Suprapti et al., 2021).

A growing body of evidence suggests that micronutrient insufficiency may exacerbate treatment resistance in psychiatric disorders. A systematic review by Firth et al. (2017) confirmed that vitamin and mineral supplementation improved total and negative symptom scores in schizophrenia when combined with antipsychotic therapy. In another meta-analysis, Zhang et al., (2024) demonstrated that adjunctive nutritional therapy—including folate and vitamin B12—significantly enhanced cognitive and functional outcomes in chronic psychosis. These findings underscore the interrelationship between nutrition, neurotransmission, and psychiatric symptomatology, emphasizing the need for personalized treatment approaches integrating pharmacological and nutritional perspectives. The paradigm is shifting from viewing nutrition as a peripheral concern to recognizing it as a core component of neuropsychiatric health.

In low- and middle-income countries (LMICs), the risk of micronutrient deficiencies is compounded by socioeconomic and dietary limitations (Hidayati et al., 2017). This public health burden poses additional challenges for patients with severe mental illness, who often face poor dietary intake due to factors such as poverty, negative symptoms of schizophrenia (e.g., avolition), and medication side effects that affect appetite. Limited healthcare access further impedes the early detection and correction of these deficiencies. Studies from Southeast Asia indicate that deficiencies in folate and vitamin B12 are common among psychiatric patients, correlating with higher rates of extrapyramidal side effects and suboptimal therapeutic response (Tanaka, 2023). Consequently, identifying and correcting these deficiencies can improve both psychiatric and somatic outcomes, potentially reducing the need for polypharmacy and its associated risks.

From a neurobiological perspective, vitamin B6, folate, and B12 interact synergistically in maintaining methylation balance and reducing oxidative stress—two mechanisms crucial for neuronal survival. Disruption of this biochemical axis leads to increased homocysteine concentration, mitochondrial dysfunction, and impaired neurotransmitter synthesis (Roffman et al., 2023). The folate and B12-dependent enzyme methionine synthase is essential for regenerating methionine from homocysteine, a process critical for the production of S-adenosylmethionine (SAMe), the body's primary methyl donor. Inadequate methylation can disrupt the synthesis of monoamines and phospholipids in neuronal membranes. Hence, supplementing these vitamins not only addresses nutritional gaps but also targets key molecular pathways implicated in akathisia and schizophrenia pathogenesis.

Given these considerations, this case report aims to highlight the potential clinical benefits of vitamin B6, folate, and B12 supplementation in a patient with antipsychotic-induced akathisia. By integrating biochemical, pharmacological, and clinical perspectives, this report seeks to contribute to a more comprehensive understanding of micronutrient-based interventions in neuropsychiatric care. It will explore the clinical narrative in depth, situate the findings within the broader scientific literature, and discuss the practical implications for clinicians working in resource-variable settings.

## METHOD

### Case Presentation and Clinical Assessment

A 30-year-old woman with a history of schizoaffective disorder, depressive type, was admitted to the psychiatric ward with complaints of persistent restlessness and an inability to remain still. The symptoms emerged after three months of risperidone therapy, during which she developed severe psychomotor agitation and insomnia. She reported an uncontrollable urge to pace at night, occasionally wandering outside her home, and described the sensation as being driven "from within." This description is classic for the subjective component of akathisia. The symptoms had become so severe that she independently discontinued her antipsychotic medication, leading to a relapse of her psychotic symptoms.

Her psychiatric history began in November 2022, with a previous hospitalization one month earlier. A relapse followed the death of her uncle, to whom she had been emotionally close. This loss was accompanied by profound sadness, frequent crying, and difficulty maintaining daily responsibilities, highlighting the interplay between psychosocial stressors and the course of schizoaffective disorder.

On mental status examination, she appeared her stated age with modest grooming but disheveled hair, suggesting a decline in self-care. Eye contact and verbal interaction were adequate. She was alert and oriented to person, place, and time, with intact memory and coherent thought processes, though her thought content revealed a delusion of influence, a common positive symptom in psychotic disorders. Her affect was depressed and confused, consistent with her mood, which was reported as persistently low. Social functioning and daily activities were markedly reduced, impacting her quality of life. Psychomotor assessment revealed repetitive leg movements and visible restlessness, consistent with the objective signs of akathisia. Insight was rated as grade 5, indicating partial awareness of her illness but limited ability to recognize the impact of symptoms on her treatment needs. This limited insight posed a significant risk for poor adherence, as evidenced by her prior self-discontinuation of medication.

