Cureus
Part of SPRINGER NATURE

Open Access Case Report

Psychiatric Intervention in a Pre-adolescent Patient With Wiedemann-Steiner Syndrome: A Case Report

Review began 10/16/2026
Review ended 10/22/2026
Published 10/28/2026

© Copyright 2026
Prestley et al. This is an open access article distributed under the terms of the Creative Commons Attribution License CC-BY 4.0., which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

DOI: 10.7759/cureus.118721

Grace M. Prestley [1], Matheu L. Wong [1], Faheem S. Arain [2]

1. Medicine, A.T. Still University, Kirksville, USA 2. Adolescent and Child Psychiatry, Compass Health Network, Windsor, USA

Corresponding author: Grace M. Prestley, sa212370@atsu.edu

Abstract

Wiedemann-Steiner syndrome (WSS) is a rare genetic condition presenting with a classic triad of intellectual disability, developmental delay, and characteristic facial features, as well as various associated conditions. Patients are prone to episodes of aggressive behavior, sleep disturbances, and comorbid psychiatric conditions.

We present a case of an eight-year-old girl admitted to inpatient psychiatric care following ongoing aggression and violent outbursts. She has a monoallelic mutation in KMT2A and is genetically confirmed to have WSS. The inpatient care team utilized a combination of psychopharmacotherapy and various therapy modalities to address her behavioral concerns. Medications utilized in this case include Thorazine, Concerta, Ritalin, guanfacine, and Zoloft to optimally address symptoms of behavioral dysregulation as well as comorbidities of attention-deficit/hyperactivity disorder and autism spectrum disorder. Therapeutic methods used to address behavioral concerns included group therapy, expressive therapy, and individual therapy sessions. During the inpatient stay, the patient's sleep and weight improved remarkably. Behavioral regulation was augmented, but not fully resolved, suggesting ongoing interventions will be necessary. Psychiatric interventions in patients with WSS can improve their emotional regulation, preventing escalation to aggression. WSS is relatively understudied, especially the psychiatric attributes of this condition. Further evaluation of the behavioral traits of WSS is essential, and our case report adds to the limited literature on this topic.

Categories: Psychiatry
Keywords: behavioral psychiatry, case report, child psychiatry, pre-adolescent, wiedemann-steiner syndrome

Introduction

Wiedemann-Steiner syndrome (WSS) is a rare genetic condition most commonly resulting from a de novo heterozygous mutation in KMT2A, which encodes a histone methyltransferase [1]. The resulting premature termination of the protein-coding sequence leads to irregular chromatin modification in tissues including but not limited to blood cells, gastrointestinal tissues, skin, endocrine organs, and brain tissue. Resultant haploinsufficiency of genes such as Hox and Wnt, due to lack of histone methyltransferase activity, is present in most cell types [1]. All of this leads to downstream phenotypic traits consistent with WSS, but pathophysiology is not fully understood at this time. Jones et al. also note potential nonsense-mediated decay in mutant alleles, which may explain delay of presentation beyond infancy in some patients [1]. Patients with WSS typically present with a classic triad of intellectual disability, developmental delays, and characteristic facial features, often, but not always, accompanied by hypertrichosis [1]. Additionally, WSS patients can have symptoms of gastrointestinal dysfunction and feeding difficulties, endocrine abnormalities, renal and uterine anomalies, growth retardation, hypotonia, and immunodeficiencies [2]. Due to the widespread expression of KMT2A's protein product, patients with this condition can present in various ways, making diagnosis difficult. Clinical suspicion is based on the expression of the classic triad, but confirmation with genetic testing is necessary for official diagnosis.

Less formally explored are the behavioral and psychiatric characteristics of patients with Wiedemann-Steiner syndrome. Ng et al. found through parental reports that WSS patients have significant impairments in executive functioning, including difficulties with emotion, behavior, and cognitive regulation [3]. These issues can present as aggression, hyperactivity, defiance, and memory problems. As with other presentations of WSS, behavioral dysregulation varies widely between patients and is largely unpredictable. Patients with WSS can be quick to anger, often seemingly without a trigger or warning signs. Yuill et al. also used parental reports to examine behavioral characteristics of WSS and found that these patients exhibit intense attachment to their caregivers and other adults while exhibiting temporally variable relationships among siblings [4].

