Case Report

Anorexia Nervosa in Thai Male Adolescents: Case Report

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Anorexia nervosa (AN) is an eating disorder that is uncommonly reported from developing countries such as Thailand. The authors aim to report the clinical presentation and course of two Thai adolescent males, one with restricting type and one with binge-purge type. The first was a 16-year-old boy who presented with facial puffiness, bilateral leg edema, normotensive bradycardia, chronic kidney disease, and persistent metabolic alkalosis. Diagnosis of AN binge-purge type, mild severity was made. Beyond clinical presentation, this case highlights the relevance of psychosocial assessments for adolescents. The second patient was a 13-year-old boy who presented with significant weight loss, sinus bradycardia, hypercholesterolemia, transaminitis, and euthyroid sick syndrome secondary to AN extreme severity. This patient's presentation was typical for AN and highlights the severity of the illness that can present in male adolescents. Both lived in rural regions of Northeastern Thailand and experienced symptoms as young as 13 and 12 years of age. Even though, AN is uncommon in males, two cases presented at the authors' tertiary care center in two consecutive years. Each case had different subtypes, but what they had in common were low to middle socioeconomic status and living in rural areas, which confirms that AN is found in both females and males in Asian cultures. Further studies to estimate the prevalence of eating disorders should be done to understand the disease in both male and female Thais.

Keywords: eating disorder, male, Asian, renal insufficiency, depression, adolescent

Received 23 November 2020 | Revised 10 March 2021 | Accepted 11 March 2021

J Med Assoc Thai 2021;104(5):860-5

Website: http://www.jmatonline.com

Anorexia nervosa (AN) is prevalent in adolescents and young adults. It has the highest mortality rate among all psychiatric disorders in adolescents and affects the quality of life of the patient and their family[1,2]. AN is more prevalent in post-industrialized, high-income countries in North America and Europe[3,4]. However, the diagnosis of AN has gradually proliferated through other countries such as Singapore, Hong Kong, Korea, and Taiwan, during the past decades. Although, there are increasing reports from China, India, and countries in the Association of Southeast Asian Nations (ASEAN), the prevalence in most low- and middle-income countries in ASEAN including Thailand remain unreported[3,4]. Therefore, the nation-wide prevalence of AN in Thailand remains unknown.

A study in Australia has demonstrated that Thai college students have significantly higher eating disorder attitudes than their Australian counterparts[5]. Several studies in Thailand found that around 6.3 to 13.8% of university students have eating disorder attitudes and 19.2% had body image dissatisfaction[6,7]. However, there are only several case reports of adolescents with AN from Thailand, in which all cases were female[8].

Although AN is much less common in males, the prevalence also peaks during adolescence to young adulthood and most clinical presentations are similar to females[6,7]. Studies from clinical populations generally reflect approximately a 10:1 female-to-male ratio in adults and 6:1 in younger children and adolescents[3,9]. Body dissatisfaction in males tends to be centered around muscularity, but thinness could also be of concern[10,11]. The authors report two cases of male adolescents with AN, both from the North Eastern Region of Thailand.

The present case report had been approved by the Khon Kaen University Ethics Committee for Human Research based on the Declaration of Helsinki (HE631108). The patients and their guardians have consented to the submission of the case report to the journal.

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How to cite this article:

Piyawattanametha S, Chaiudomsom K, Saengnipanthkul S, Wisanuyotin S, Areemit R. Anorexia Nervosa in Thai Male Adolescents: Case Report. J Med Assoc Thai 2021;104:860-5.

doi.org/10.35755/jmedassocthai.2021.05.12240

Case Report

Case presentation: 1

A 16-year-old boy presented with a 3-month history of facial puffiness, bilateral leg edema, and persistent impaired renal function with high serum creatinine according to age (1.5 to 1.8 mg/dL). The patient had normotensive bradycardia, laboratory investigations persisted to show a feature of chronic kidney disease, metabolic alkalosis, and proteinuria for three months. The ultrasonography showed atrophic parenchymatous change of both kidneys.