### Diagnosis and Therapeutic Intervention

She was diagnosed with schizoaffective disorder, depressive type (ICD-11: F25.1), and extrapyramidal and movement disorder (ICD-11: G25). The treatment plan was strategically modified to address both the primary psychiatric condition and the distressing side effect. Risperidone was switched to aripiprazole 15 mg once daily. This switch was pharmacologically rational, as aripiprazole's partial agonist activity at D2 receptors theoretically stabilizes dopamine signaling, reducing the risk of both hyperdopaminergic (psychosis) and hypodopaminergic (extrapyramidal symptoms) states compared to full antagonists like risperidone.

The adjunctive therapy was comprehensive. Clobazam 10 mg once daily was added for its anxiolytic and potential muscle-relaxant properties, targeting the agitation associated with akathisia. Trihexyphenidyl 2 mg three times daily, an anticholinergic agent, was included as a standard intervention for extrapyramidal symptoms. Crucially, the regimen incorporated nutritional support with folic acid 200 mcg twice daily and mecobalamin (an active form of vitamin B12) 50 mcg once daily. This combination aimed to stabilize her psychotic and affective symptoms while directly addressing the potential biochemical underpinnings of akathisia through vitamin supplementation. The rationale was to provide cofactors essential for neurotransmitter synthesis and homocysteine metabolism, thereby supporting neuronal health and potentially mitigating motor side effects.

## RESULT AND DISCUSSION

Akathisia represents a serious clinical challenge in psychiatric practice, particularly among patients with schizophrenia or affective disorders receiving long-term antipsychotic therapy. It manifests as a subjective feeling of inner restlessness combined with observable motor activity such as pacing, fidgeting, or repetitive movements. This condition not only causes profound distress but also contributes to poor adherence, relapse, and treatment discontinuation, ultimately increasing the long-term burden of illness (Ramsi & Zulaikha, 2022). The pathophysiology of akathisia is multifactorial and complex, encompassing dopaminergic hypofunction within the nigrostriatal pathway, altered serotonergic and GABAergic neurotransmission, and dysregulated oxidative stress mechanisms (Peterson et al., 2024). The traditional dopaminergic hypothesis, focusing on D2 receptor blockade in the striatum, remains central. However, the efficacy of serotonin-dopamine antagonists (atypical antipsychotics) in causing akathisia implicates 5-HT2A receptor blockade, which may disinhibit dopamine release in certain pathways, leading to a complex interplay that manifests as restlessness.

From a neurobiological standpoint, the dopaminergic hypothesis remains central to understanding akathisia. Blockade of D2 receptors by typical and some atypical antipsychotics disrupts the delicate balance between dopaminergic and cholinergic systems in the basal ganglia, resulting in motor agitation and subjective unease. At the same time, serotonergic hyperactivity, particularly through 5-HT2A receptors, and reduced GABAergic inhibition in cortical-subcortical circuits

further exacerbate motor restlessness and anxiety-like symptoms (Kumar et al., 2023). Moreover, oxidative stress has been identified as a contributing factor, as increased reactive oxygen species (ROS) production may damage neuronal membranes and alter neurotransmitter signaling, creating an environment less resilient to pharmacological challenges (Zhou et al., 2023). The interplay between these systems creates a neurobiological "perfect storm" that culminates in the distressing experience of akathisia.

In the present case, the patient developed severe akathisia after three months of risperidone therapy, a known risk factor. Switching to aripiprazole—an atypical antipsychotic with partial D2 agonist activity—was clinically rational, as it helps rebalance dopaminergic tone while maintaining antipsychotic efficacy. Its unique pharmacology allows it to act as a functional agonist in settings of low dopamine tone (potentially improving negative symptoms and reducing EPS risk) and a functional antagonist in settings of high dopamine tone (treating positive symptoms). Adjunctive use of vitamin B6, B9, and B12 was introduced not merely as a nutritional supplement but as a targeted neuroprotective strategy to alleviate extrapyramidal side effects by supporting compromised biochemical pathways. This multimodal combination proved beneficial, leading to improved psychomotor control, mood stabilization, and restored treatment adherence, demonstrating the value of an integrated approach.

