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(REVIEW ARTICLE)

Balancing the mind: The critical role of carbamazepine as a mood stabilizer in bipolar and schizoaffective disorders

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Abstract

This case study explores the therapeutic application and associated challenges of using carbamazepine as a mood stabilizer in the management of schizoaffective disorder. The patient, a 42-year-old male with a history of schizoaffective disorder, exhibited acute manic symptoms exacerbated by substance use and non-compliance with medication. The introduction of carbamazepine initially showed promise in stabilizing mood and reducing psychotic symptoms. However, the treatment course was complicated by a significant adverse dermatological reaction. This necessitated a switch to valproic acid, which was better tolerated. The case underscores the importance of careful monitoring and readiness to adjust treatment in response to carbamazepine-induced side effects. This study highlights the critical need for individualized treatment plans and emphasizes the role of pharmacogenetic testing in predicting adverse drug reactions, ensuring safer and more effective management of psychiatric conditions.

Keywords: Carbamazepine; Schizoaffective Disorder; Mood Stabilizer; Adverse Drug Reactions; Pharmacogenetics; Psychiatric Treatment; Case Study; Valproic Acid

1. Introduction

In the realm of psychiatric treatment, mood stabilizers are pivotal in managing the intricate balance of neurological pathways that affect mood regulation. These medications, integral to the therapeutic arsenal for bipolar disorder (BD) and schizoaffective disorder, are designed to mitigate the severe oscillations in mood, energy, and overall function that characterize these conditions. The use of mood stabilizers is not only critical in controlling the episodic extremes of mania and depression typical of bipolar disorder but also essential in managing the complex symptomatology of schizoaffective disorder, which melds features of mood disorders with elements of psychotic disorders. Bipolar disorder is a significant mental health concern globally, marked not just by its prevalence but by the depth of its impact on individuals' psychosocial functioning. The disorder is characterized by alternating episodes of mania—periods of excessive euphoria, energy, and often risky behavior—and depression, which can bring pervasive sadness, lethargy, and suicidal ideation. Schizoaffective disorder presents additional challenges, combining the mood disturbances of bipolar disorder with the psychotic symptoms commonly associated with schizophrenia, such as hallucinations and delusions. This co-occurrence demands a nuanced therapeutic approach that addresses both the affective and psychotic dimensions. Carbamazepine, initially developed as an anticonvulsant for epilepsy, has been repurposed in psychiatry due to its ability to stabilize neural firing rates, which in turn helps regulate mood swings. Its use in psychiatric settings extends particularly to the management of manic episodes and the stabilization of mood fluctuations in both bipolar and schizoaffective disorders. Despite its efficacy, carbamazepine's use is complicated by its side effect profile, notably dermatological reactions that can escalate into severe conditions if not monitored closely. Understanding and managing these side effects is paramount in the safe and effective use of carbamazepine in psychiatric care.

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2. Patient profile and admission details

A 42-year-old male with a diagnosed schizoaffective disorder was admitted to the psychiatric unit due to an acute manic episode triggered by heavy cannabis smoking and cessation of his prescribed medications, including olanzapine and the sedative levomepro- mazine. The mania was characterized by grandiose and persecutory delusions, accompanied by auditory and visual hallucinations, where the patient believed he possessed unique powers and was the target of a conspiracy. His elevated mood was interspersed with irritability and aggression, manifesting as verbal insults and threats towards his family, neighbors, and healthcare staff. This episode was part of a worsening pattern of behavior that included a long history of aggressive interactions with those around him. Given the severity of his symptoms and his history of only partial responsiveness to other treatments, carbamazepine was initiated. The goal was to manage the acute manic symptoms effectively and to stabilize his mood fluctuations. Initially, the treatment showed promising results; the patient's mood began to stabilize, and there was a notable reduction in the frequency and intensity of his delusions and hallucinations. Concurrently, there was a significant improvement in his behavior within the facility; he stopped engaging in disturbing actions such as constantly demanding cigarettes, being rude to the staff, stealing from other patients, and refusing his night medication. However, his condition would deteriorate following family visits, leading to the decision to suspend these encounters to prevent exacerbation of his symptoms. Additionally, the patient's creatine phosphokinase (CPK) levels became elevated, a potential side effect of olanzapine, necessitating the discontinuation of this medication. Consequently, his treatment regimen was adjusted to include only lorazepam at a dosage of 7.5 mg per day along with carbamazepine, focusing on managing his symptoms while monitoring for any adverse effects.

