CASE REPORT

Adolescent Cyclical Vomiting Syndrome with Psychosomatic Triggers: A Case Report on Multidisciplinary Management

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ABSTRACT

This case report discusses a 17-year-old female diagnosed with Cyclical Vomiting Syndrome (CVS), a functional gastrointestinal disorder marked by repeated episodes of intense vomiting in the absence of identifiable physical abnormalities. The patient reported significant psychological stressors, including academic pressure and body image concerns, which appeared to exacerbate her symptoms. These factors contributed to notable academic and occupational impairment. A comprehensive psychological evaluation revealed underlying traits of neuroticism. The patient was treated using a multidisciplinary approach that included psychological counseling and a pharmacological trial of amitriptyline, which led to substantial clinical improvement. This case highlights the complex interplay between psychological and physiological factors in CVS and reinforces the need for a holistic, patient-centred treatment plan that incorporates mental health evaluation and support to achieve better clinical outcomes.
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INTRODUCTION

Cyclical Vomiting Syndrome (CVS) is a chronic, functional gastrointestinal disorder characterised by recurrent episodes of vomiting that are stereotyped in pattern and separated by symptom-free intervals. Although initially described in children, increasing evidence shows its occurrence across age groups, including adolescents and adults. The prevalence in the general population is estimated to be between 0.1% and 2% (1), with significant impairment of daily functioning and quality of life.

The pathogenesis of CVS is not fully understood. However, it is widely believed to involve dysregulation of the brain-gut axis, a bidirectional system integrating signals between the gastrointestinal tract and the central nervous system (2). Studies indicate a high co-occurrence of anxiety, depression, and emotional dysregulation among those affected, supporting a strong psychosomatic interface (3,4). Among available pharmacological interventions, amitriptyline, a tricyclic antidepressant (TCA), has shown considerable efficacy in both pediatric and adult populations with CVS. Its utility is attributed to modulation of visceral pain, serotonin-norepinephrine reuptake inhibition, and improvement in sleep and anxiety, all of which are relevant to CVS symptomatology (2,5). This report discusses a case of adolescent-onset CVS with significant psychosocial stressors and demonstrates the effectiveness of low-dose amitriptyline and psychological intervention in symptom resolution.

CASE REPORT

A 17-year-old female was referred to the psychiatry outpatient department following a series of recurrent hospitalizations for intractable, episodic vomiting. Over a period of three months, the patient experienced severe bouts of non-bilious, non-projectile vomiting occurring every 10–14 days. These episodes typically lasted approximately 72 hours, during which the patient was unable to tolerate even minimal oral intake, including water. Between these acute phases, she remained entirely asymptomatic and functional, a pattern highly characteristic of Cyclical Vomiting Syndrome (CVS).

Upon initial presentation to the general medicine team, a rigorous diagnostic workup was initiated to rule out structural, metabolic, or neurological etiologies. Laboratory investigations—including a complete blood count, serum electrolytes, renal and liver function tests, and a thyroid profile—yielded results within normal physiological limits.

To assess for potential thoracic or gastrointestinal pathologies such as hiatal hernias or pulmonary complications from aspiration, a chest X-ray was performed (Figure 1). The imaging demonstrated clear lung fields and a normal cardiothoracic ratio, effectively ruling out primary thoracic contributors to her symptoms. Furthermore, given the intractable nature of the vomiting, it was imperative to exclude central nervous system (CNS) pathology, such as space-occupying lesions or vascular abnormalities that could induce

Figure 1: Chest X-ray (PA view) -Normal chest X-ray appearance. No radiological evidence of active pulmonary or cardiac pathology.

increased intracranial pressure. An MRI of the brain was conducted, complemented by a Magnetic Resonance Venogram (MRV) (Figure 2). The sagittal 3D MIP projection of the MRV demonstrated a completely normal cerebral venous system, with no evidence of sinus thrombosis or structural anomalies. Upper gastrointestinal endoscopy and abdominal ultrasound also returned normal results, confirming the absence of obstructive or inflammatory bowel disease.

With organic causes excluded, the patient underwent a comprehensive psychiatric evaluation. Mental status examination revealed a high degree of anxiety and preoccupation with her somatic symptoms. Psychometric testing using the Thematic Apperception Test (TAT) highlighted a personality profile marked by high neuroticism and emotional sensitivity. The patient exhibited significant body image dissatisfaction and perceived academic pressure as a primary stressor. A clear temporal correlation was noted: vomiting episodes often occurred in the lead-up to school deadlines or social events, suggesting that her psychological