The following history was revealed during the psychosocial assessment, which was performed after the kidney biopsy. Three years prior to presentation, his weight was 79 kg or greater than the 97th percentile, while his height was 157 cm or between the 25th and the 50th percentile, and body mass index (BMI) z-score for age was +2.89. He was teased by friends and felt that he was obese. Therefore, he decided to go on a diet by caloric restriction to less than 2,000 kcal per day, running 30 minutes per day, rope jumping 300 times per day, and self-induced vomiting once weekly. He lost 40 kg in three to four months. However, he still felt globally overweight, expressing that "his face and tummy were too fat". He usually felt bloated and guilty for eating too much and vomited after every meal. Three months prior to the presentation, he started to ingest sennoside laxatives every day. He denied using diuretics and ipecac. He took over the counter supplement tablets such as calcium, lecithin, and vitamin D, for two weeks to be taller. He denied ever using illegal substances and other complementary and alternative medicines. Sexuality, he preferred female but had never had any girlfriend. His past medical history was unremarkable. There was no family history of mental illnesses.

Mental status examination was well co-operated, normal psychomotor activity, speech, and thought. Mood was euthymia and appropriate affect. He denied suicidal ideation. In the psychiatric interview, he showed a conflict with his father.

On physical examination, his BMI was 17.3 kg/cm² (BMI z-score for age –1.59). His vital signs were normal without significant postural change. He had mild dental enamel erosion, puffy eyelids, and pitting edema 1+ on both legs. Bilateral parotid gland enlargement was observed, no subconjunctival hemorrhage or Russell sign were seen.

Laboratory findings revealed high serum sodium, normal potassium level with severe metabolic alkalosis. An abnormally high creatinine level with a glomerular filtration rate (GFR) of 40.3 mL/minute/1.73 m² by Schwartz's formula or 47.4 mL/minute by Cockcroft-Gault formula were noted. The renal histopathology showed mild mesangial proliferative glomerulonephritis with acute tubular necrosis. A dual-energy X-ray absorptiometry (DXA) revealed that his bone mineral density (BMD) was below the expected range for age (z-score –2.8).

Considering the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), diagnosis of AN binge eating and purging type, mild severity was made. Chronic kidney disease and low bone mass density occurred because of malnutrition and chaotic water restriction secondary to AN.

On the first week of admission, the intellectual and projective psychological test to assess personality, coping mechanism, and intrapsychic and interpersonal conflicts were performed. He was depressed and had poor insight. He considered himself as a shy person and denied any anxiety or depressive symptoms. He had had suicidal ideation once, for a brief moment, after arguing with his family, but he changed his mind. After sessions of psychoeducation about causes of AN and his facial puffiness, he was more cooperative and enthusiastic to participate in psychotherapy. Then the sessions moved on to change cognitive distortion of his body perception, raise self-esteem and promote autonomy. The patient was admitted to the hospital for approximately three weeks. Adequate oral hydration with meal planning were initiated. A nutritional plan included a healthy balanced diet of 2,000 kcal per day and micronutrient supplements. The family and patient were provided with psychoeducation, dietary, and activity plans. Fluoxetine of 20 mg/day and Risperidone of 1 mg/day were prescribed as well as the cognitive-behavioral therapy during admission.

After discharge, he steadily gained weight. The serum electrolytes including metabolic alkalosis normalized within one week. The proteinuria and edema subsided within two weeks. Parotid gland enlargement subsided in four months. At 1.5 year follow up, his BMI was 19.9 kg/cm² (BMI z-score for age –0.47). He denied fear of gaining weight. He ate normally and had appropriate exercise. His mood was stable, and he denied any concern about exercise. He decided to discontinue the medications himself. His creatinine level slowly declined and was 1.27 mg/dL with a GFR of 53.0 mL/minute/1.73 m² by Schwartz's formula or 74.5 mL/minute by Cockcroft-Gault formula.