Notably, they also experience sensitivities to sensory stimulation, including sound and touch. This can

manifest as heightened senses or discomfort with tasks of daily living such as brushing hair. While sensory overstimulation and outbursts of aggression may be related in these patients, their episodic violence is noted to occur in various other situations, such as when changes are made to their schedules or demands are placed on them. Ng et al. also noted difficulties in mental flexibility, which may explain the prevalence of behavioral dysregulation in response to change [3].

Prospective and self-report studies have confirmed common comorbidities between Wiedemann-Steiner syndrome and psychiatric disorders such as autism spectrum disorder (ASD), anxiety disorders, and attention-deficit/hyperactivity disorder (ADHD) [4,5]. These comorbidities are unsurprising considering WSS patients' propensities toward sensory overstimulation resulting in outbursts, impulsivity, and hyperactivity, as well as intense attachment to adult figures previously noted. Additionally, sleep deficits have been reported to exacerbate behavioral dysregulation; these include restless sleep and, rarely, sleep apnea, which may reflect the mutation's potential ENT effects [6]. Sleep issues have also been noted to exacerbate comorbid psychiatric conditions such as ADHD, which may result in complex interactions in WSS patients [7]. Of note, shorter duration of sleep and nighttime awakenings result in daytime sleepiness that tends to worsen functioning in children with ADHD [7].

The present case is particularly unique in that it explores the treatment of a young girl with WSS throughout inpatient psychiatric admission. Up to this point, studies have largely focused on parental reports of behavior and symptoms, but our setting allowed for primary observation of this condition for several days. We were also able to observe the short-term effects of psychiatric intervention on this patient within the inpatient setting. This case addresses the current gap in existing literature on the management of behavioral dysregulation in children with Wiedemann-Steiner syndrome.

Case Presentation

Patient information

We report a case of an eight-year-old girl admitted to psychiatric inpatient treatment due to ongoing aggression and behavioral dysregulation concerns. Past medical history is notable for a KMT2A genetic mutation diagnostic of Wiedemann-Steiner syndrome. During episodes of dysregulation, this patient exhibits self-injurious behaviors (e.g., head-banging) and agitation, including knocking items over, throwing objects, and destroying property. She has a history of these episodic behaviors both at home and at school, and during these episodes has shown aggression towards other kids at school and her brothers when at home. Additionally, she has a history of elopement from school and home, with episodes of running toward roads and throwing objects into a busy street. The current episode is her first psychiatric hospital admission. She was brought by her adoptive mother due to concerns for the patient's safety should the behaviors continue. Her symptoms are noted to worsen following changes in routine, particularly at the start of the school year. The school she attends has started suspending her for behaviors this academic year, with three suspensions to date. The patient's mother has noted that even with multiple staff members present, they are consistently unable to ensure the patient's safety during behavioral episodes. Instances of behavioral dysregulation have been described by her mother as "fight or flight" responses to panicking. The mother notes that the patient has made passive suicidal statements in the past and has impulsively consumed essential oils without suicidal intent. The patient lives with her adoptive mother and three older siblings. She currently has no contact with the biological parents. She has an Individualized Education Plan (IEP) and attends a self-contained classroom with few peers; she is officially in third grade but completes kindergarten-level curriculum. She has had episodes of enuresis over 100 times in the last academic year. Her most recent intelligence quotient (IQ) score was found to be 60, with a gradual decrease from prior years.

Past psychiatric history includes diagnoses of intellectual disability, attention-deficit/hyperactivity disorder (ADHD), and disruptive mood dysregulation disorder (DMDD), with a rule-out diagnosis of bipolar disorder type II with rapid cycling. Formal testing for autism spectrum disorder (ASD) was performed at age three years, and she was not diagnosed at that time. She received 7-9 h of outpatient therapy weekly. Past psychiatric treatment includes lithium started around two years ago to address potential bipolar disorder, after which the patient had a seizure and the dose was lowered. She has had no further seizures since the dose was adjusted. She has also been on Abilify in the past, which was changed to Seroquel over the summer for undetermined reasons. On admission, the patient was taking lithium carbonate 300 mg twice daily, Seroquel 25 mg twice daily, Ritalin 10 mg three times daily, and guanfacine hydrochloride (HCl) 1 mg three times daily. Her most recent blood lithium level was 0.8 mEq/L. She is generally compliant with her medications at home, but over the past few months has been fussing and not wanting to take them. Past medical history includes chronic constipation and growth hormone deficiency. She has a history of head trauma due to recurrent head-banging. She has a surgical history of tonsillectomy and adenoidectomy performed in February 2026.

