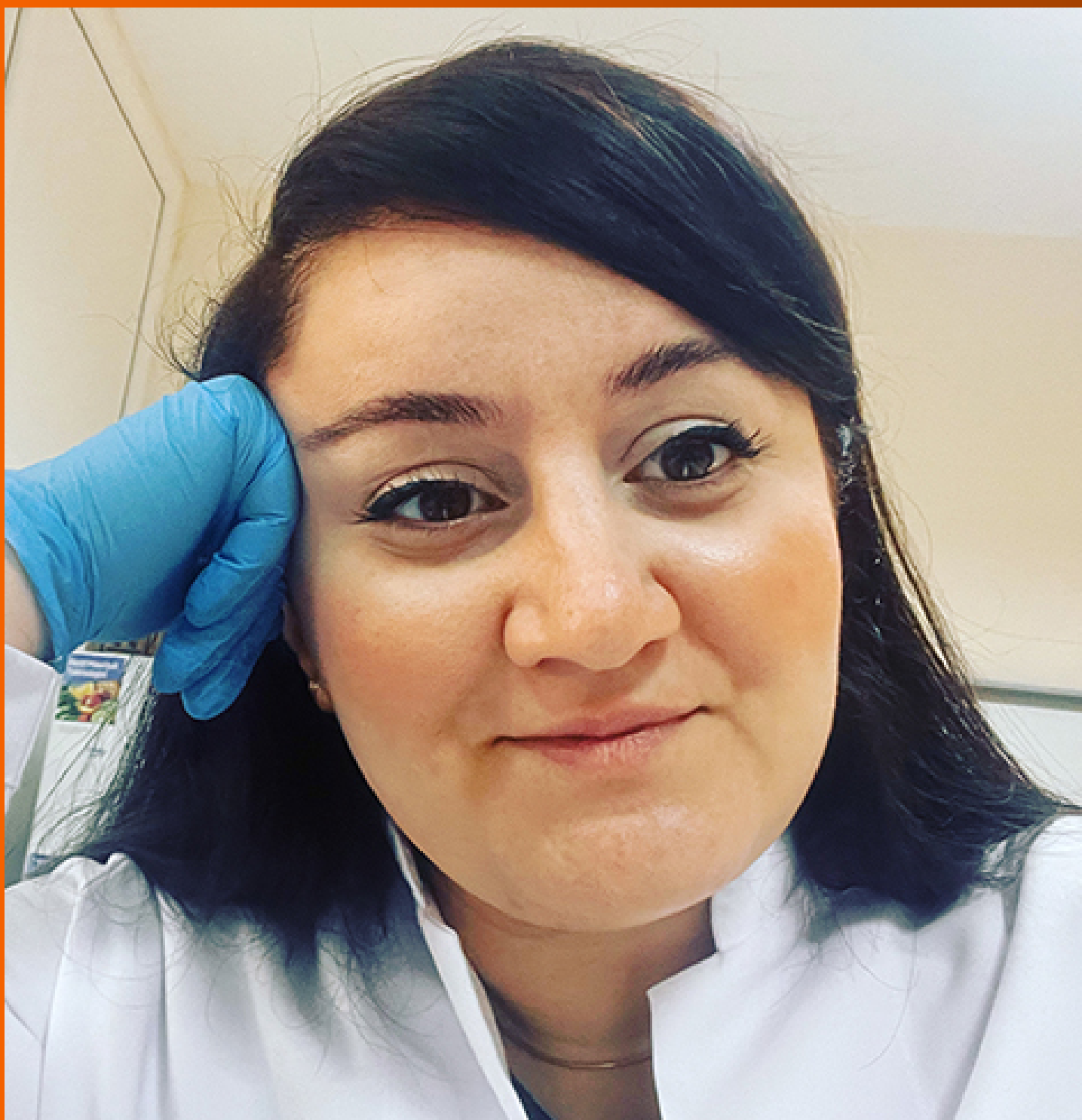


# World Journal of *Clinical Cases*

*World J Clin Cases* 2024 October 16; 12(29): 6250-6334



## Contents

Thrice Monthly Volume 12 Number 29 October 16, 2024

## EDITORIAL

- 6250** Post competency training in standardized training of resident physicians and integrated postgraduates  
*Zeng Y, Yang J, Zhang JW*
- 6255** Solid pancreatic masses: What's hidden beneath? Insights into rare pancreatic lesions  
*Balaban DV*
- 6258** Medical imaging for the diagnosis, recurrence and metastasis evaluation of clear cell sarcoma  
*Wang WJ, Wang X, Hui DM, Feng JB, Li CM*
- 6262** Metastatic clear cell sarcoma of the pancreas: An overview  
*Ait Addi R*
- 6266** Advancing the predictive accuracy of PNTML in rectal prolapse: An ongoing quest  
*Meng J, Wang ZG, Zhang LM, Chen DY, Wang Y, Bai HX, Ji CC, Liu DL, Zhao XF, Liu Y, Li BY, Wang L, Wang TF, Yu WG, Yin ZT*
- 6271** Challenges in integrating traditional Chinese medicine and gut microbiota research for insomnia treatment  
*Bilal M, Nashwan AJ*

## ORIGINAL ARTICLE

## Observational Study

- 6275** Quran memorisation and heart rate variability: How do they correlate?  
*Ghazali AR, Abd Warif NM, A Yazit NA, Juliana N, Ishak I, Ibrahim FW, Mat Ludin AF, Harun D, Abd Rahman S, Che Wan Mohd Rozali WNA*

## SYSTEMATIC REVIEWS

- 6285** Spectrum of delayed post-hypoxic leukoencephalopathy syndrome: A systematic review  
*Srichawla BS, Garcia-Dominguez MA*