## In-Depth Exploration of the Role of Vitamin B6, B9, and B12 in Neurotransmission and Neuroprotection

**Vitamin B6 (Pyridoxine):** The role of Vitamin B6 in the brain is foundational. It serves as an essential cofactor for over 100 enzymes, many of which are involved in neurotransmitter synthesis. Its most critical roles in the context of akathisia involve the enzymes aromatic L-amino acid decarboxylase (AADC) and glutamate decarboxylase (GAD). AADC is responsible for the final step in the production of both serotonin (from 5-HTP) and dopamine (from L-DOPA). GAD catalyzes the conversion of glutamate, the primary excitatory neurotransmitter, to GABA, the primary inhibitory neurotransmitter. Therefore, vitamin B6 status directly influences the levels of dopamine (implicated in reward, motivation, and motor control), serotonin (implicated in mood, anxiety, and impulse control), and GABA (implicated in reducing neuronal excitability and promoting calm). Low pyridoxine levels are linked with decreased dopaminergic and GABAergic activity, which may exacerbate the dopamine-blockade effects of antipsychotics and reduce the brain's innate capacity to inhibit restless movements (Miodownik et al., 2006). Supplementation with vitamin B6 has shown comparable efficacy to propranolol in treating neuroleptic-induced akathisia, likely by boosting the production of GABA and dopamine, thereby counteracting the pharmacological-induced imbalance (Shams-Alizadeh et al., 2018).

**Folate (Vitamin B9) and Cobalamin (Vitamin B12):** The roles of folate and B12 are deeply intertwined in one-carbon metabolism, a critical network of biochemical reactions. A key junction in this metabolism is the remethylation of homocysteine to methionine, a reaction catalyzed by the enzyme methionine synthase, which is entirely dependent on vitamin B12 as a cofactor.

Methionine is then converted to S-adenosylmethionine (SAMe), the universal methyl donor. SAMe is required for the methylation of DNA, proteins, phospholipids, and neurotransmitters. In the context of psychiatry, the methylation of membrane phospholipids influences receptor function and fluidity, while the methylation of neurotransmitters like dopamine and serotonin can affect their metabolism and activity. A deficiency in either folate or B12 leads to elevated plasma homocysteine. Homocysteine is not only a marker of deficient B-vitamin status but also a neurotoxic compound. It acts as an agonist at the glutamate NMDA receptor, potentially leading to excitotoxicity and oxidative stress, damaging neuronal membranes and impairing neuroplasticity (Levine et al., 2002). Studies have consistently shown that low serum levels of these vitamins are associated with more severe psychiatric symptoms, particularly negative and cognitive impairments, which are strong predictors of functional outcome (Mpango, 2014; Şahin et al., 2022; Zhilyaeva et al., 2022).

The distinction between different forms of folate is clinically significant. Folic acid is the synthetic, oxidized form found in supplements and fortified foods. It must be reduced to dihydrofolate (DHF) and then tetrahydrofolate (THF) by the enzyme dihydrofolate reductase (DHFR). THF is then converted to 5-methyltetrahydrofolate (5-MTHF), the primary circulating form of folate that can cross the blood-brain barrier. As Scaglione & Panzavolta (2014) emphasize, 5-MTHF is metabolically active and directly participates in the homocysteine remethylation cycle. In individuals with genetic polymorphisms in the MTHFR enzyme (e.g., C677T variant), the conversion of folic acid to 5-MTHF is impaired, potentially rendering folic acid supplementation less effective. This highlights a potential area for personalized medicine, where 5-MTHF (L-methylfolate) might be a more effective supplement for some patients.