Family psychiatric history includes intellectual disability in both biological parents, with both exhibiting aggression, bipolar disorder, and concerns of substance use. A maternal half-brother has severe ASD and intellectual disability, two paternal half-brothers are in long-term group-home settings, and a maternal cousin has severe functional impairment. Family medical history also includes intellectual disability and

genetic mutations in biological parents and siblings.

Perinatal and birth history are notable for no prenatal care received by the biological mother. The patient was born at full term with a birth weight of 7 pounds. In utero substance exposure was strongly suspected. She was placed in foster care at four days old and was formally adopted by her foster family at the age of two years. Postnatally, the patient exhibited frequent emesis with multiple formula changes made, difficulty sleeping, inconsolable crying, and cessation of napping at 11 months. Developmental history is notable for normal development until age 11 months, with the patient reaching the crawling milestone normally before development slowed. Speaking single words, using phrases or sentences, starting toilet training, bedwetting, and soiling after training were all delayed. She exhibited altered sleep patterns; her mother noted that she slept through the night in her mother's room and otherwise got up multiple times to play or eat before returning to her mother's room for the night.

Clinical findings

Most pertinent to the inpatient psychiatric setting, this patient presents with episodes of disruptive behavior and intellectual disability. She very rapidly and seemingly spontaneously becomes upset and begins banging her head and hitting herself when dysregulated. Similar episodes also occur when she is told to participate in an activity that she is not interested in, such as group therapy or expressive therapy. This patient gets very upset when staff try to brush her hair and is quite sensitive to this daily task. Staff have described her intentionally urinating herself after being asked to complete tasks and activities that she is uninterested in. As this is the only noted episode of urinary incontinence in this patient, staff have described this action as being thought to avoid said activities and taking that time to clean up instead. She requires constant redirection on the unit and often refuses to participate in group activities. Her understanding of questions asked during evaluation is quite low, and many questions require rephrasing prior to an answer being elicited. On mental status examination, she is poorly groomed and restless, moving about the room and constantly jumping from point to point. She avoids eye contact throughout the exam. During initial evaluation, she moved about the room, fixing bedding and rearranging clothing while avoiding the questions asked and ignoring the examiner. When using steppingstone toys, she exhibits poor balance and must hold her hand to maintain balance. Notably, she is sensitive to sound, rapidly covering her ears and exclaiming that the noise is loud or disruptive. During initial psychosocial evaluation, she exhibited rocking and head-banging; she was noted to not assume responsibility, not express her needs, and not play games with others. She frequently responds "I don't know" to questions asked of her during examinations, as well as telling examiners that they are "asking too many questions." She appears shorter than average for her age and thin with thick, unkempt hair. Characteristic facial features include thick, laterally flaring eyebrows; long eyelashes; a flat nasal bridge; vertically narrow, down-slanting palpebral fissures; and thick scalp hair. While not characteristic of WSS, she has hyperpigmentation on the elbows. She has excessive hair on the forearms, but this hair is not as dark in color as would be expected with hypertrichosis. She appears younger than her age and generally appears anxious. Her height is 4'2", weight is 52 pounds, and BMI is 14 kg/m^2. She frequently eats less than 25% of meals provided to her and prefers to eat snacks throughout the day instead of consistent meals. Her sleep during treatment has not been noted as abnormal.

Diagnostic assessment

The care team decided on diagnoses of autism spectrum disorder (ASD), attention-deficit/hyperactivity disorder (ADHD), and mild intellectual disability. Diagnosis of ASD was based on clinical impression of Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5) criteria, including avoidance of eye contact, frequent sensory overstimulation, deficits in communication and cognition, and repetitive behaviors. ADHD diagnosis was based on restlessness and hyperactivity exhibited throughout encounters with the patient. The diagnosis of mild intellectual disability was based on evaluation of the patient's level of understanding during evaluation as well as historical IQ scoring. Differentials considered for behaviors exhibited by this patient included disorders of trauma and attachment, but these factors were less prevalent due to the patient's placement with her adoptive family at four days old. Anxiety was noted as a diagnosis by the weekend provider but was left off the final list of diagnoses due to lack of characteristics seen on further evaluation. Nutritional services were consulted due to her underweight status, and she was started on supplemental nutritional shakes three times daily following evaluation by a registered dietitian; weight was monitored weekly to ensure absence of weight loss.