## CASE REPORT

- 6302** Recurrent acute pancreatitis as an initial presentation of primary hyperparathyroidism: A case report  
*Karim MM, Raza H, Parkash O*
- 6307** Combination treatment with telitacicept, mycophenolate mofetil and glucocorticoids for immunoglobulin A nephropathy: A case report  
*Shen Y, Yuan J, Chen S, Zhang YF, Yin L, Hong Q, Zha Y*
- 6314** Ruptured venous aneurysm associated with a dural arteriovenous fistula: Two case reports  
*Kim YS, Yoon W, Baek BH, Kim SK, Joo SP, Kim TS*

- 6320** Novel procedure for hepatic venous outflow block after liver resection: A case report  
*Higashi H, Abe Y, Abe K, Nakano Y, Tanaka M, Hori S, Hasegawa Y, Yagi H, Kitago M, Kitagawa Y*
- 6327** Comprehensive interventions for adult cyclic vomiting syndrome complicated by superior mesenteric artery syndrome: A case report  
*Liu B, Sun H, Liu Y, Yuan ML, Zhu HR, Zhang W*

ABOUT COVER

Peer Reviewer of *World Journal of Clinical Cases*, Ayse Kocak, PhD, Affiliate Associate Professor, Department of Molecular Medicine, Dokuz Eylül University Faculty of Medicine, Izmir 000, Türkiye. kocak.ayse@gmail.com

AIMS AND SCOPE

The primary aim of *World Journal of Clinical Cases* (WJCC, *World J Clin Cases*) is to provide scholars and readers from various fields of clinical medicine with a platform to publish high-quality clinical research articles and communicate their research findings online.

WJCC mainly publishes articles reporting research results and findings obtained in the field of clinical medicine and covering a wide range of topics, including case control studies, retrospective cohort studies, retrospective studies, clinical trials studies, observational studies, prospective studies, randomized controlled trials, randomized clinical trials, systematic reviews, meta-analysis, and case reports.

INDEXING/ABSTRACTING

The WJCC is now abstracted and indexed in PubMed, PubMed Central, *Reference Citation Analysis*, China Science and Technology Journal Database, and Superstar Journals Database. The 2024 Edition of Journal Citation Reports® cites the 2023 journal impact factor (JIF) for WJCC as 1.0; JIF without journal self cites: 0.9; 5-year JIF: 1.1; JIF Rank: 168/325 in medicine, general and internal; JIF Quartile: Q3; and 5-year JIF Quartile: Q3.

RESPONSIBLE EDITORS FOR THIS ISSUE

Production Editor: Xiang-Di Zhang.; Production Department Director: Xiang Li; Cover Editor: Jin-Li Wang.

NAME OF JOURNAL

*World Journal of Clinical Cases*

ISSN

ISSN 2307-8960 (online)

LAUNCH DATE

April 16, 2013

FREQUENCY

Thrice Monthly

EDITORS-IN-CHIEF

Jerzy Tadeusz Chudek, George Kontogeorgos, Maurizio Serati, Bao-Gan Peng, Salim Surani

EDITORIAL BOARD MEMBERS

<https://www.wjgnet.com/2307-8960/editorialboard.htm>

PUBLICATION DATE

October 16, 2024

COPYRIGHT

© 2024 Baishideng Publishing Group Inc

INSTRUCTIONS TO AUTHORS

<https://www.wjgnet.com/bpg/gerinfo/204>

GUIDELINES FOR ETHICS DOCUMENTS

<https://www.wjgnet.com/bpg/GerInfo/287>

GUIDELINES FOR NON-NATIVE SPEAKERS OF ENGLISH

<https://www.wjgnet.com/bpg/gerinfo/240>

PUBLICATION ETHICS

<https://www.wjgnet.com/bpg/GerInfo/288>

PUBLICATION MISCONDUCT

<https://www.wjgnet.com/bpg/gerinfo/208>

ARTICLE PROCESSING CHARGE

<https://www.wjgnet.com/bpg/gerinfo/242>

STEPS FOR SUBMITTING MANUSCRIPTS

<https://www.wjgnet.com/bpg/GerInfo/239>

ONLINE SUBMISSION

<https://www.f6publishing.com>



# Comprehensive interventions for adult cyclic vomiting syndrome complicated by superior mesenteric artery syndrome: A case report

Bo Liu, Hui Sun, Yang Liu, Min-Lan Yuan, Hong-Ru Zhu, Wei Zhang

**Specialty type:** Medicine, research and experimental

**Provenance and peer review:** Unsolicited article; Externally peer reviewed.

**Peer-review model:** Single blind

**Peer-review report's classification**

**Scientific Quality:** Grade C

**Novelty:** Grade C

**Creativity or Innovation:** Grade C

**Scientific Significance:** Grade C

**P-Reviewer:** Batta A

**Received:** May 30, 2024

**Revised:** July 4, 2024

**Accepted:** July 23, 2024

**Published online:** October 16, 2024

**Processing time:** 88 Days and 16.6 Hours



**Bo Liu**, Department of Psychiatry, Zigong Mental Health Center, Zigong 643020, Sichuan Province, China

**Hui Sun**, Department of Radiology, West China Hospital of Sichuan University, Chengdu 610041, Sichuan Province, China

**Yang Liu, Min-Lan Yuan, Hong-Ru Zhu, Wei Zhang**, Mental Health Center and Psychiatric Laboratory, West China Hospital of Sichuan University, Chengdu 610041, Sichuan Province, China

**Co-first authors:** Bo Liu and Hui Sun.

**Corresponding author:** Wei Zhang, Doctor, MD, Chief Doctor, Professor, Mental Health Center and Psychiatric Laboratory, West China Hospital of Sichuan University, No. 37 GuoXue Xiang, Chengdu 610041, Sichuan Province, China. [weizhanghx@163.com](mailto:weizhanghx@163.com)

## Abstract

### BACKGROUND

Cyclic vomiting syndrome (CVS) is a chronic functional gastrointestinal disorder involving the gut-brain interaction that is characterized by recurring episodes of nausea, vomiting, abdominal pain, and interspersed complete normal periods. Superior mesenteric artery (SMA) syndrome (SMAS) is a vascular condition in which the horizontal portion of the duodenum is compressed due to a reduced angle between the aorta and the SMA. This condition presents with symptoms similar to CVS, posing challenges in distinguishing between the two and often resulting in misdiagnosis or inappropriate treatment.