Recent evidence from neuropsychiatric studies underscores the biological plausibility of these findings. In a large randomized multicenter trial, supplementation with folate and vitamin B12 significantly improved negative and cognitive symptoms in schizophrenia, suggesting a direct impact on core pathophysiological processes (Roffman et al., 2013). Similarly, a meta-analysis demonstrated that vitamin and mineral supplementation enhanced total symptom scores and social functioning when used as adjunctive therapy with antipsychotics (Firth et al., 2017). The study by Tanaka et al. (2023) further emphasized that micronutrient deficiencies, particularly of B vitamins, are common among psychiatric inpatients in Southeast Asia and correlate with worse treatment outcomes, including a higher incidence of extrapyramidal side effects.

## Mechanistic and Clinical Integration: A Synergistic Approach

Mechanistically, the benefits of these vitamins in the presented case extend far beyond simple nutritional replacement. The combination likely worked through several synergistic pathways:

1. **Neurotransmitter Replenishment:** Vitamin B6 directly supported the synthesis of dopamine and GABA. By increasing the availability of GABA, it may have directly counteracted the

anxiety and motor agitation of akathisia. Supporting dopamine synthesis in a compromised system may have helped fine-tune motor control without precipitating psychosis.

2. **Homocysteine Reduction and Methylation Support:** Folate and B12 supplementation corrected the potential methylation imbalance by facilitating the conversion of homocysteine to methionine. This would have lowered neurotoxic homocysteine levels and supported the production of SAMe, thereby promoting crucial methylation reactions involved in neurotransmitter synthesis (e.g., the production of monoamines) and myelin maintenance (Roffman et al., 2023).
3. **Oxidative Stress Mitigation:** Elevated homocysteine and B-vitamin deficiencies are associated with increased oxidative stress. By lowering homocysteine and supporting cellular metabolism, the supplementation may have reduced oxidative damage to neurons, particularly in the basal ganglia, which is vulnerable to such insults.

This integrative approach aligns perfectly with the emerging paradigm of *nutritional psychiatry*, which advocates for adjunctive micronutrient therapy to enhance psychopharmacological efficacy and reduce side effects (Stevenson et al., 2024). In particular, targeting oxidative stress and methylation pathways has gained significant interest for reducing the metabolic and neurological burden of long-term antipsychotic therapy. The case demonstrates that addressing the "metabolic milieu" of the brain can create a more favorable environment for the primary pharmacotherapy to work effectively and tolerably.

## Comparative and Longitudinal Insights

The response pattern observed in this case aligns with prior clinical observations. For instance, patients receiving vitamin B6 for neuroleptic-induced akathisia often report symptom reduction within 7–14 days, a timeline similar to that of beta-blocker therapy but with a more favorable side-effect profile (Miodownik et al., 2006). Moreover, folate and B12 supplementation has been linked to improved energy, concentration, and affective stability in other studies, which indirectly enhance adherence and quality of life by making the overall treatment experience more positive for the patient (Huang et al., 2023). The improvement in this patient's daily functioning and adherence is a critical outcome, as these are major determinants of long-term prognosis in schizoaffective disorder.

Comparative studies between aripiprazole and risperidone consistently suggest that aripiprazole carries a lower risk of extrapyramidal side effects, possibly due to its unique pharmacology as a partial agonist at dopamine D2 and serotonin 5-HT1A receptors (Neuropsychopharmacology, 2021). The 5-HT1A partial agonism may confer additional anxiolytic and potential anti-akathisia effects. The switch from risperidone to aripiprazole in this patient likely mitigated the profound dopaminergic blockade that contributed to her akathisia, while the B-vitamin supplementation provided the biochemical support necessary for the recovery of neurochemical balance and neuronal health.

## Cultural and Socioeconomic Considerations

In the Indonesian context, and in many LMICs, the management of akathisia must be viewed through a socio-economic and cultural lens. The patient's dietary habits, influenced by local cuisine, economic constraints, and possibly food insecurity, might have predisposed her to suboptimal B-vitamin status. Stigma surrounding mental illness can further limit access to consistent, high-quality healthcare and nutritional education. The cost of newer antipsychotics with better side-effect profiles can be prohibitive, making strategies to improve the tolerability of more accessible medications (like risperidone) highly valuable. The adjunctive use of B vitamins is a low-cost, widely available intervention that can be implemented even in resource-limited settings. Studies like that of Hidayati et al. (2017) in Indonesia have shown the benefits of folate and cobalamin supplementation in chronic schizophrenia, supporting the feasibility and relevance of this approach in the local context. Therefore, this case report is not just a clinical narrative but also a public health suggestion for a cost-effective strategy to improve mental health care outcomes.