Case presentation: 2

A 13-year-old boy presented with a significant

weight loss. One year prior, his relative commented that his face was big. He denied any other stressors. His BMI z-score for age was –1.34. Four months prior to admission, his stepmother noticed that he had been dieting, he had skipped breakfast and ate one-fourth of his meals.

Two months prior, he began to exercise by arm swinging and running. The intensity of exercise increased to arm swinging, bouncing around during free time, running instead of walking for daily activities, and secretly running in the toilet at school. He perceived that he still had a fatty belly, then further restricted his food intake to two spoons per meal. He cried whenever his parents convinced him to eat. He denied self-induced vomiting, laxatives, diuretics, or other substances.

He lost 10 kg in four months, felt less energetic, and had constipation with weekly bowel movements. He denied dizziness and shortness of breath. A review of his longitudinal growth curve demonstrated a lack of increase in height for one year prior to weight loss.

He lived in a rural area where he attended school with average grades. His family's economic status was low. His mother passed away three years prior due to pulmonary tuberculosis. He was close to his mother but he denied persistent grief. His father re-married a year and a half years ago and he denied any conflicts with his stepmother. His past health history was unremarkable. There was no family history of psychiatric disorders.

Upon presentation, he appeared cachectic. He recognized that he was thin and denied any desire to continue to lose weight. On request to draw a person, he drew himself expressing that he wanted to be a "muscular guy", the picture was drawn with significant pressure pushed onto the paper. His speech was low volume and he had a poverty of speech. His mood was anxious with restricted affect. He denied suicidal ideation, delusions, or hallucinations. Psychological testing showed he had average IQ. The tests also showed that he had conflict between id and superego as he needed emotional support from his family, but he had to repress the feelings because major family's concern was socioeconomic problem.

Clinical examination revealed a cachectic boy with a BMI of 10.5 kg/cm² (BMI z-score for age of less than –3). His vital signs showed bradycardia and hypotension without significant postural change. He had dry mucosa, dry skin, and visible lanugo hair. Pitting of the nails and generalized muscle wasting was observed. His pubertal stage was Tanner 1.

Laboratory findings revealed dyslipidemia and transaminitis. His thyroid function was compatible with euthyroid sick syndrome. A DXA revealed low total body fat mass with normal BMD z-score for age. Echocardiography demonstrated trivial tricuspid regurgitation with mild decreased ventricular systolic contraction (LVEF 57%).

Considering the DSM-5, diagnosis of AN restricting type, extreme severity was made. Hypercholesterolemia with transaminitis, euthyroid sick syndrome, and cardiac findings occurred as a metabolic consequence from severe AN.

The patient was admitted for approximately six weeks. He was on cardiac monitor and bed rest. Adequate oral hydration with meal planning were initiated. He had difficulty in decreasing activities and increasing the caloric intake. The psychological test revealed that he had always been compliant with parental commands and rules. He was anxious and sensitive to other's feeling. The family and patient were provided with psychoeducation, dietary and activity plans, and Risperidone 0.5 mg/day. Bradycardia subsided at 30 days, and hypotension subsided at three weeks. He was discharged at 28 kg with stable vital signs.

Two weeks later, he was readmitted due to hypernatremia with dehydration. The CHILD-1-diet (Cardiovascular Health Integrated Lifestyle Diet), the diet for cardiovascular risk reduction was introduced together with oral nutritional supplements to ensure adequate micronutrient intakes. After that, he could drink and eat well. Additionally, he was started on sertraline 25 mg/day because his clinical manifestation showed some degree of depression.

At 3-month follow up, his weight had increased to 30 kg. His cholesterol level was reduced to acceptable range for age and no transaminitis was presented. He was closely followed-up.

Discussion

AN may lead to serious physical consequences and significant psychiatric effects. Physical complications involve multiple system impairments such as electrolyte imbalance, hypotension, bradycardia, arrhythmia, constipation, delay gastric emptying time, amenorrhea, delay puberty, growth retardation, osteopenia, anemia, thrombocytopenia, leukopenia, skin and hair loss, proteinuria, and cognitive impairment.