Therapeutic intervention

Following evaluation, lithium and Seroquel were deemed inappropriate for the current situation and tapered off. We did not find the patient to exhibit symptoms consistent with bipolar disorder and felt that lithium would not address the behaviors that led to this admission. We also did not find Seroquel to be appropriate to address these behaviors, as it is typically used in adolescents and adults. The morning dose of Ritalin was discontinued in favor of Concerta 36 mg every morning for longer-acting control of ADHD. She was started on Thorazine 25 mg three times daily to reduce aggression and Ritalin 5 mg every day at 3 PM as a booster dose to optimize treatment for her hyperactivity. Treatment with guanfacine 1 mg three times daily and Zoloft 25 mg every morning was started on day four of admission and continued following recommendation by weekend provider. EEG was performed following implementation of the treatment regimen to assess risk of seizures based on this patient's history and was normal. Safety profiles of these medications were

discussed with the patient's guardian prior to authorization. Length of inpatient stay was set for 11 days, which was later extended to 12 days. Throughout the hospitalization, the patient was encouraged to participate in group therapy, expressive therapy, and individual therapy daily to teach and reinforce positive coping strategies.

Follow-up and outcomes

A comprehensive timeline of this patient's stay is detailed in Table *1*. By day five of admission, this patient was exhibiting improved sleep behaviors and weight gain of 2 pounds following intervention with hydroxyzine 25 mg as needed and registered dietitian (RD) recommendations, respectively. At that point of her stay, she was still exhibiting mild behavioral issues when taken to group sessions, but once adjusted to the situation, she was cooperative. On day six, the patient was placed on peer and unit restriction due to unsafe behaviors. On day eight of admission, she continued to have mild behavioral issues concerning group interactions but was cooperative once provided with alternative work to do on the unit apart from her peers. She also had occasional emotional outbursts involving verbal and physical manifestations, such as yelling, rolling on the floor, and head-banging, when being redirected. By day nine of admission, she demonstrated improvement in conduct when she was with peers or in group activities and required less behavioral redirection; however, there were some remaining instances of outbursts that led to verbal defiance and physical aggression. These observations have been consistent throughout the rest of her admission, and she was discharged on day 12. Long-term follow-up was not possible in this case due to limitations of the inpatient psychiatric setting. Overall, episodes of behavioral dysregulation were reduced in frequency and severity by the end of admission. She required peer and unit restrictions halfway through her admission but required less redirection once these were in place. We are unable to attribute these improvements to any one intervention due to the simultaneous introduction of behavioral and pharmacological interventions in this setting.

Day of admission	Events
1	Inpatient admission from ER due to ongoing behavioral concerns; current episode involving overstimulation by brother's playing and escalation to aggression
2	Seen by weekend provider, diagnosed with general anxiety, and Zoloft added to medications; underweight
4	Treatment team met, final diagnoses made, medication regimen altered to include Thorazine and Concerta; length of stay set for 12 days
5	2 pounds weight gain and sleep improved with PRN medication; outbursts less frequent, increased participation in group sessions, but redirection still required
6	Placed on peer and unit restrictions
8	Mild behavioral issues, cooperative once given alternative activities; less frequent outbursts with ability to be redirected
9	Conduct improvements in group sessions, redirection less frequently required; occasional episodes of defiance and aggression
11	Still having occasional outbursts but significantly less frequent than at beginning of stay
12	Discharge date; medications unchanged from day 4; outbursts remain reduced overall following interventions

TABLE 1: Timeline of inpatient course throughout admission.

PRN: as needed

Discussion

Our patient exemplifies behavioral dysregulation characteristic of Wiedemann-Steiner syndrome, which has been genetically confirmed. She expresses several additional traits of WSS, including intellectual disability, developmental and growth delays, endocrine abnormalities, gastrointestinal abnormalities, sleeping deficits, feeding restrictions, sensory sensitivities, and common comorbid psychiatric conditions, including ADHD and ASD. Her behavior is very characteristic of WSS behavioral dysregulation, often described as "flipping a switch" and suddenly resulting in outbursts of aggression.