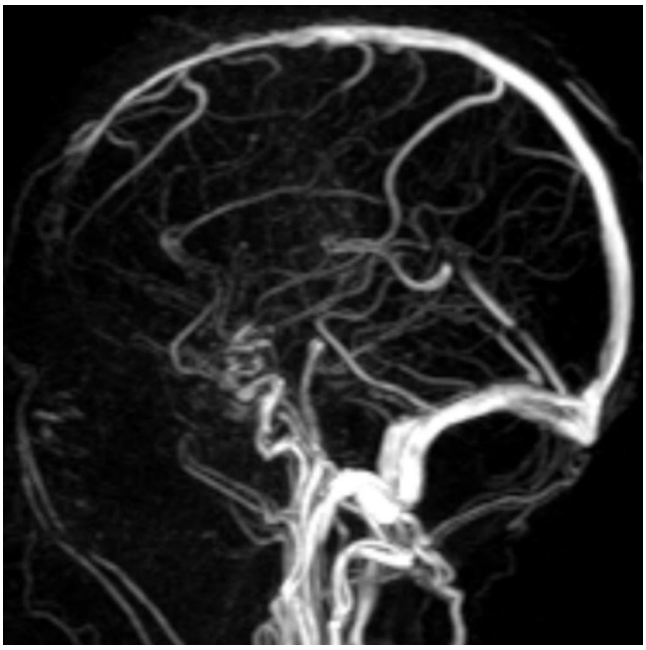

Figure 2: Magnetic resonance venogram (MRV) of the brain in 3D MIP sagittal projection shows no abnormality detected in the cerebral venous system on MR venography.

distress was being somatized through the gut-brain axis.

A multidisciplinary approach was adopted, integrating pharmacological and psychological interventions. Amitriptyline, a tricyclic antidepressant known for its efficacy in modulating visceral hypersensitivity and autonomic dysfunction in CVS, was initiated at 10 mg at bedtime and titrated to 25 mg. This was supported by acute symptomatic management using ondansetron and pantoprazole.

Psychosocial interventions included psychoeducation for the family to reduce the stigma of a psychosomatic diagnosis and individual counseling to address her body image concerns. Cognitive-behavioral strategies, such as deep breathing and guided imagery, were introduced to enhance her coping mechanisms against academic stress.

The clinical response was robust. Within 72 hours of starting amitriptyline, the vomiting subsided, and her appetite returned. A significant clinical "test" occurred when the patient inadvertently discontinued her medication for four days, leading to an immediate relapse of symptoms. Upon restarting the regimen, she achieved full remission. Over a six-month follow-up, she remained asymptomatic, regained her baseline weight, and resumed her education with improved psychological resilience. This case underscores the importance of a multidisciplinary approach in treating functional gastrointestinal disorders triggered by psychological distress.

DISCUSSION

Cyclical Vomiting Syndrome (CVS) exists at the

intersection of gastroenterology, neurology, and psychiatry, with a pathophysiology involving dysregulation of the autonomic nervous system, the hypothalamic-pituitary-adrenal (HPA) axis, and serotonergic signaling (2, 4). As evidenced by this case, psychological stressors—specifically academic pressure and body image dissatisfaction—interact with neurotic personality traits to trigger or exacerbate episodes (3). In adolescents, who often possess limited emotional coping mechanisms, psychological distress frequently manifests through the gut-brain axis as somatic symptoms. Amitriptyline remains a cornerstone of management due to its ability to modulate visceral hypersensitivity, enhance descending pain inhibition, and provide anxiolytic effects through monoamine reuptake inhibition (2, 4). The rapid resolution of symptoms in this patient, followed by an immediate relapse upon medication withdrawal, underscores the critical role of tricyclic antidepressants in maintaining functional stability.

Recent neurobiological research has further refined the understanding of CVS beyond simple gastric dysfunction. Studies on heart rate variability and baroreflex sensitivity suggest that central autonomic network dysregulation creates a stress-sensitive circuit that triggers vomiting cycles. Furthermore, the gut–brain–microbiome axis is increasingly implicated, with evidence of reduced microbial diversity and altered short-chain fatty acid profiles during prodromal phases. Genetic insights into mitochondrial polymorphisms, such as m.16519C>T and m.3010G>A, suggest that energy-production deficits may heighten vulnerability to stress-induced metabolic crises (5). Consequently, current consensus guidelines favor a biopsychosocial approach, prioritizing low-dose amitriptyline as a first-line prophylactic while incorporating adjunctive therapies like cognitive-behavioral therapy (CBT), mindfulness, and lifestyle modifications to manage anxiety sensitivity. Ultimately, this case illustrates that early psychiatric referral and a multidisciplinary management strategy are essential for addressing the multifaceted nature of CVS and ensuring long-term recovery in pediatric populations.

CONCLUSION

Cyclical Vomiting Syndrome in adolescents can be profoundly disabling, especially when psychological stress acts as a trigger. This case highlights the importance of identifying psychosomatic contributors and employing an integrated management strategy. The patient's dramatic improvement with amitriptyline underscores the dual benefit of addressing both gastrointestinal and psychological domains. Further studies are needed to establish optimal treatment duration, dosing strategies, and the role of psychotherapies like Cognitive behavioural therapy (CBT) and mindfulness-based interventions in CVS. Meanwhile, a biopsychosocial approach remains central to effective care.

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