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Case Report

Internal Medicine Section

Non Parasitic Chyluria and Nephrotic Range Proteinuria: A Case Report

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ABSTRACT

Chyluria is excreting chyle in urine leading to white urine. It can cause mild proteinuria. It could be parasitic or non parasitic in origin. It is often mistaken as nephrotic syndrome or urinary tract infection. Normal renal biopsy should prompt for further investigation. Lymphangiography or retrograde pyelogram can establish the diagnosis. Non parasitic chyluria is rare, but do occur like the one reported in this case. Hereby, authors discuss a case of chyluria associated with proteinuria in a 49-year-old male patient, due to non parasitic cause which was successfully treated. Treatment was done with installation of povidone iodine into renal pelvis. The resolution of chyluria and proteinuria suggest that abnormal lymphatic-urinary communications was causing chyluria.

Keywords: Lymphatics, Pelvi-calyceal system, White urine

CASE REPORT

A 49-year-old male patient presented to the Nephrology Department with the chief complaint of white urine since two years without any other associated symptoms [Table/Fig-1]. He was evaluated elsewhere, and found to have proteinuria, and workup for filariasis, chyluria was negative. Patient reported to authors seeking for a second opinion. He had no history of abdomen or genitourinary surgeries, filariasis, trauma nor any other systemic illness like diabetes mellitus, malignancy or history suggestive of urinary tract infection. The physical examination showed normal vitals, no pedal oedema and systemic examination were unremarkable. Investigations are represented in [Table/Fig-2].

[Table/Fig-1]: White urine on presentation.

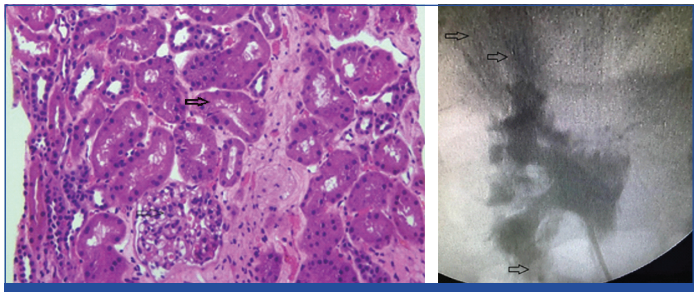
For evaluation of proteinuria, kidney biopsy was done which showed minimal change disease (pointed by arrows in the [Table/Fig-3]). Light microscopy study with magnification 400X on Haematoxylin and Eosin staining showed 12 glomeruli, none showed segmental sclerosis, two glomeruli showed periglomerular fibrosis. There was no mesangial or endocapillary hypercellularity, crescent or necrosis, glomerular basement membrane was normal. Tubulo-interstitial compartment was normal. Blood vessels showed mild fibrointimal thickening with hyalinosis. Immunofluoroscence staining was negative for all complements and immunoglobulins. The renal biopsy showed no immunocomplex disease and proteinuria was attributable to chyluria.

Ivermection (Vermectin) single dose of 12 mg was given. Later done, peripheral smear showed no microfilaria. Under antibiotics coverage, cystoscopy followed by bilateral Retrograde Pyelography (RGP) [Table/Fig-4] was done, which showed chylous efflux from both

Name of investigation	Result	Reference range
Urine test		
Protein	3+	nil
Red Blood Cells (RBC) (High Powered Field)	nil	0-5
White Blood Cells (WBC) (High Powered Field)	nil	0-5
Urine-Chylomicrons, triglycerides, lymphocytes	Present	
Urine protein-creatinine ratio	9.3	<0.2
Blood test		
Haemoglobin (g/dL)	14.7	13-15
White Blood Cells (WBC) (/cmm)	7700	7000-11000
Differential WBC Count (%:Neutrophils/ Lymphocytes/ Monocytes/Basophils/ Eosinophils)	67/18/8/0.6/4.8	
Platelet (/cmm)	3.44 Lacs	1.5-5 Lacs
Erythrocyte sedimentation rate (mm 1st Hour)	10	<10
Blood urea (mg/dL)	10	0-20
Serum creatinine (mg/dL)	0.9	0.8-1.5
Random blood sugar (mg/dL)	122	100-200
Liver function test		
Serum bilirubin (mg/dL)	0.6	<1
Serum protein (g/dL)	4.3	5-10
Serum albumin (g/dL)	2.19	3.5-5
Aspartate aminotransferase (U/L)	19	<30
Alanine aminotransferase (U/L)	18	<30
Serum calcium (mg/dL)	7.7	8.5-10
Serum phosphorus (mg/dL)	4	3.5-5
Serum uric acid (mg/dL)	6.5	<7
Serum cholesterol (mg/dL)	212	<200
Serum triglyceride (mg/dL)	145	<150
Urine culture	Sterile	
Ultrasound abdomen	2-3 gallbladder stones, right kidney Non obstructive calculus	
Human Immunodeficiency Virus (HIV), Hepatitis B and C viruses (HBV and HCV)	Non reactive	
Chest X-ray	Normal	

[Table/Fig-2]: Investigations.

ureter orifices and diffuse meshwork of multiple bilateral pelvi-lymphatic communications which was possibly idiopathic in origin.