### CASE SUMMARY

A 20-year-old female patient presented with recurrent episodes of vomiting and experienced a persistent fear of vomiting for the past 2 years. She adopted conscious dietary restrictions, which led to severe malnutrition. Initially, she was diagnosed with SMAS, as revealed by computed tomography angiography. Despite efforts to increase the angle between the aorta and the SMA through weight gain, her vomiting did not improve. Finally, she was diagnosed with comorbidities including CVS, SMAS and anxiety disorder. She underwent comprehensive interventions, including enteral and parenteral nutritional supplementation, administration of antiemetic and anti-anxiety agents, and participation in mindfulness-based cognitive therapy. The patient eventually experienced a notable improvement in both body weight and clinical symptoms.

## CONCLUSION

We present a rare case of CVS in an adult complicated with SMAS and propose additional treatment with nutritional support, pharmacological intervention, and psychotherapy.

**Key Words:** Cyclic vomiting syndrome; Superior mesenteric artery syndrome; Anxiety disorder; Nutritional supplementation; Mindfulness-based cognitive therapy; Case report

©The Author(s) 2024. Published by Baishideng Publishing Group Inc. All rights reserved.

**Core Tip:** Cyclic vomiting syndrome (CVS) is a rare gastrointestinal disorder characterized by intense, recurrent vomiting episodes. Superior mesenteric artery (SMA) syndrome (SMAS) occurs when the third part of the duodenum is compressed by the SMA, often leading to vomiting similar to CVS. Weight loss resulting from CVS can contribute to the development of SMAS, and conversely, SMAS can mimic CVS symptoms. To distinguish between these conditions, detailed clinical examination is essential, particularly with abdominal imaging. Additionally, long-term closely follow-up is necessary to differentiate between the two. Comprehensive interventions involving psychosomatic treatment are necessary to address these conditions.

**Citation:** Liu B, Sun H, Liu Y, Yuan ML, Zhu HR, Zhang W. Comprehensive interventions for adult cyclic vomiting syndrome complicated by superior mesenteric artery syndrome: A case report. *World J Clin Cases* 2024; 12(29): 6327-6334

**URL:** <https://www.wjgnet.com/2307-8960/full/v12/i29/6327.htm>

**DOI:** <https://dx.doi.org/10.12998/wjcc.v12.i29.6327>

## INTRODUCTION

Cyclic vomiting syndrome (CVS) is a chronic functional gastrointestinal disorder (FGID) involving the intricate connection along the gut-brain axis, marked by recurring episodes of nausea, vomiting, and abdominal pain[1]. It affects people across all age groups, spanning children to adults, and exhibits an approximate prevalence of 2% in the United States[1]. While initially identified and predominantly prevalent among children, CVS is now progressively acknowledged among adults. Approximately 30% of adult patients become disabled[2]. The current diagnosis of CVS relies on the Rome IV symptom-based criteria: (1) Recurrent bouts of nausea and vomiting interspersed with symptom-free intervals; and (2) At least three separate episodes within the previous year and two episodes during the last 6 months; each occurring at least 1 week apart[3]. It is important to note that CVS could be mistaken for other conditions involving nausea and vomiting, including neurogenic vomiting, anorexia nervosa, superior mesenteric artery (SMA) syndrome (SMAS) and gastroparesis. The characteristic abrupt onset, stereotypic symptoms, and complete resolution appear to be distinct features of CVS compared to other diseases involving vomiting. SMAS is characterized by duodenal obstruction resulting from an angle of less than 20° between the aorta and the SMA, presenting with symptoms such as early satiety, nausea, vomiting, postprandial epigastric pain, secondary anorexia and weight loss[4]. The incidence of SMAS in the general population has been approximated to range from 0.013% to 0.78%[5]. SMAS exhibits a higher prevalence among females, with a ratio of 3 to 2 compared to males[5]. It has been associated with various conditions, encompassing malignancy, malabsorption, trauma and burns, spinal cord injury, prolonged periods of bed rest, and anorexia nervosa, leading to severe malnutrition and diminished retroperitoneal and visceral fat[6]. The diagnosis of SMAS relies on abdominal computed tomography (CT), upper gastrointestinal contrast studies, and sufficient differential diagnoses. The common strategies for SMAS involve addressing the underlying disease, implementing nutritional interventions to promote weight gain, or employing surgical procedures to alleviate the obstruction[5]. Here, we present an adult case who met the diagnostic criteria for both CVS and SMAS. We provide a comprehensive and effective intervention paradigm for managing this condition.

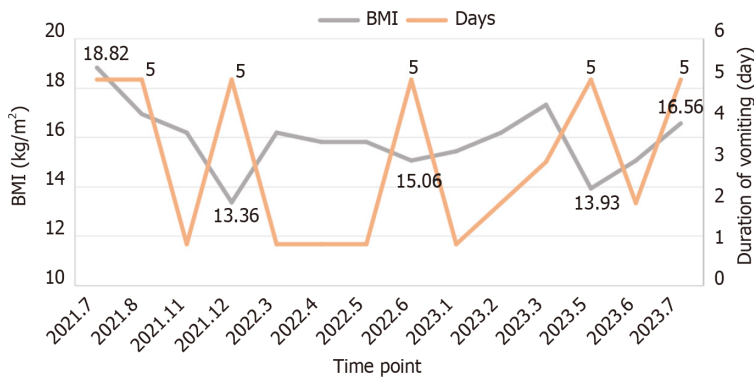
## CASE PRESENTATION

### Chief complaints

A 20-year-old female undergraduate student presented with recurrent vomiting and persistent fear over 2 years.

