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## Filarial Chyluria

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Chyluria is the passage of milky urine due to a lymphourinary fistula, the cause of which may be parasitic or non-parasitic. Filariasis is the commonest cause of chyluria.

Filarial chyluria has been reported to have a clinical incubation period of 15-20 years(1), while some authors have quoted it to be 5 years also. It is, therefore, uncommon in children, there being no report of its occurrence in children in a statistical analysis of more than 2000 cases of chyluria(2). We are reporting a case of microfilaricidal chyluria in a 10-year-old male child.

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### Case Report

The patient presented to the Pediatric Unit of PGIMER, Chandigarh with complaints of intermittent passage of milky white urine and fever, since 3 months. He also had swelling of right leg one month prior to admission, which subsided spontaneously. There was no history of trauma to the abdomen. Except for the presence of mild pallor, the physical examination was normal.

The urine was milky white and thick and it did not clear on heating with 10% acetic acid. On ether extraction, however, it cleared indicating that emulsified lipids had dissolved. Urine examination revealed albuminuria (4+), 6-8 RBCs per HPF and fat globules identified by Sudan stain. The cholesterol, phospholipid and triglyceride levels of urine were 64 mg/dl, 76 mg/dl and 130 mg/dl, respectively. The corresponding serum levels were 279 mg/dl, 286,148 mg/dl, indicating that the chylous urine contained as much triglycerides as was in the serum. The urine did not contain any HDL cholesterol. Twenty four hours urinary proteins excretion was 1.65 g. The serum electrolytes and renal function tests were normal. The hemoglobin was 9.0 g/dl and the blood counts did not reveal any lymphopenia or eosinophilia. The peripheral blood film showed presence of sheathed microfilaria of *Wuchereria bancrofti*.

The child was treated with diethylcarbamazine (DEC) (6 mg/kg/d) for 21 days for parasitemia. Pruritis and skin rash responded to antihistaminics. By the end of the one month, the urine had completely cleared and peripheral blood films tested negative for microfilaria.

### Discussion

The index case had bancroftian filaria-

sis, of which chyluria is one of the chronic manifestations. Malayan filariasis causing chyluria has not been reported except in areas where brugian and bancroftian filariasis coexist. Of the adult patients infected with filaria, about 2% are estimated to have chyluria(1).

Apart from chyluria, milky urine may also be caused by urates which clear on heating or phosphaturia which clears on adding acetic acid.

The causes of chyluria may be parasitic (*Filariasis, Echinococcosis, Bilharziasis, Ascariasis*) or nonparasitic (congenital lymphangioma)(3).

The adult filaria cause lymphangitis, lymphatic hypertension and finally valvular incompetence. If the obstruction is between intestinal lacteals and thoracic duct, the resulting cavernous malformation opens into the urinary system forming a lymphourinary fistula. The common sites of the fistula are renal fornix, pelvicalyceal system of the kidney, the trigone of the bladder and prostatic urethra. Once such a fistula is formed, milky white urine is passed, which may be continuous or intermittent.

As in our patient, chyluria may be the only complaint, though they may also have dysuria, hematuria due to rupture of minute blood vessels at the fistulous site, weight loss, malnutrition and rarely cachexia. Loss of proteins in urine may add to the malnutrition. Chylous clots may cause renal colic, obstruction and rarely acute urinary retention. Lymphangitis of lower extremities and genitalia may co-exist, as also hydrocele. Pyuria may be associated in 50% of the patients as in this child.

Demonstration of microfilaria in blood gives the conclusive and direct evidence of the etiology of chyluria. A DEC provoca-

tion test is 80% as efficacious in demonstrating microfilaremia is nocturnal sampling of blood for detecting microfilaria.

Microfilaria positivity in urine has been variously reported as 40-75% but could not be demonstrated in our patient(4,5). Hematuria, microscopic or macroscopic, has been reported in all patients of chyluria. The lipid contents of chyluria are mainly chylomicrons, 90% content of which is in the form of triglycerides as in the patient under discussion. The chylous urine has been shown to have complement components C<sub>4</sub> and C<sub>3</sub> due to leak of complement from the retroperitoneal lymphatics in the urinary system(6).

Recirculating lymphocytes in the chyle which would normally be returned to the blood via the thoracic duct are lost in urine in chyluria. This has been postulated to produce lymphocytopenia(7). The lymphocytes are predominantly T-cell resulting in suppression of delayed hypersensitivity and impaired T-cell function(8). In bancroftian filariasis without chyluria, a reduction in T-cell function has not been reported(7).

Lymphangiography is the most useful radiological investigation but is indicated mainly to demonstrate the lymphourinary fistula and levels of obstruction prior to surgery. It may be therapeutic in certain cases.

The management of these patients involves diet manipulations and drug therapy, bed rest and use of abdominal binders, which is said to prevent the lymphourinary reflux by increasing the intra-abdominal pressure. A diet exclusive of all fats except medium chain triglycerides, which enter the circulation through the portal system by-passing the thoracic duct, is recommended.

Diethylcarbamazine has microfilaricid-

al action as well as action on the adult worm. DEC also has a useful role in treatment of chyluria, although repeated doses may be needed to eliminate all the adult worms.

Surgical management of chyluria is indicated only in patients with recurrent colics, retention of urine and progressive weight loss when medical therapy has failed.

No deaths owing to chyluria alone have been recorded and a spontaneous remission in 50% of cases, most within six months, has been noted. Some authors are of the opinion that chyluria is a relatively benign disease process and the patients can be followed safely without medical or surgical intervention(9).

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## **Knowledge, Attitude and Practice of Maintenance of Cold Chain in Immunization**

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Immunization is an important cost effective strategy for child survival(1,2). With the inclusion of heat labile oral polio and measles vaccine in the Universal Immunization Programme, maintenance of cold chain is of paramount importance(3). Inadequate management of cold chain may reduce the potency of the oral polio vaccine to almost zero. In India 15 to 30% cases of poliomyelitis, occur in children who have received primary immunization with the oral polio vaccine(4,6).

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In order to assess the knowledge, attitude and practice regarding maintenance of the cold chain among medical personnel, we interviewed qualified family physicians, final year medical students, interns and non-pediatric residents.

### **Materials and Method**

One hundred and sixty four family practitioners randomly selected from Ahmedabad, Gandhinagar and Baroda; 324 final MBBS students, 138 interns and 105 non-pediatric residents from B.J. Medical College and Smt. N.H.L. Municipal Medical College, Ahmedabad, Government Medical College, Baroda and M.P. Shah Medical College, Jamnagar, were studied.

Information was sought in the questionnaire about the place of storage of vaccines, how they are storing vaccine in the refrigerator, how they are carrying vaccines in the field, how many days they are using the same vaccine bulb, what do they do to the frozen Diphtheria, Pertusis, Tetanus (DPT) and Oral Polio Vaccine (OPV).

In the analysis, persons who answered all the questions correctly were tabulated in 'correct answer' group, who answered correctly for more than 2 vaccines were tabulated as 'partially correct' answer, those who gave wrong answers were tabulated as 'incorrect knowledge' and those who did not give answer as 'no knowledge' group.