Case Reports

Filariasis, with Chyluria and Nephrotic Range Proteinuria

Sham Sundar**, K Venkataramanan‘, Himanshu Verma‘, Minakshi Bhardwaj’, HS Mahapatra***

Abstract

28 yr female presented with (grade III) chyluria, with nephrotic range proteinuria and Ig M mesangial deposition in immunofluorescence, secondary to filariasis which was confirmed by serology and microfilaria in glomerulus, and successfully treated by Renal Pelvic instillation sclerotherapy with 0.2% povidine and medical treatment (Diethylcarbamazaine). She was asymptomatic with follow up period of 19 months.

Introduction

In India, filariasis is a major health problem and the country contributes to about 40% of the global clinical burden. The disease is predominantly caused by the parasite Wuchereria Bancrofti. The common clinical manifestations of lymphatic obstruction are hydrocoele, lymphedema and chyluria. Chyluria is due to the passage of chyle into the urine giving it a typical milky appearance. Retroperitoneal lymphatics receiving lymph flow from the intestinal lymphatics become obstructed secondary to fibrosis produced by parasitic infestation thus short-circuiting flow from the intestinal lymphatics become obstructed secondary to filariasis and microfilaria in glomerulus, and focal C3 , and negative for Ig A and IgG. Electron microscopy showed few mesangial deposits with normal podocyte stucture. Diagnosis of chyluria, secondary to filariasis was made.

Case Report

28 yr old female, from Bihar presented with complaints of milky and red milky urine (on and off) and associated with passing clots for past 3 months, with history of weakness and progressive loss of weight for 3-4 months. There was history of fever, on and off, asso. with chills and rigor 6 months back, for which she took treatment locally. On examination pt. was malnourished and had pallor. Vital signs were within normal limits. General and systemic exam were unremarkable. Her blood investigations showed Hb- 10.9 gm%, TLC- 10500, DLC-P-52:L-7:E41, Platelet-2.8 lacs and absolute Eosinophil count 3,120 cu.mm.

Patient renal parameters and serum electrolytes were within normal limits with low protein and albumin.(total protein: 4.9 gm/dl, S.Albumin 2.9 gm/dl, S. Globulin 2.0gm/dl). Urine was milky white in appearance, settled down into 3 layers (Figure 1). Examination revealed pH of 5.5, specific gravity 1.015, albumin+++, few fat droplets, red blood cells (RBC) 30-40/hpf, few lymphocytes but no casts or crystals. The turbidity disappeared by adding Ether. Chyluria was further confirmed by presence of Triglyceriduria which were 198 mg/dl. 24 hr urinary protein was 8 gms which is in nephrotic range. Ultrasound showed Multiple echogenic masses in the bladder due to Chylosus and blood clot with normal sized kidney. But repeat ultrasound after two weeks showed disappearance of the echogenic masses. Regarding etiology, Filarial antigen rapid -format immunochromatographic card test which is the most sensitive and specific test was positive in our patient.

Plain CT abdomen showed, bilateral multiple tubular hypodense channels seen in the retro peritoneal region, more on the left side along left psoas muscle and in the Aorto-caval region (Figure 2) due to retroperitoneal lymphangiectasis, suggestive of dilated lymphatics near renal pelvis. Patient was subjected to retrograde pyelography for evaluation of pyelolymphatic fistula, but it did not show obvious pyelolymphatic connection. On cystourethroscopy, there was white milky urine efflux from left ureteric orifice. Urine appeared clear from right ureter. Patient was subjected to ultrasound guided Renal biopsy for evaluation of nephrotic range proteinuria. On light microscopy, the glomeruli showed mild increase in mesangial cellularity with increase in mesangial matrix. One glomerulus showed a capillary loop with longitudinal section of microfilaria with nuclear chain triglycerides (coconut oil) and high protein diet. Patient was given Diethylcarbamazine (DEC) dose of 6 mg/kg, which was given in three divided doses after food over a period of 12 days. Renal Pelvic instillation sclerotherapy (RPIS) was given to the patient by Urologist. During the procedure retrograde catheter was passed up to 15 cm in the left ureter and solution of 0.2% povidone-iodine (Betadine) and 50% dextrose was injected into the renal pelvis, and catheter was kept in situ. This instillations was repeated every 8 hourly for 3 days. Urine was brown coloured for 3-5 days during the time of instillation therapy, after that urine was transparent within 3 days. Followed by the course of DEC and RPIS, the eosinophil count became normal and urine became clear with no proteinuria or chyluria. During the follow up period of one and half years, the patient has remained asymptomatic.