### History of present illness

The patient had been enduring recurring bouts of severe vomiting over 2 years, coupled with a persistent fear of its return. After the onset, she consistently experienced severe vomiting, which did not respond to conventional antiemetic medication, except for a high dose of sedative to induce sleep. She underwent multiple examinations, including upper gastrointestinal series, upper endoscopy, and enhanced abdominal CT. Due to the absence of identified organic abnormalities, a diagnosis of psychogenic vomiting was made, resulting in the prescription of antianxiety medication.



**Figure 1** Body mass index and duration of vomiting on indicated time point during the course of the disease. The gray or yellow line represents the changes in body mass index (BMI) or duration of vomiting, respectively. The lowest BMI was 13.36 kg/m<sup>2</sup> and the longest duration of vomiting lasted 5 days. BMI: Body mass index.

However, the vomiting symptoms still displayed sudden and recurring patterns, accompanied by a progressive decrease in weight. To obtain a conclusive diagnosis and effective treatment, she sought medical evaluation and treatment from various clinical disciplines at several renowned hospitals across China. She received a series of diagnoses, including FGIDs from the Gastroenterology Department, intestinal flora disturbance from the Gastrointestinal Surgery Department, weakness of the spleen and stomach from the Traditional Chinese Medicine Department, and psychogenic vomiting from the Psychiatry Department. She underwent various treatments, such as probiotic supplementation, intestinal flora transplantation, and herbal remedies. However, there was no significant improvement in symptoms observed. Throughout the 2 years, she encountered 14 episodes of vomiting, each lasting 1–5 day, alongside fluctuating changes in body weight (Figure 1). The triggering factors varied on each occasion, including eating, defecation, dysmenorrhea and psychological influences. Between these episodes, she experienced no discomfort whatsoever, and the periods of complete remission varied from 2 weeks to 8 months. One month before admission to our hospital, the diagnosis of SMAS was confirmed when an abdominal CT angiography (CTA) revealed an aortomesenteric angle measuring  $< 10^\circ$  (no image data is available due to the results from another hospital), coinciding with her weight dropping from 46 kg to 37 kg. Consequently, she underwent placement of a small intestinal decompression tube for enteral nutrition and a peripherally inserted central catheter (PICC) for parenteral nutrition. Unfortunately, although body weight had returned to 44 kg 1 month later, the intense vomiting symptoms appeared to persist. Regrettably, she once again encountered severe vomiting, which resulted in the forceful expulsion of the small intestinal decompression tube due to the intense pressure. At the same time, she exhibited clear signs of anxiety, such as a fear of consuming food and vomiting.

### History of past illness

Her past medical history has been good with no significant underlying illnesses.

### Personal and family history

Since childhood, she has had a mild, obedient and endearing personality, maintaining good relations with her family. She has a younger brother with whom she shares a good relationship. She excelled academically; however, her performance in the college entrance examination fell short of her aspirations, leading her to cry out in frustration. Furthermore, she has experienced betrayal from an ex-boyfriend. Her parents run their own businesses, resulting in a well-off financial status at home. After the patient fell ill, her mother lost interest in work, dedicating a significant amount of time to provide meticulous care for her daughter. She accompanied the patient everywhere, seeking medical advice and treatment, researching relevant information online, and maintaining extremely detailed records of the patient's medical history.

### Physical examination

She appeared thin and weak, with a PICC line inserted in her left arm. Her vital signs were within normal limits, and there were no apparent abnormalities noted upon examination of her lungs and heart. Her abdomen was flat and soft, showing no signs of significant tenderness upon palpation or rebound tenderness. Additionally, there were no positive findings detected during the examination of her neurological system.

### Psychiatric state examination

She appeared conscious and friendly, communicating effectively. She shared concerns about experiencing vomiting episodes again and showed hesitancy towards eating, along with anxiety regarding her prognostic outlook. She felt low in mood, yet did not mention feelings of extreme negativity, despair, or suicidal thoughts. There were no apparent signs of psychotic symptoms. Her thinking abilities seemed unaffected, and she showed the ability to manage daily tasks on her own.

### Laboratory examinations

All blood test results were within normal limits.



### Imaging examinations

Abdominal ultrasound examination revealed no obvious abnormalities. Follow-up CTA revealed improvement in the angle between the aorta and SMA to 24.8°, indicating a favorable treatment response. However, cross-sectional imaging showed that the distance between the horizontal plane of the aorta and SMA at the level of the duodenum remained < 5 mm, suggesting ongoing potential for SMA compression of the duodenum (Figure 2). Electroencephalography and brain magnetic resonance imaging revealed no abnormalities.

## FINAL DIAGNOSIS

Combined with the patient's medical history, we arrived at the comorbid diagnoses of CVS (Rome IV), SMAS (ICD-10), and anxiety disorder (ICD-10).

## TREATMENT

During hospitalization, the patient experienced severe and unrelenting vomiting, showing no response to typical antiemetics such as triptans and ondansetron. She displayed a fear or heightened sensitivity to both sound and light during the episode. Her vomiting subsided only after receiving high doses of sedatives (such as benzodiazepines) until she fell asleep. She continued to receive ongoing parenteral nutrition through a PICC and gradually transitioned to a more liquid-based diet (Table 1). In addition, she received pancreatin enteric-coated capsules (2 capsules tid) and *Bacillus coagulans* dual probiotic enteric-coated capsules (2 capsules tid) for regulating GI function. As for her anxiety aspect, her drug doses were titrated to reach the final prescribed doses of duloxetine (60 mg/d), olanzapine (10 mg/d), depakine (500 mg/d), and clonazepam (0.5 mg/d). She also underwent mindfulness-based cognitive therapy (MBCT) following the acute episode.