Interestingly, in this patient, her stature lies at the 28th percentile for her age, while most WSS patients' heights are below the 20th percentile; this may be attributed to the patient's care under an endocrinologist for growth hormone deficiency. Otherwise, her features are quite suggestive of Wiedemann-Steiner

syndrome, especially the presence of thick, unruly hair, vertically narrow and down-slanting palpebral fissures, broad nasal bridge, and thick, laterally flaring eyebrows. Her significant developmental history is in line with developmental delays described by prior studies, especially her delays in speech and executive functioning behaviors such as toilet training. While she does not express obvious hypertrichosis cubiti, a characteristic formerly considered the hallmark of WSS, Baer et al. noted a large number of their cohort (39%) lacking this feature as well [8].

Additionally, this patient's co-expression of ADHD and ASD is remarkable. Hyperactivity and sensory sensitivity are often noted in patients with this condition, making these comorbidities unsurprising. This patient particularly struggles with changes in her routine, particularly around the start of the school year. Similar rigidity is noted by Yuill et al., suggesting that consistent structure and pre-emptive measures should be taken in these patients to prevent dysregulation following a shift in their routine [4]. Ritualistic behavior is similarly described by Ng et al. regarding bedtime behavior [6]. Other notable sleep issues in that study include sleep reluctance and restlessness during sleep. While they didn't note a large number of participants as insisting they sleep in a bed that isn't their own (31.82% "once or twice a week" to "many times a week"), our patient is noted by her guardian to only sleep through the night if she is in her mother's bed. This behavior may be indicative of her intense attachment to her parental figure rather than disordered sleep. Separation anxiety has been noted as a potential characteristic of WSS, which could explain issues regarding sleeping in her own bed in this patient [9]. Ng et al. noted behavioral interventions directed toward emotional regulation as a potential mitigating factor for anxiety disorders, which were noted to improve our patient's behavioral regulation while on the unit [9].

Medical history in this patient is notable for chronic constipation, a condition relatively common in individuals with WSS. Her surgical history of tonsillectomy and adenoidectomy is indicative of recurrent infections prior to removal, which could suggest immunodysfunction, but is also not uncommon in immunocompetent children. Yiğit et al. found that half of their cohort that underwent biochemical evaluation showed deficiency of growth hormone, a characteristic also expressed by our patient [10].

Prior to her admission, the patient was prescribed lithium, likely to address the previous diagnosis of disruptive mood dysregulation disorder (DMDD). While lithium can be a very effective mood stabilizer, this patient's aggression did not seem to improve after two years of treatment with lithium. We did not suspect DMDD in this patient and instead attributed her behavioral dysregulation to a combination of ASD and suspected WSS. Thus, we did not feel the various side effects of lithium were a worthwhile risk in the treatment of her dysregulation and opted instead for Thorazine to stabilize her mood and behavior. Her history of seizure following the initiation of lithium is likely attributed to inappropriate dosing, but EEG was performed and found to be normal following medication adjustments inpatient to reassess future risk of seizures. Considering the relative lack of standardization in treatment of WSS patients, misdiagnosis and suboptimal treatment are not surprising. Treatment of WSS largely relies on symptom management and reduction of risk regarding behaviors, but caregiver support is lacking due to the rare nature of this condition.

Overall, this case outlines the difficulties in treating a young child with Wiedemann-Steiner syndrome. Addressing behavioral dysregulation in these patients is intensely complicated, especially with very few official guidelines for management of WSS. Our evaluation of this patient's behavioral improvements is based on subjective progress notes made throughout the admission. This limits our report by not presenting objective evaluations, but all episodes of dysregulation were noted in progress notes. The use of peer and unit restrictions also complicates evaluation of the outcomes, but this may suggest utility of rigid structure as a potential source of behavioral regulation in these patients. Our report intends to address potential interventions for these children to prevent ongoing behavioral issues, but our situation was limited by length of acute inpatient stay, prioritization of psychiatric symptoms over global conditions in this patient, and lack of long-term follow-up post-discharge. Another limitation in our case is the implementation of multiple changes to the medication regimen, which may convolute interpretation of the effectiveness of each medication. Further exploration of long-term impacts of interventions is necessary to confirm improvements.