The authors reported cases of two male adolescents from North-East Thailand with AN, one with binge eating and purging type and the other with restricting type (Table 1).

Table 1. Summary of the main findings

Clinical presentation	Case 1	Case 2
Age (years)	16	13
Chief complaint	Face puffiness	Rapid weight loss
Baseline weight	Previously obese (BMI z-score for age +2.89)	Normal (BMI z-score for age -1.34)
Weight loss (% of baseline weight)	50% in 3 to 4 months	30% in 4 months
Eating and behavior pattern	• Caloric restriction • Self-induced vomiting • Sennoside laxative use	• Caloric restriction • High intensity of exercise • Constipation
Body image distortion	• Positive • Intense fear of gaining weight	• Positive • Persistent behavior that interferes with weight gain despite significantly low weight
Physical examination	• BMI z-score for age –1.59 • BT 36.3°C • HR 74/minute • BP 103/63 mmHg • Dental enamel erosion • Puffy eyelids • Bilateral parotid gland enlargement • Bilateral leg edema • Tanner stage 3	• BMI z-score for age less than –3 • BT 36.4°C • HR 38/minute • BP 87/57 mmHg • Cachexia • Dry skin with lanugo hair • Tanner stage 1
Laboratory results	• Hb 11.9 g/dL, MCV 91.0 fL • BUN 12, Cr 1.67 mg/dL (GFR 40.3 mL/minute/1.73 m^2) • Serum Na 149, K 3.7, HCO_3 40 mEq/L • Alb 4.4 g/dL • Renal histopathology: mild mesangial proliferative glomerulonephritis, 10% acute tubular necrosis, tubular vacuolization, and interstitial foam cells with granular mesangial deposits of IgG (1+). No segmental glomerulosclerosis. • DXA: 21.1% total body fat, bone mineral density of 0.682 g/cm^2 at L1-L4 vertebrae (z-score –2.8) and 0.744 g/cm^2 at TBLH	• Hb 13.1 g/dL, MCV 89.3 fL • BUN 31.6, Cr 0.89 mg/dL • Serum Na 142 mEq/L, cholesterol 287, LDL-C 208, HDL-C 86, triglyceride 145 mg/dL • ALT 73 U/L, AST 114 U/L • Holter monitor: sinus bradycardia, HR range 31 to 118/minute (average 48/minute) • Echocardiography: trivial tricuspid regurgitation (RVSP 16 mmHg), mild decreased ventricular systolic contraction (LVEF 57%) • DXA: 13.1% total body fat, bone mineral density of 0.636 g/cm^2 at L1-L4 vertebrae (z-score –1.3) and 0.673 g/cm^2 at TBLH
Diagnosis	AN binge eating/purging type, mild severity	AN restricting type, extreme severity
Complications	• Chronic kidney disease • Hypernatremia • Metabolic alkalosis • Proteinuria	• Dyslipidemia • Transaminitis • Euthyroid sick syndrome • Trivial tricuspid regurgitation with decreased ventricular systolic contraction
Treatment	• Refeeding precaution • Correction of fluid and electrolyte imbalance • Healthy balanced diet with multivitamin and mineral supplement • Psychoeducation • Fluoxetine, risperidone, cognitive-behavioral therapy	• Cardiac monitoring and bed rest • Refeeding precaution • Correction of fluid and electrolyte imbalance • CHILD-1 diet, oral nutritional support, and multivitamin and mineral supplement • Psychoeducation • Risperidone

Alb=albumin; ALT=alanine aminotransferase; AN=anorexia nervosa; AST=aspartate aminotransferase; BMI=body mass index; BP=blood pressure; BT=body temperature; BUN=blood urea nitrogen; CHILD=cardiovascular health integrated lifestyle diet; Cr=creatinine; DXA=dual-energy X-ray absorptiometry; GFR=glomerular filtration rate; Hb=hemoglobin; HDL-C=high-density lipoprotein cholesterol; HR=heart rate; LDL-C=low-density lipoprotein cholesterol; LVEF=left ventricular ejection fraction; MCV=mean corpuscular volume; RVSP=right ventricular systolic pressure; TBLH=total body less head