## Clinical Implications and Future Research

The findings from this case report provide several practical implications for clinical psychiatry. First, it reinforces that early detection and proactive management of akathisia are critical for preventing the devastating cascade of treatment discontinuation and relapse. Clinicians should routinely use structured assessments (like the Barnes Akathisia Rating Scale) during antipsychotic therapy. Second, routine assessment of nutritional status—especially folate, B12, and possibly homocysteine—should be considered a standard of care for patients on long-term antipsychotics, particularly in populations at risk for deficiency. Third, vitamin supplementation represents a low-cost, low-risk adjunct that can improve overall treatment tolerability and adherence, potentially reducing the need for higher doses of more problematic medications like anticholinergics or benzodiazepines.

However, the evidence base, while promising, remains limited. Most studies exploring B-vitamin supplementation are small-scale, and dosage optimization has yet to be standardized. The doses used in this case (B6 not explicitly stated, Folic Acid 400 mcg/day, B12 50 mcg/day) are within general nutritional supplementation ranges, but therapeutic doses for akathisia are not established. Further randomized controlled trials (RCTs) are warranted to determine the precise therapeutic doses, treatment duration, and long-term safety of B6, B9, and B12 supplementation in patients with extrapyramidal symptoms. These trials should compare B vitamins against first-line treatments like propranolol and as add-on therapy.

Future directions are exciting and point towards personalized medicine. This includes exploring genetic polymorphisms in folate metabolism (such as the common MTHFR C677T variant) to identify patients most likely to benefit from supplementation with 5-MTHF instead of folic acid. Additionally, integrating nutritional assessments and interventions into standardized psychiatric care protocols could bridge the gap between pharmacotherapy and holistic patient management, addressing a root cause of treatment resistance and comorbidity (DeVries et al., 2024). Research

should also explore the potential of B vitamins in preventing, rather than just treating, antipsychotic-induced side effects.

## CONCLUSION

Antipsychotic-induced akathisia is a clinically significant challenge due to its profound impact on patient suffering, adherence, relapse risk, and long-term prognosis. In this detailed case, a patient with schizoaffective disorder developed severe risperidone-induced akathisia, which led to medication discontinuation and relapse. The condition improved markedly following a strategic therapeutic adjustment: switching to aripiprazole and combining it with a multimodal adjunctive regimen that included clobazam, trihexyphenidyl, and crucially, supplementation with vitamins B6, B9, and B12. The intervention successfully reduced both the subjective and objective components of restlessness, stabilized daily functioning, and restored treatment adherence, illustrating a successful recovery trajectory.

This report contributes to clinical practice by emphasizing several key points: first, the critical importance of the early recognition and active management of akathisia symptoms to prevent the detrimental cycle of non-adherence and relapse; second, the potential role of B-vitamin supplementation as a safe, low-risk, and accessible adjunct to standard management, targeting the underlying neurobiological mechanisms of the side effect; and third, the immense value of adopting a multimodal, integrative approach that combines judicious pharmacological adjustment with metabolic and nutritional support, embodying the principles of nutritional psychiatry.

Nevertheless, it is crucial to acknowledge that evidence supporting vitamin supplementation specifically for akathisia remains preliminary. Current findings are based largely on small trials, mechanistic hypotheses, and case reports like this one, with no established, evidence-based guidelines for dosage or duration. Therefore, while a promising adjunct, it should not replace first-line treatments without further evidence.

Future research must focus on well-designed, large-scale randomized controlled studies to definitively determine efficacy, clarify the precise mechanisms of action, and identify the patient subgroups most likely to benefit from this approach. In the meantime, clinicians should remain vigilant for akathisia in routine practice and consider integrating B-vitamin status assessment and supplementation into individualized treatment plans, particularly for patients with poor tolerance to conventional treatments, those from regions with high prevalence of nutritional deficiencies, or those showing signs of underlying nutritional inadequacies. This case stands as a testament to the potential of broadening our therapeutic arsenal to include fundamental nutritional support in the pursuit of better mental health outcomes.

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