Case Report

An Adolescent Girl with a Complaint of Clitoral Swelling

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A B S T R A C T

Background: We present the case of an adolescent girl with prominent clitoral swelling as the first symptom when she presented to the emergency department, and who was subsequently diagnosed with nephrotic syndrome.
Case: A 14-year-old adolescent girl was admitted with painless clitoral swelling. She denied recent masturbation, itching, or discharge. She was within the last few days of menstruation. Physical examination revealed clitoral edema without erythema or genital edema. Urine dipstick test and microscopic evaluation revealed protein 2+, blood 3+, abundant erythrocytes and 9–10 leukocytes. A few days later, additional clinical findings, such as pretibial and facial edema, were diagnosed as nephrotic syndrome.
Summary and Conclusion: This case is a reminder that clitoral swelling is to be considered a sign in the diagnosis of nephrotic syndrome, even when it occurs alone.
Key Words: Clitoris, Edema, Causes

Introduction

Swelling of the clitoris might occur for many reasons. Although it might occur in patients with nephrotic syndrome, this condition is rare and usually a part of genital edema. We present an adolescent girl who presented to emergency services with a swollen clitoris as an initial symptom of nephrotic syndrome.

Case

A 14-year-old adolescent girl presented to our pediatric emergency department with a complaint of spontaneous clitoral swelling the night before. At that time, the patient's menstrual cycle was ongoing. She denied recent masturbation or genital itching, and she had no genital or clitoral pain. That night, a physical examination revealed that she had a clitoral edema. There were no erythema and no genital or labial edema. The emergency doctor noted no other remarkable findings. Laboratory evaluation showed complete blood count was normal as hemoglobin: 12 g/dL, white blood cells: 7500 cells/μL, platelets: 250,000 cells/μL. Urinalysis revealed pH: 6.5, gravity: 1020, glucose: negative, protein: 2+, ketones: negative, nitrite: negative, blood: 3+, leukocyte esterase: trace, bilirubin: negative; there were abundant erythrocytes and 9–10 leukocytes in every high power field under microscopic examination. After the urine sample was sent to the microbiology laboratory for culture, the emergency physician advised to go to the polyclinic of pediatrics the next morning for a detailed examination.

When she was admitted to our clinic in the morning, a physical examination revealed that she had marked clitoral edema and mild pitting edema of her lower limbs (Fig. 1). Her blood pressure was normal (110/70 mm Hg) according to age and height. The rest of her examination was normal. Urinalysis showed that proteinuria was 2+ in spot urine. She had low serum albumin (23.1 g/L). One day later, the patient's face also swelled, pretibial edema increased, ascites developed, and clitoral edema continued, but minimal labial edema also occurred (Fig. 1). Her proteinuria increased to 3+ in spot urine, and nephrotic range proteinuria was confirmed with 24-hour urinary protein excretion of 166 mg/m^2/h (normal $<$ 4 mg/m^2/h for children). Because her menstrual cycle ended, hematuria in microscopic evaluation disappeared. Serum albumin decreased to even lower levels (18.2 g/L). She had low serum albumin (18.2 g/L) and high serum levels of triglyceride (150 mg/dL) and cholesterol (340 mg/dL). However, kidney function tests, liver enzymes, serum electrolyte levels, and serum complements (C_3 and C_4) were normal. She was diagnosed with nephrotic syndrome and treated with oral prednisolone (60 mg/d) and furosemide. She was also given salt and fluid restrictions. Three days later, the clitoral edema disappeared as a first sign of recovery. Pretibial edema and ascites resolved on the 7th day, and she went completely into remission associated with normal level of proteinuria ($<$4 mg/m^2/h) on the 11th day. After 4 months, nephrotic syndrome relapsed, but the clitoral edema was not present. Likewise, this relapse was also dissolved with use of a steroid.

Summary and Conclusion

Clitoral swelling was the first noticeable symptom of nephrotic syndrome in this adolescent girl. The subsequent

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Fig. 1. Marked clitoral edema.

emergence of other clinical manifestations of nephrotic syndrome, such as pretibial edema and ascites, facilitated the diagnosis. Although labial or genital edema is a common presentation of nephrotic syndrome, clitoral edema is not usually seen. The protein in the urine might have been overlooked because she was menstruating at the time of admission, and the emergency doctor noted only the finding of clitoral edema during the examination. The positive reagent strip tests might also result from leukocytes and bacterial proteins during urinary tract infections.[1] Moreover, when a urine test is performed during menstruation, a false positive test result for proteinuria can occur.

Generally, clitoral edema without labial or genital edema is not an expected condition in nephrotic syndrome. Therefore, during the first admission, other causes of local edema were considered in this patient. A few days later, the appearance of other clinical findings led to the diagnosis of nephrotic syndrome as the underlying pathology.

Clitoral swelling in a woman is not usually a cause for concern. However, excluding certain conditions, a swollen clitoris in a child or adolescent should be investigated. One of the most important causes of clitoral swelling in children is hair-thread tourniquet syndrome. It is described as clitoral edema and severe pain resulting from the ischemic strangulation of hair, and organ amputation might be required.[2] It is usually seen in young children. Severe local pain makes diagnosis easier. There were no such findings in our patient (Fig. 1).

A mildly swollen clitoris might result from sexual intercourse and masturbation in young women and some adolescents. However, our patient was not sexually active and denied masturbation.

Local (fungal and bacterial) infections that cause clitoral swelling often present with itching and pain. Clitoral and labial swelling in a girl with Crohn's disease was also reported as a an initial symptom. Tumor and tumor-like clitoral lesions often occur on a chronic basis.[3] As in polycystic ovary syndrome, hormonal disorders can also cause clitoral swelling. In these patients, symptoms such as hirsutism, acne, weight gain and irregular menstrual periods are associated with clitoral swelling.[4] However, in most of the diseases mentioned, clitoromegaly is seen rather than clitoral edema.

The most common presenting symptom in the pediatric population with nephrotic syndrome is edema. Edema generally occurs first in areas with low tissue resistance such as periorbital, scrotal, and labial regions and the lower extremities. Anasarca might develop with ascites and pleural and pericardial effusion.[5] Edema in nephrotic syndrome is also gravity-dependent, appearing most commonly as periorbital or back edema upon awakening, with gradual shifting of the fluid to the lower extremities over the day while the child is upright.[6] Two hypotheses have been proposed for the etiology of generalized edema in nephrotic syndrome. The first proposes that heavy proteinuria leads to hypoalbuminemia that, in turn, decreases plasma oncotic pressure, causing fluid to leak into the interstitium. The second hypothesis postulates that protein loss in the urine leads to sodium retention, thereby causing intravascular volume expansion, leading to fluid overflow into the interstitium.[5] However, it is not clear why this girl with nephrotic syndrome had only clitoral edema without genital edema at the beginning of the disease.

A careful history, examination, and analysis of laboratory results can easily lead to an accurate diagnosis of an adolescent with clitoral swelling. Nephrotic syndrome should be considered in patients who presenting to emergency services with clitoral edema.

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