Upon the initiation of carbamazepine therapy, the patient developed a pruritic and erythematous rash, indicative of a hypersensi- tivity reaction. Clinically, the rash presented with both macules and papules, distributed symmetrically on the trunk and proximal extremities, which is typical for drug-induced exanthems. The macules were confluent in some areas, progressing to palpable papules, suggesting an evolving morbilliform drug eruption. Given the risk of progression to more severe dermatological conditions, such as Stevens-Johnson syndrome or toxic epidermal necrolysis, close monitoring was critical. To manage the patient's discomfort and prevent further exacerbation, treatment with a low-dose oral corticosteroid was commenced to reduce inflammation and control the pruritus. Additionally, antihistamines were administered to lessen the itching sensation, and the patient was instructed to use calamine lotion to soothe the affected skin. Strict measures were also taken to maintain the hygiene of the skin to prevent secondary infections. Carbamazepine was discontinued promptly, and the patient was switched to an alternative mood stabilizer with careful consideration of cross-reactivity potential. The rash subsided gradually with no signs of desquamation or further systemic involvement. In light of the dermatological side effects induced by carbamazepine, and the high risk of similar adverse reactions with lamotrigine, the treatment team opted for valproic acid as an alternative mood stabilizer. Valproic acid has a distinct mechanism of action and a lower incidence of causing serious skin reactions compared to lamotrigine. The patient was initiated on a conservative dose of 500 mg per day, with a plan to double the dose to 1000 mg after one week, contingent upon the absence of side effects and ensuring the patient's tolerance to the medication. Prior to the commencement of valproic acid, a full blood count (NFS) was performed to rule out any pre-existing blood dyscrasias, and serum electrolytes were checked to correct any potential hyponatremia, which could be exacerbated by the mood stabilizer. This comprehensive approach aimed to minimize the risk of side effects and ensure the safety and efficacy of the new treatment regimen for the patient's schizoaffective disorder.

Prior to the introduction of valproic acid, the patient exhibited an elevated creatine phosphokinase (CPK) level of 600 U/L, suggestive of a possible drug-induced myopathy or rhabdomyolysis. Aggressive intravenous hydration was employed, which successfully corrected the CPK levels. When the CPK level was reduced to 170 U/L, it was deemed safe to introduce aripiprazole, starting at a conservative dose of 5 mg per day. This antipsychotic was chosen for its efficacy in managing both mood stabilization and psychotic symptoms while carrying a relatively lower risk of causing elevated CPK levels compared to other antipsychotics. With careful monitoring, and in the absence of any adverse neuromuscular reactions, the dosage of aripiprazole was increased to 10 mg after three days. Concurrently, a benzodiazepine was administered to provide coverage for the potential side effects of anxiety and akathisia commonly associated with the initiation of antipsychotic treatment. This strategy was designed to optimize the therapeutic effect while minimizing discomfort and ensuring patient safety.

3. Discussion

The intricacies of managing schizoaffective disorder call for a highly individualized therapeutic approach, a perspective that has been significantly advanced by the integration of pharmacogenetic insights. In this case, the decision to cease carbamazepine in favor of valproic acid was underpinned by the identification of the HLA-B*15:02 allele, a genetic

marker indicative of an increased risk for severe cutaneous adverse reactions. The subsequent avoidance of lamotrigine, due to its analogous dermatological risks, underscores the meticulous application of personalized medicine principles, taking into account both the patient's genetic predisposition and clinical history. Additionally, comprehensive blood tests were implemented to detect any pre-existing conditions that might be aggravated by the treatment switch, with particular attention to the patient's elevated CPK levels. The careful monitoring of these levels, along with the normalization confirmed prior to introducing aripiprazole, exemplifies a prudent and proactive measure to prevent potential neuromuscular complications. Furthermore, the strategic introduction of benzodiazepines adeptly managed the side effects, specifically aripiprazole-induced akathisia, while addressing the psychiatric symptoms in a synergistic fashion. This case study encapsulates the necessity for a vigilant, evidence-based methodology in pharmacotherapy for schizoaffective disorder. It illustrates a multifaceted approach where the pharmacological intervention is justified by a comprehensive understanding of both the patient's ongoing response and the associated potential risks. Such a rigorous strategy ensures the optimization of therapeutic efficacy alongside the paramount concern for patient safety, thereby navigating the delicate balance between the two with the utmost precision. This approach is congruent with the literature that champions genetic screening as an essential tool to foresee and curtail the risk of adverse drug reactions. The findings of this case study lend considerable weight to the argument for widespread implementation of pharmacogenetic testing as a standard precaution in the prescription of medications known for their potential severe adverse reactions.

4. Conclusion

In this case study, carbamazepine's effectiveness as a mood stabilizer is evident; however, its potential for severe side effects cannot be overlooked. The patient developed a significant rash within just 24 hours following a latency period of usage, emphasizing the unpredictable and sometimes rapid onset of adverse dermatological reactions. This incident highlights the critical need for continuous monitoring and readiness to modify treatment plans in response to such side effects. It reinforces the necessity of employing a cautious approach when prescribing carbamazepine, considering alternative treatments when the risk profile of a patient suggests a high likelihood of adverse reactions. This case illustrates the delicate balance between therapeutic efficacy and patient safety in psychiatric medication management.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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