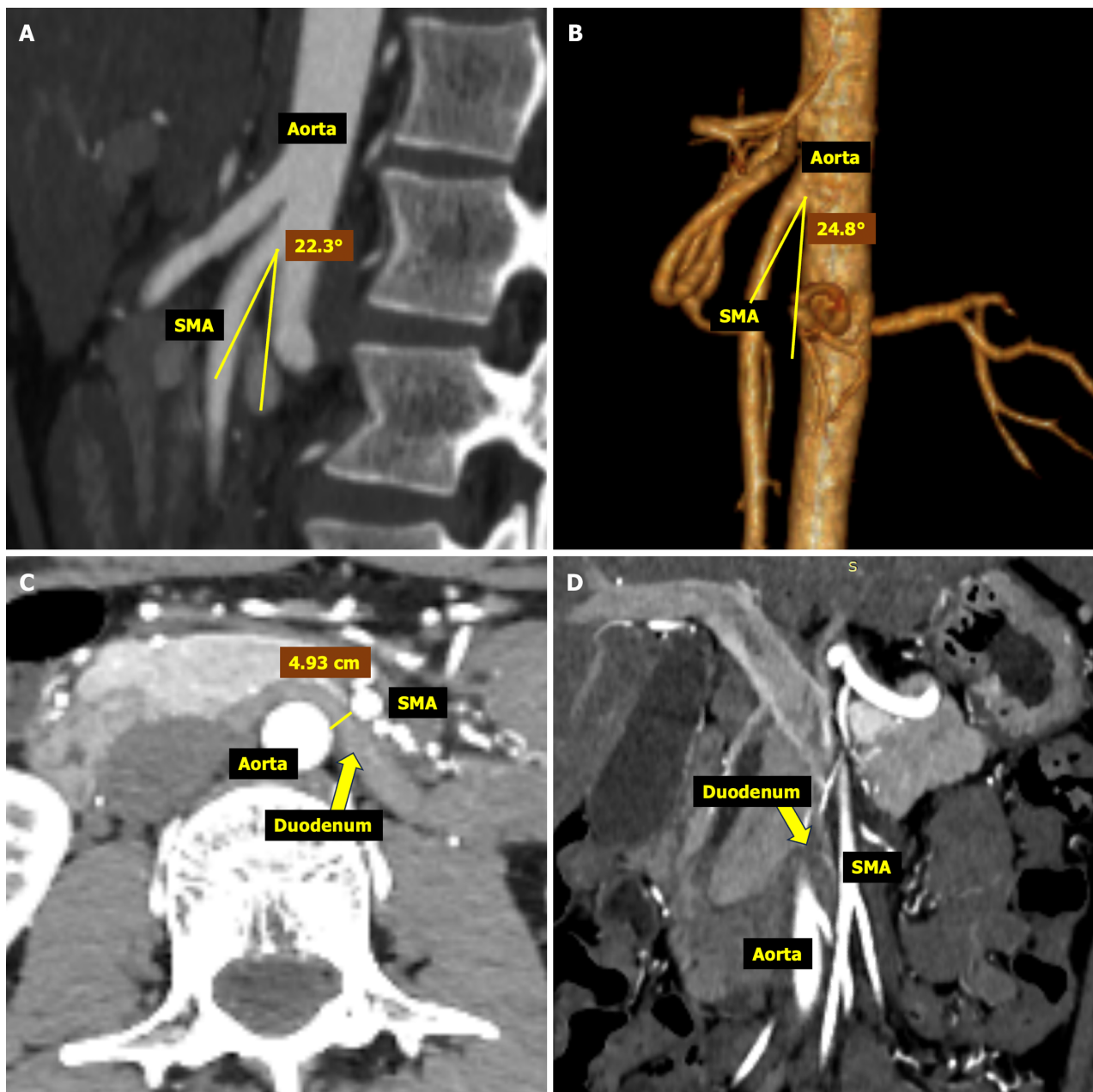
## OUTCOME AND FOLLOW-UP

After 17 days in hospital, the patient was released when achieving clinical recovery. For the initial 2 weeks after discharge, she progressed well. However, she experienced a relapse following a bout of dysmenorrhea, showing similar but relatively mild symptoms as before. After receiving nutrient supplementation in local hospital, she recovered again. Fortunately, she did not exhibit excessive fear regarding her treatment and health.

## DISCUSSION

To the best of our knowledge, we have not found any similar reports of comorbidity between CVS and SMAS in adults. Recently, Berken *et al*[6] documented a case of cannabinoid hyperemesis syndrome (CHS), with a symptom pattern resembling CVS, complicated by SMAS, indicating that SMAS occurs following precipitous weight loss resulting from CHS. While CHS is currently considered a limited subset of CVS[1], it cannot explain the origin and development of other forms of CVS. Another case involved an adolescent diagnosed with both SMAS and CVS, where SMAS was identified as the cause of CVS, as CVS symptoms improved after treating SMAS[7]. However, in our case, SMAS appeared to result from the weight loss caused by CVS, as CVS symptoms did not improve even after alleviating SMAS. It has been reported that CVS often coexists with other conditions, including migraine headaches, fibromyalgia, irritable bowel syndrome, gastroesophageal reflux disease, anxiety, depression, panic disorder, and seizures[8]. In the present case, the patient also exhibited severe anxiety disorder. It is widely accepted that excessive anxiety seems to be an independent predisposing factor to CVS[9]. While CVS is more common in children, its recognition is increasingly expanding among adults[8,10]. Because the etiology and pathogenesis of CVS is elusive, its diagnosis is based on the Rome IV symptom-based criteria[1, 8], depending on carefully observing the symptoms and ensuring that there are no underlying physiological causes that could account for them. The characteristic vomiting episodes with distinct intervals of no vomiting form the fundamental pattern of CVS, often accompanied by additional symptoms such as abdominal pain, thirst, migraine headaches, sensitivity to light, and sensitivity to sound[8,9]. In this case, the patient exhibited sensitivity to both light and sound during the episode, without experiencing any abdominal pain or headaches of any kind. Due to the strict symptoms, course, and exclusion criteria for diagnosing CVS, patients tend to experience delayed or misdiagnosis and ineffectual treatment, sometimes inappropriately invasive management[9]. During the initial stages, these conditions are frequently misidentified as either acute gastroenteritis[11] or psychogenic vomiting[12]. The diagnosis of CVS in our case was made 2 years after the symptoms initially appeared. In addition to thorough examinations, the most effective method for distinguishing between these vomiting-related conditions is by examining the pattern of episodes. In CVS, vomiting typically occurs suddenly and stereotypically, with normal intervals between episodes. Moreover, CVS often does not respond to common antiemetic medications. Typically, each cycle of CVS often follows a pattern encompassing four consecutive phases: prodromal (30–90 minutes); emetic (1 day to 1 week); recovery (several days to several weeks); and interepisodic (several weeks to several months)[1,8]. The therapeutic goals for different phases are to abort, terminate, resume feeding,





