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Nephrotic range proteinuria & turbid urine: A rare presentation in a 4-year-old child

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Abstract

A 4-year-old girl presenting with chyluria is very rare, especially with the initial presentation of nephrotic range proteinuria, presenting to a nephrologist. The final diagnosis was parasitic chyluria and there are only 6 reported cases of chyluria in children.

Keywords: Chyluria in children; Lymphatic filariasis; White urine; Parasitic infection; Nephrotic range proteinuria.

Introduction

Chyluria is rare in children and this is only the 7th case in the world literature. Chyluria is the result of fistula formation between lymphatic and urinary system, due to parasitic or non-parasitic causes. This is one of the chronic manifestations of lymphatic filariasis and has a long incubation period from 5 to 20 years, [1,2] and therefore not commonly seen in children. Here, we present an index case of a 4-year-old girl who presented with intermittent milky urine in pediatric OPD.

Case history

A 4 year old girl presented with complaints of intermittent milky white urine (Figure 1) in the morning since 3 days. The urine coagulated within 5 minutes. She also had history of a vulvar swelling 1 week prior.

On physical examination, the child was normal; no lymph nodes were palpable and external genitalia were normal. A urine sample collected in outpatient clinic was clear. Urine routine showed albumin 3+ (103.5 mg/dl), Albumin/creatinine ratio was 4042 mg/g were in the nephrotic range. Multiple urine triglycerides tests done ranged between 37 mg/dl - 45 gm/dl confirmed chyluria. Ultrasound showed normal kidneys and urinary bladder. Blood and urine trophozites were negative. Blood examination for microfilaria (at 2 AM), malaria and dengue was negative.

Child was given empirical anti filarial therapy in view of high index of suspicion and being a resident of an endemic area. One dose of ivermectin, DEC (diethylcarbamazine citrate) (50 MG/5 ML) 10 ml for 10 days was given. Chyluria resolved in 10 days. Since India is an endemic area we gave regime according to WHO [1]. She is well 10 months after the medication.

Discussion

Globally, 40 million people are affected by lymphatic filariasis. As of 2018, 51 million people were infected. There is 74% decline after WHO started the program to eliminate lymphatic filariasis in 2000 [1].

Parts of Asia, especially India and Africa are endemic area for

Table 1: Previous reports of chyluria in children is shown

S No	Author	Age/ years	Presentation	Diagnosis	Management	Follow-up (months)	Country
1	Stalens et al	10	Milky urine	Congenital pyelovesical communication	Conservative	–	Australia
2	A Kohli et al	10	Milky urine Fever swelling in right leg	Parasitic infection	Conservative	1	India
3	Jung et al	10	Milky urine	–	Conservative	10	Korea
4	Mc Neil et al	5	Cloudy urine	Malignancy (metanephric adenoma)	Surgery (nephrectomy)	12	US
5	Ganesh et al	5	Dysuria Passage of clots	–	Surgery (laparoscopic lympho renal disconnection)	6	India
6	Garg G et al	7	Milky urine and pedal edema	Parasitic	Conservative	12	India
7	Index case	4y2m	Milky urine	Parasitic	Conservative	9	India

Table 2: Differential diagnosis chyluria vs nephrotic syndrome.

Clinical features	Chyluria	Nephrotic Syndrome
Edema	Not common	Very commonly seen
S. Albumin	Normal	Low
S. Cholestrol	Normal	High
Urine Appearance	Milky and cloud Coagulated within minutes	Normal/Hematuria Stays as it is

Table 3: Diagnostic approach according to etiology

Etiology of Chyluria		Diagnosis	Treatment
Parasitic infection	Very rare in children as incubation period is 10 – 20 years	Peripheral smear Urine Examination	Conservative Antifliarial drug therapy
Congenital	Pyelovescial communication or lymphorenal connection	Intravenous urography CT scan MRI	Cystoscopic sclerotherapy surgery – disconnenction of communication Or lymphovenous anastomosis
Malignancy	Metanephric adenoma	CT SCAN MRI	Tumor resection with partial or total nephrectomy / auto transplant

Figure 1: Urine sample.

Lymphatic Filariasis. Most common cause of lymphatic filariasis is parasitic infection and chyluria presents in 10% of filarial cases. Chyluria is observed commonly in the rural population and lower socioeconomic sections of society. Filariasis infection impairs drainage of lymph in limbs, more often in lower limbs and genitalia and causes abnormal enlargement, pain, disability as well as social stigma [1-3].

In chyluria (white urine, hematuria). Urine examination is positive for triglycerides and chylomicrons. Initial treatment is drugs (as per WHO protocol) and low fat diet, if symptoms persist Intravenous urography, CT scan, MRI is recommended to find the source of chyle in urine. Primary surgical approach would be sclerotherapy-betadine, silver nitrate (2 cycles) followed by surgical intervention. Surgical intervention includes division of chylolymphatic channel (laparoscopic), and if there is recurrence, then lymphovenous anastomosis can be considered [3]. Nephrectomy could be the final option in some cases.

WHO recommends mass drug administration (MDA) to the entire at-risk population. [Diethylcarbamazine citrate (DEC) (6 mg/kg) + albendazole (400 mg) or Ivermectin (200 mcg/kg) + diethylcarbamazine citrate (DEC) (6 mg/kg) +albendazole (400 mg)]. In our patient, we gave regime as per WHO protocol (DEC

+ albendazole+ ivermectin) [1]. The child is well now. No mass therapy was given in the child's residential area.

In the last decade, MDA Regimens were delivered to more than 935 million people at least once in 70 countries, considerably reducing the transmission of the diseases, and infection prevalence has been reduced below elimination thresholds. It has been observed that drug and dietary therapy has 50% recurrence rate, whereas surgery has less than 10% [1,4].

Conclusion

Chyluria is rare in children and an association of nephrotic syndrome is rarer still. WHO has proposed a protocol for mass drug administration for prevention of infection in endemic areas but it is not yet followed in India.

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