The first case was a 16-year-old boy who presented with facial puffiness, bilateral leg edema, normotensive bradycardia, chronic kidney disease, and persistent metabolic alkalosis. Kidney involvement in AN such as chronic tubulointerstitial nephropathy and segmental glomerulosclerosis have been documented[12]. These abnormalities result from prolonged hypokalemia, chronic dehydration, and chronic interstitial nephritis. Paradoxical hypokalemia in AN with advanced kidney disease may be due to a

deficit in potassium intake, habitual vomiting, and abuse of diuretics or laxatives. Moreover, the upregulation of renin-angiotensin-aldosterone system in response to low blood pressure may further contribute to the maintenance of hypokalemia in AN[13]. The patient's kidney biopsy revealed acute tubular necrosis with tubular vacuolization and interstitial foam cells, which may be due to dehydration and hypokalemia. However, mild mesangial glomerulonephritis with C3 deposition could not be explained. A recent study reported the renal histopathology of patients with AN, that showed hypertrophy of the juxtaglomerular apparatus, advanced glomerular collapse, and interstitial fibrosis, consistent with ischemic kidney injury and hypokalemic nephropathy[13].

The second patient was a 13-year-old boy that presented with significant weight loss, sinus bradycardia, hypercholesterolemia, transaminitis, and euthyroid sick syndrome secondary to AN extreme severity. This patient's presentation was typical for AN and highlights the severity of the illness that can present in male adolescents.

Beyond different clinical presentations, both cases highlight the relevance of psychosocial assessments and presence of parent-adolescent conflict of autonomy[14]. In the first case, the authors found obvious parent-adolescent psychological conflicts, while the second patient denied any conflict and only showed his psychopathology through the psychological test. These results are congruent to studies in females with restricting type AN who tend to have deficits in emotion regulation, which is characterized by emotional overcontrol, such as emotional inhibition and lack of emotion expression[15], while patients with binge eating and purging type AN show greater difficulty with impulse control and difficulties inhibiting maladaptive behavior when experiencing negative emotions[16].

Both cases stated that they were heterosexual, however this issue must be followed because homosexuality is more common in males with eating disorders and their gender identity might have not yet been well formed[14,17,18].

AN is uncommon especially in males, but eating disorders are increasing in minority groups as well as in Asian and Arab countries along with industrialization, urbanization, and globalization[19]. Thailand's economy has also dramatically changed, and this might cause the two cases of male adolescents with AN in two consecutive years. Interestingly, both patients lived in rural northeastern provinces, the region with the lowest Gross Domestic Product (GDP) per capita in Thailand[19].

Both patients experienced symptoms as young as 13 and 12 years of age. According to DSM-5, the absence of an expressed intense fear of weight gain appears to be relatively more common in populations in Asia[20]. Consistent with the authors' findings, the second patient had persistent behaviors that interfered with weight gain but did not express fear of gaining weight.

Conclusion

Even though AN is uncommon in males, two cases presented at the authors' tertiary care center in two consecutive years. Each case had different subtypes, but they had in common low to middle socioeconomic status and living in rural areas, which confirms that AN is found in both females and males in non-Western cultures. Further studies to estimate the prevalence of eating disorders should be done to understand the disease in both male and female Thais.

What is already known on this topic?

Eating disorders have the highest mortality rate of any other mental illness and are accompanied by severe medical and nutritional complications. The female to male ratio is 10:1.

What this study adds?

The clinical presentations of eating disorders are related to starvation and severe fluid and electrolyte disturbance, which lead to chronic kidney disease. Growth faltering may indicate eating problems in teenagers.

Ethical approval and consent to participate

This case report had been approved by the Khon Kaen University Ethics Committee for Human Research based on the Declaration of Helsinki (HE631108).

The patients and their guardians have consented to the submission of the case report to the journal.

Conflicts of interest

The authors declare that they have no conflict of interest.

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