**Figure 2** Follow-up abdominal computed tomography angiography examination. A-D: Computed tomography angiography image (A) and the three-dimensional reconstruction of abdominal artery (B) showed the angle between the superior mesenteric artery (SMA) and the aorta; Axial (C) and coronal (D) images illustrate the distance between the horizontal plane of the aorta and SMA at the level of the duodenum. SMA: Superior mesenteric artery.

and prevent episodes, respectively[8,9]. In general, medications used to manage CVS can be categorized into prophylactic agents (*e.g.*, tricyclic antidepressants and anticonvulsants) and abortive agents (*e.g.*, antiemetics, triptans and sedatives)[1, 13]. During the emetic phase, which is the most dangerous and life-threatening stage, supportive treatments such as enteric or paraenteric nutrient supplementation are crucial[14]. These treatments help maintain water and electrolyte balance, especially when severe and persistent nausea and vomiting are present. During the intervals between episodes, it is important to use antianxiety medications to reduce anxiety and prevent CVS relapses[9]. Psychological therapy is also crucial in preventing recurrences. Psychological factors play a crucial role in the onset and maintenance of FGIDs[15]. Both CBT and hypnotherapy have shown effectiveness in treating FGIDs[15]. For instance, a case report demonstrated that CBT and biofeedback training were effective for a boy with CVS who did not respond to medication[16]. In our case, the patient also experienced benefits from MBCT, which is considered the third generation of CBT and is widely utilized for treating anxiety and panic disorder[17]. SMAS is due to a diminished SMA angle commonly associated with insufficient visceral fat due to being underweight, characterized by early satiety, nausea, vomiting, and postprandial abdominal pain[4]. In the present case, the diagnosis of SMAS could be associated with the low body weight caused by frequent episodes of vomiting. Most patients benefit from nutritional support through hyperalimentation, regardless of their medical history[18]. In cases of ineffectiveness, surgical intervention is advised[19]. However, there have been reports indicating that surgery for SMAS was ineffective in aiding weight recovery for patients with anorexia nervosa [20]. Additionally, it is worth noting that certain individuals with a narrow SMA angle do not exhibit symptoms of SMAS

Table 1 Formula of parenteral nutrition via peripherally inserted central catheter			
Formula	Specifications	Dosage (mL)	Frequency
Compound amino acid injection	250 mL: 28.5 g	500	Ivgtt qd
Compound amino acid injection	8.5%/250 mL	250	
Glucose injection	10%/100 mL	250	300
Glucose injection	5%/500 mL	300	
Medium- and long-chain fat emulsion for injection	20%: 250 mL	250	30
Concentrated sodium chloride injection	10 mL: 1 g	30	
Multiple microelement injection	10 mL	10	10
Sodium glycerophosphate injection	10 mL: 2.16 g	10	
Magnesium sulfate injection	10 mL: 2.5 g	10	5
Calcium gluconate injection	10 mL: 1 g	5	
Water-soluble vitamin injection	1 vial	1 vial	10
Fat-soluble vitamin injection	10 mL	10	

Table 2 Comparison of clinical characteristics between cyclic vomiting syndrome and superior mesenteric artery syndrome		
Characteristics	CVS	SMAS
Onset	Sudden and recurrent episodes	Gradual onset
Symptoms	Severe nausea and vomiting, abdominal pain	Early satiety, postprandial abdominal pain, nausea, vomiting
Triggers	Stress, infections, certain foods, menses, <i>etc.</i>	Physical activity, weight loss, position changes, dietary changes
Duration of episodes	Lasts for hours to days, with variable duration of symptom-free intervals	Persistent until compression is resolved
Age of onset	More common in children, but can occur in adults	Typically in adolescents and young adults
Diagnostic tests	Mainly clinical diagnosis, exclusion of other causes	Upper gastrointestinal series, endoscopy, CT scan
Treatment	Anti-emetics, anti-anxiety medications, lifestyle changes, psychotherapy	Nutritional support, small frequent meals, surgery for decompression

CVS: Cyclic vomiting syndrome; SMAS: Superior mesenteric artery syndrome; CT: Computed tomography.

[21]. Certain patients diagnosed with SMAS experience persistent symptoms even after surgical correction[22]. In line with our case, despite efforts to increase the angle through weight gain, her vomiting did not improve. Therefore, it is important to be cautious when solely linking SMAS to an absolute SMA angle, and the surgical approach for SMAS should be chosen carefully. SMAS can either be the cause or the result of CVS. In our case, it is evident that SMAS developed during a period of lower weight resulting from CVS, as CVS symptoms persisted even when the SMA angle increased from 10 to 24.8. Here, we summarize the typically differences in clinical characteristics between CVS and SMAS (Table 2). Although the two conditions commonly occur separately, they can also co-occur, as demonstrated in our case. A comprehensive intervention for this comorbidity, including nutritional support, medication, and psychotherapy, is essential.