Conclusions

WSS is a relatively new diagnosis and exhibits complex clinical characteristics that make identification and diagnosis difficult. Further studies on WSS are necessary to delve into the intricacies of the condition and advance understanding of this sophisticated diagnosis. Most prior studies into WSS have examined the genetic foundation of the disease, clinical diagnostics, and physically identifiable traits of patients with the condition, with very few analyzing associated behavioral dysregulation and psychiatric comorbidities. All in all, our patient with suspected WSS is a prime example of the need for additional education and exploration of Wiedemann-Steiner syndrome, particularly its impacts on behavior and psychiatric involvement in the condition. Our patient's behavior was significantly improved following intervention with a combination of psychotropic medications and therapeutic modalities, but she continued to have episodic behavioral outbursts involving verbal and physical aggression throughout her inpatient stay, suggesting that other interventions may be necessary in the future. We are also unable to attribute noted improvements to specific interventions and are only able to note overall improvement during inpatient admission. As previously

noted, our case is also limited by briefness of acute inpatient encounter as well as multiple alterations to treatment made simultaneously. Ideally, each of these interventions would be evaluated individually to determine efficacy, but this was not possible in our setting. Our encounter with this patient took place entirely during inpatient admission for psychiatric concerns, and evaluation of behaviors was subjective based on continuous observation on the unit. Formal evaluation of behaviors in the future may help identify more specific interventions to assist in long-term behavioral regulation in this patient.

Further studies should be conducted to identify optimal strategies for behavior improvement in patients with Wiedemann-Steiner syndrome. Studies are also necessary to compare implementation of behavioral interventions and pharmacological interventions to establish efficacy of these differing treatment modalities on behavioral dysregulation in WSS. This condition presents a unique clinical challenge due to its effects on various body systems and variation in presentation across affected individuals. Focus on individualized treatment is likely the best route for this condition, complicating efforts to standardize clinical approach to Wiedemann-Steiner syndrome.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Concept and design: Grace M. Prestley, Faheem S. Arain

Acquisition, analysis, or interpretation of data: Grace M. Prestley, Faheem S. Arain, Matheu L. Wong

Drafting of the manuscript: Grace M. Prestley, Matheu L. Wong

Critical review of the manuscript for important intellectual content: Grace M. Prestley, Faheem S. Arain, Matheu L. Wong

Supervision: Faheem S. Arain

Disclosures

Human subjects: Informed consent for treatment and open access publication was obtained or waived by all participants in this study. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work. **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

References

1. Jones WD, Dafou D, McEntagart M, et al.: De novo mutations in MLL cause Wiedemann-Steiner syndrome. Am J Hum Genet. 2012, 91:358-64. 10.1016/j.ajhg.2012.06.008
2. Wiedemann-Steiner syndrome. (2023). https://rarediseases.org/rare-diseases/wiedemann-steiner-syndrome/.
3. Ng R, Bjornsson HT, Fahrner JA, Harris J: Associations between executive functioning, behavioral functioning, and adaptive functioning difficulties in Wiedemann-Steiner syndrome. Arch Clin Neuropsychol. 2024, 39:186-95. 10.1093/arclin/acad060
4. Yuill N, Elphick C, Marshall J, Jones WD, Waite J, Viner H: Behavioral profiles and social relationships in Wiedemann-Steiner syndrome: parent reports on 25 cases. Orphanet J Rare Dis. 2025, 20: 10.1186/s13023-025-03643-1
5. Durand B, Schaefer E, Burger P, et al.: Neurocognitive and neurobehavioral characterization of two frequent forms of neurodevelopmental disorders: the DYRK1A and the Wiedemann-Steiner syndromes. Clin Genet. 2022, 102:296-304. 10.1111/cge.14190
6. Ng R, Bjornsson HT, Fahrner JA, Harris J: Sleep disturbances correlate with behavioral problems among individuals with Wiedemann-Steiner syndrome. Front Genet. 2022, 13:10.3389/fgene.2022.950082
7. Larsson I, Aili K, Lönn M, et al.: Sleep interventions for children with attention deficit hyperactivity disorder (ADHD): a systematic literature review. Sleep Medicine. 2023, 102:64-75. 10.1016/j.sleep.2022.12.021
8. Baer S, Afenjar A, Smol T, et al.: Wiedemann-Steiner syndrome as a major cause of syndromic intellectual disability: a study of 33 French cases. Clin Genet. 2018, 94:141-52. 10.1111/cge.13254
9. Ng R, Bjornsson HT, Fahrner JA, Harris J: Anxiety in Wiedemann-Steiner syndrome. Am J Med Genet A. 2023, 191:437-44. 10.1002/ajmg.a.63040
10. Yiğit MZ, Erbaş MA, Türkyılmaz A, et al.: Revisiting Wiedemann-Steiner syndrome: novel KMT2A variants and broadened clinical spectrum. Balkan Med J. 2026, 43:92-102. 10.4274/balkanmedj.galenos.2025.2025-9-81