Treatment

Patient was advised fat free diet, supplemented by medium chain triglycerides (coconut oil) and high protein diet. Patient was given Diethylcarbamazine (DEC) dose of 6 mg/kg, which was given in three divided doses after food over a period of 12 days. Renal Pelvic instillation sclerotherapy (RPIS) was given to the patient by Urologist. During the procedure retrograde catheter was passed up to 15 cm in the left ureter and solution of 0.2% povidone-iodine (Betadine) and 50% dextrose was injected into the renal pelvis, and catheter was kept in situ. This instillations was repeated every 8 hourly for 3 days. Urine was brown coloured for 3-5 days during the time of instillation therapy, after that urine was transparent within 3 days. Followed by the course of DEC and RPIS, the eosinophil count became normal and urine became clear with no proteinuria or chyluria. During the follow up period of one and half years, the patient has remained asymptomatic.

Discussion

Chyluria is the passage of intestinal lymph in urine. By far the most important and the most common cause-effect relationship of chyluria is with Wuchereria bancrofti. Chyluria is graded according to mode of presentation; grade I with milky white...
urine, grade II with whitish clots or episodes of clot retention, and grade III with haematochyluria.3 Our patient was from endemic area of filariasis (Bihar) and presented with both hematuria and chyluria (grade III).

When chylous urine is kept in the test tube, it usually settles down into three layers, the fat being lighter gets deposited as the top layer, the fibrin clots from the middle layer and cells together with debris settle in the bottom layer (Figure 1). On adding equal quantity of ether opacity will almost disappear. Chylomicrons can be seen directly under microscope with dark ground illumination or orange pink color when stained with Sudan red III. Estimation of urinary triglycerides is 100% sensitive and specific test for chyluria. It is noninvasive and cost effective and is independent of manual error. In any patient presenting with history suggestive of chyluria, other causes of milky white urine like phosphaturia (clears on adding 10% acetic acid), amorphous urates, severe pyuria, lipiduria secondary to fat embolism, pseudochylous urine and caseousuria due to renal tuberculosis have to be ruled out.4 The observed hypoalbuminemia in our patient could be due to the massive loss of chyle and protein in the urine. Enzyme linked immunosorbent assay (ELISA) and a rapid -format immunochromatographic card test for circulating antigens of W. bancrofti permit the diagnosis of microfilaricmic infection and both assays have sensitivities of 96-100% and specificities approaching 100%.2

Fig. 1 : Patient urine (chyluria) settles down into three layers

Fig. 2 : CT scan showing retro peritoneal lympangiectasis (white arrow) on left side

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An association between filariasis and glomerular disease has been reported in India.5 In filarial nephropathy, light microscopy reveals a gamut of lesions consistent with diffuse and mesangial proliferative, Acute eosinophilic glomerulonephritis, membranous, mesangiocapillary, minimal change and chronic sclerosing glomerulonephritis, and the collapsing variant of focal segmental glomerulosclerosis. A diffuse basement membrane thickening and mild increase in number of endo-capillary cells are the commonest findings. In our case, One glomerulus showed a capillary loop with longitudinal section of microfilaria which is very rarely reported and Immunoflorescence showed mesangial deposits of Ig M and focal C3 (Figure 3). In Electron microscopy shows widely spaced subepithelial, subendothelial, and intramembranous deposits, basement membrane spikes, and podocyte effacement.6

Nutrition support has played a major role in the treatment of chyluria, both to prevent malnutrition and to minimize chyle production and its flow. The medical treatment of filariasis and chyluria is based on dietary modification, i.e. a diet excluding fat, supplemented by medium chain triglycerides (MCT) and high protein content. Diethylcarbamazine (DEC) (Hetrazan, Benocide) dose of 6 mg/kg, in three divided doses after food over a period of 10-14 days, reduces microfilaremia levels by approximately 80-90%.

The cornerstone of management of chyluria is Renal Pelvic instillation sclerotherapy (RPIS). Sclerosants act by inducing an inflammatory reaction in the lymphatic vessels and blockade of the communicating lymphatics by fibrosis. 0.2% povidone iodine is easy to reconstitute, easily available and its quality can easily be ensured, side effects were much less, so recommended as first line sclerotherapy for chyluria. As for the frequency of sclerostant instillation, 8-h instillation for 3 days is more economical and less cumbersome regimen as compared to weekly instillation for 6 weeks.3 In our case, solution of 0.2% povidone-iodine (Betadine) and 50% dextrose was injected and same was repeated every 8 hourly for 3 days and urine was transparent after 3-4 days.

Conclusion

Hereby, we are presenting a case of chyluria, with nephrotic range proteinuria and microfilaria in glomerulus (rare) with Ig M mesangial deposits, secondary to filariasis which was successfully treated by Renal Pelvic instillation sclerotherapy with 0.2% povidine and 50% dextrose and medical treatment (DEC).

References

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