## CONCLUSION

Nausea and vomiting are shared symptoms in CVS and SMAS, often leading to confusion, particularly in patients with low weight. Early recognition, diagnosis and management of CVS in clinical practice pose considerable challenges. It is imperative to concurrently address both the underlying primary condition and any secondary conditions effectively. Because the pathophysiology of CVS remains unclear, it is essential to adopt comprehensive strategies encompassing a bio-psychosocial perspective. To gain a better understanding of the patient's outcome, a more thorough and prolonged follow-up is essential.

## ACKNOWLEDGEMENTS

We appreciate the patient and her mother's cooperation, as well as the assistance from multiple departments including radiology, nutrition, gastroenterology and psychiatry.

## FOOTNOTES

**Author contributions:** Liu B wrote original manuscript; Sun H performed imaging examination; Liu Y, Yuan ML and Zhu HR revised the manuscript; Zhang W designed the study; all authors have read and approved the final manuscript. Liu B and Sun H contributed equally to this work as co-first authors. The designation of co-first authorship for Liu B and Sun H is based on the following reasons. Firstly, the research was conducted as a collaborative effort, with the distribution of responsibilities and efforts evenly shared between the two, accurately reflecting their equal contribution to the study and the resultant paper. Secondly, the study involved multidisciplinary cooperation, particularly in the fields of psychiatry and radiology. Liu B served as the psychiatrist responsible for addressing clinical data, while Sun H acted as the radiologist responsible for analyzing image data. Therefore, we believe that designating Liu B and Sun H as co-first authors appropriately represents our team's collaborative spirit, equal contributions, and the interdisciplinary nature of our work.

**Supported by** 135 Project for Disciplines of Excellence, West China Hospital, Sichuan University, No. ZYJC21004.

**Informed consent statement:** Informed written consent was obtained from the patient and her mother for publication of this case.

**Conflict-of-interest statement:** No conflict of interest.

**CARE Checklist (2016) statement:** The authors have read the CARE Checklist (2016), and the manuscript was prepared and revised according to the CARE Checklist (2016).

**Open-Access:** This article is an open-access article that was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution NonCommercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <https://creativecommons.org/licenses/by-nc/4.0/>

**Country of origin:** China

**ORCID number:** Wei Zhang [0000-0003-3113-9577](https://orcid.org/0000-0003-3113-9577).

**S-Editor:** Lin C

**L-Editor:** A

**P-Editor:** Wang WB

## REFERENCES

- 1 Frazier R, Li BUK, Venkatesan T. Diagnosis and Management of Cyclic Vomiting Syndrome: A Critical Review. *Am J Gastroenterol* 2023; **118**: 1157-1167 [PMID: [36791365](https://pubmed.ncbi.nlm.nih.gov/36791365/) DOI: [10.14309/ajg.0000000000002216](https://doi.org/10.14309/ajg.0000000000002216)]
- 2 Kumar N, Bashar Q, Reddy N, Sengupta J, Ananthakrishnan A, Schroeder A, Hogan WJ, Venkatesan T. Cyclic Vomiting Syndrome (CVS): is there a difference based on onset of symptoms--pediatric versus adult? *BMC Gastroenterol* 2012; **12**: 52 [PMID: [22639867](https://pubmed.ncbi.nlm.nih.gov/22639867/) DOI: [10.1186/1471-230X-12-52](https://doi.org/10.1186/1471-230X-12-52)]
- 3 Stanghellini V, Chan FK, Hasler WL, Malagelada JR, Suzuki H, Tack J, Talley NJ. Gastrointestinal Disorders. *Gastroenterology* 2016; **150**: 1380-1392 [PMID: [27147122](https://pubmed.ncbi.nlm.nih.gov/27147122/) DOI: [10.1053/j.gastro.2016.02.011](https://doi.org/10.1053/j.gastro.2016.02.011)]
- 4 Welsch T, Büchler MW, Kienle P. Recalling superior mesenteric artery syndrome. *Dig Surg* 2007; **24**: 149-156 [PMID: [17476104](https://pubmed.ncbi.nlm.nih.gov/17476104/) DOI: [10.1159/000102097](https://doi.org/10.1159/000102097)]
- 5 Oka A, Awoniyi M, Hasegawa N, Yoshida Y, Tobita H, Ishimura N, Ishihara S. Superior mesenteric artery syndrome: Diagnosis and management. *World J Clin Cases* 2023; **11**: 3369-3384 [PMID: [37383896](https://pubmed.ncbi.nlm.nih.gov/37383896/) DOI: [10.12998/wjcc.v11.i15.3369](https://doi.org/10.12998/wjcc.v11.i15.3369)]
- 6 Berken JA, Saul S, Osgood PT. Case Report: Superior Mesenteric Artery Syndrome in an Adolescent With Cannabinoid Hyperemesis. *Front Pediatr* 2022; **10**: 830280 [PMID: [35265566](https://pubmed.ncbi.nlm.nih.gov/35265566/) DOI: [10.3389/fped.2022.830280](https://doi.org/10.3389/fped.2022.830280)]
- 7 Dimopoulou A, Zavras N, Alexopoulou E, Fessatou S, Dimopoulou D, Attilakos A. Superior mesenteric artery syndrome mimicking cyclic vomiting syndrome in a healthy 12-year-old boy. *J Paediatr Child Health* 2020; **56**: 168-170 [PMID: [31408239](https://pubmed.ncbi.nlm.nih.gov/31408239/) DOI: [10.1111/jpc.14592](https://doi.org/10.1111/jpc.14592)]
- 8 Venkatesan T, Levinthal DJ, Tarbell SE, Jaradeh SS, Hasler WL, Issenman RM, Adams KA, Sarosiek I, Stave CD, Sharaf RN, Sultan S, Li BUK. Guidelines on management of cyclic vomiting syndrome in adults by the American Neurogastroenterology and Motility Society and the Cyclic Vomiting Syndrome Association. *Neurogastroenterol Motil* 2019; **31** Suppl 2: e13604 [PMID: [31241819](https://pubmed.ncbi.nlm.nih.gov/31241819/) DOI: [10.1111/nmo.13604](https://doi.org/10.1111/nmo.13604)]
- 9 Fleisher DR, Gornowicz B, Adams K, Burch R, Feldman EJ. Cyclic Vomiting Syndrome in 41 adults: the illness, the patients, and problems of management. *BMC Med* 2005; **3**: 20 [PMID: [16368014](https://pubmed.ncbi.nlm.nih.gov/16368014/) DOI: [10.1186/1741-7015-3-20](https://doi.org/10.1186/1741-7015-3-20)]
- 10 Abell TL, Adams KA, Boles RG, Bousvaros A, Chong SK, Fleisher DR, Hasler WL, Hyman PE, Issenman RM, Li BU, Linder SL, Mayer EA, McCallum RW, Olden K, Parkman HP, Rudolph CD, Taché Y, Tarbell S, Vakil N. Cyclic vomiting syndrome in adults. *Neurogastroenterol Motil* 2008; **20**: 269-284 [PMID: [18371009](https://pubmed.ncbi.nlm.nih.gov/18371009/) DOI: [10.1111/j.1365-2982.2008.01113.x](https://doi.org/10.1111/j.1365-2982.2008.01113.x)]
- 11 Ford AC, Mahadeva S, Carbone MF, Lacy BE, Talley NJ. Functional dyspepsia. *Lancet* 2020; **396**: 1689-1702 [PMID: [33049222](https://pubmed.ncbi.nlm.nih.gov/33049222/) DOI: [10.1016/S0140-6736\(20\)30568-6](https://doi.org/10.1016/S0140-6736(20)30568-6)]