[Table/Fig-3]: Kidney biopsy- light microscopy with magnification 400X on Haematoxylin and Eosin staining showing normal histology.
[Table/Fig-4]: Retrograde Pyelography (RGP) showing lymphatic-urinary communications. (Images from left to right)

A 7 F mono-J ureteral catheter was positioned in each ureter and it was left attached to an 18 F indwelling Foley catheter for the three days. A freshly prepared solution containing 10 mL of 0.2% povidone iodine and 10 mL of 10% dextrose was instilled into renal pelvis thrice a day, kept for 15 minutes each, for three days. Routine prophylactic parenteral antibiotics and analgesics were given for four days after instillation.

Urine coloured changed, initially haematuric and gradually turned to normal. White urine and proteinuria disappeared. Patient thereafter voided normal coloured urine at the end of 2 months follow-up.

DISCUSSION

Chyluria is excreting chyle in urine leading to white urine [1]. Chyle is lymphatic fluid rich in chylomicrons collected from intestinal lymphatics into thoracic duct and subsequently drained into left subclavian vein [2]. Chyle has protein, fat and fibrin [2]. Chyluria could be parasitic or non parasitic in origin [1,3], like in this case. Most common one is the parasitic cause which is due to Wucheraria Bancrofti and non parasitic cause is due to postsurgery, trauma, tuberculosis, congenital, malignancy, idiopathic lymphatic obstruction [1] like in this case. Aetiology could be due to rupture of lymphatics into pelvicalyceal system of kidneys [1,4]. Most common communication area is renal fornix. Rupture could be due to lymphatic obstruction leading to dilatation and eventually lymphatics rupture into urinary system leading to white urine [1,5]. It can present as white urine, haematochyluria, or urinary tract infection [1]. In some cases, it can cause considerable disability due to malnutrition due to protein loss, infections, and renal colic [1,2].

Diagnosis can be confirmed with urine analysis for chyle and presence of proteinuria which is not attributed to glomerular or renal tubular origin [1] like in this case. Detecting chylous urine in laboratory depends on lab personnel expertise. Proteinuria is non glomerular in origin and postnephron in origin like in Cheng JT et al., case report and the present case [3]. Presence of lymphocytes in urine also supports chylous urine. Other causes can be excluded by abdomen ultrasound, complete blood cell count, peripheral blood smear, urine analysis [2,3]. Cystoscopy and RGP [6,7], Computed Tomography scan (CT) [8], Magnetic Resonance Imaging (MRI) scan [9] can confirm lymphatic-urinary fistulas and communications [6-8].

Fat restricted diet and therapy with ezetimibe have been tried. Different therapy have been reported in previous studies with sclerosants like 1-3% silver nitrate [1], dextrose 50% [1], 22-25% hypertonic saline, 76% urograffin and 1-25% iodine [1] for few days therapy with good results with remission of chyluria. In the case series by Guttilla A et al., they had used 10% iodine with 10% dextrose as sclerosant with good result of chyluria remission [2]. In the case reported by Maurya V et al., they had used 0.2% Iodine as sclerosant with good results [9]. Iodine was used in the present case as well, as it is easily available, effective, safe and less toxic compared other sclerosants [1,2]. Sclerosants cause chemical lymphangitis and fistula fibrosis [10-13]. In recurrent cases, surgical intervention with lymphatic vessel dissection have also been tried [10,14,15].

CONCLUSION(S)

Chyluria which presents as white urine is often mistaken to nephrotic syndrome or urinary tract infection. Normal renal biopsy should prompt for further investigation. Idiopathic non parasitic Chyluria is rare, but do occur, as reported in the present case. The treatment was done with installation of povidone iodine into the renal pelvis which is safe, efficient with no side-effects. The resolution of chyluria upon povidone iodine installation in the renal pelvis suggest that abnormal lymphatic-urinary communication was causing chyluria.

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