- 10.1016/S0140-6736(20)30469-4]
- 12 **Li BUK.** Managing cyclic vomiting syndrome in children: beyond the guidelines. *Eur J Pediatr* 2018; **177**: 1435-1442 [PMID: [30076469](#) DOI: [10.1007/s00431-018-3218-7](#)]
- 13 **Sharaf RN,** Venkatesan T, Shah R, Levinthal DJ, Tarbell SE, Jaradeh SS, Hasler WL, Issenman RM, Adams KA, Sarosiek I, Stave CD, Li BUK, Sultan S. Management of cyclic vomiting syndrome in adults: Evidence review. *Neurogastroenterol Motil* 2019; **31** Suppl 2: e13605 [PMID: [31241818](#) DOI: [10.1111/nmo.13605](#)]
- 14 **Lewis SR,** Schofield-Robinson OJ, Alderson P, Smith AF. Enteral versus parenteral nutrition and enteral versus a combination of enteral and parenteral nutrition for adults in the intensive care unit. *Cochrane Database Syst Rev* 2018; **6**: CD012276 [PMID: [29883514](#) DOI: [10.1002/14651858.CD012276.pub2](#)]
- 15 **Reed-Knight B,** Claar RL, Schurman JV, van Tilburg MA. Implementing psychological therapies for functional GI disorders in children and adults. *Expert Rev Gastroenterol Hepatol* 2016; **10**: 981-984 [PMID: [27356273](#) DOI: [10.1080/17474124.2016.1207524](#)]
- 16 **Slutsker B,** Konichezky A, Gothelf D. Breaking the cycle: cognitive behavioral therapy and biofeedback training in a case of cyclic vomiting syndrome. *Psychol Health Med* 2010; **15**: 625-631 [PMID: [21154016](#) DOI: [10.1080/13548506.2010.498893](#)]
- 17 **Kim YW,** Lee SH, Choi TK, Suh SY, Kim B, Kim CM, Cho SJ, Kim MJ, Yook K, Ryu M, Song SK, Yook KH. Effectiveness of mindfulness-based cognitive therapy as an adjuvant to pharmacotherapy in patients with panic disorder or generalized anxiety disorder. *Depress Anxiety* 2009; **26**: 601-606 [PMID: [19242985](#) DOI: [10.1002/da.20552](#)]
- 18 **Lippl F,** Hannig C, Weiss W, Allescher HD, Classen M, Kurjak M. Superior mesenteric artery syndrome: diagnosis and treatment from the gastroenterologist's view. *J Gastroenterol* 2002; **37**: 640-643 [PMID: [12203080](#) DOI: [10.1007/s005350200101](#)]
- 19 **Pottorf BJ,** Husain FA, Hollis HW Jr, Lin E. Laparoscopic management of duodenal obstruction resulting from superior mesenteric artery syndrome. *JAMA Surg* 2014; **149**: 1319-1322 [PMID: [25353279](#) DOI: [10.1001/jamasurg.2014.1409](#)]
- 20 **Kurusu K,** Yamanaka Y, Yamazaki T, Yoneda R, Otani M, Takimoto Y, Yoshiuchi K. A clinical course of a patient with anorexia nervosa receiving surgery for superior mesenteric artery syndrome. *J Eat Disord* 2021; **9**: 79 [PMID: [34193279](#) DOI: [10.1186/s40337-021-00436-2](#)]
- 21 **Arthurs OJ,** Mehta U, Set PA. Nutcracker and SMA syndromes: What is the normal SMA angle in children? *Eur J Radiol* 2012; **81**: e854-e861 [PMID: [22579528](#) DOI: [10.1016/j.ejrad.2012.04.010](#)]
- 22 **Yang WL,** Zhang XC. Assessment of duodenal circular drainage in treatment of superior mesenteric artery syndrome. *World J Gastroenterol* 2008; **14**: 303-306 [PMID: [18186572](#) DOI: [10.3748/wjg.14.303](#)]



Published by **Baishideng Publishing Group Inc**  
7041 Koll Center Parkway, Suite 160, Pleasanton, CA 94566, USA

**Telephone:** +1-925-3991568

**E-mail:** [office@baishideng.com](mailto:office@baishideng.com)

**Help Desk:** <https://www.f6publishing.com/helpdesk>

<https://www.wjgnet.com>

