Abstract

Chyluria is described as passage of chyle in the urine. It results from the formation of lymphaticorenal fistulae due to various etiologies. The most common implicated cause is filariasis especially in endemic areas. Other uncommon causes include thoracic duct trauma or anatomical abnormalities, pregnancy, malignancy, and tuberculosis. Although tuberculosis has been included as a cause, there are only a few case reports suggesting it as an etiology. Tuberculosis can present in various ways. However, chyluria as initial presentation of tuberculosis has never been reported in the literature. We present here, an extremely rare case of disseminated tuberculosis involving lung, lymph nodes, liver, intestine, and spine presenting as chyluria. The patient responded dramatically with antituberculous therapy with complete clearing of urine.

Keywords: Chyluria, filariasis, tuberculosis

Introduction

Chyluria has always remained a conundrum for clinicians. It is a rare condition characterized by passage of chyle in urine.\(^1\) It occurs due to an abnormal connection between the urinary tract and lymphatic channels. The most common cause in the endemic areas is filariasis.\(^2\) Other parasitic causes include cysticercosis, ascariasis, and echinococcosis. Thoracic duct abnormalities, retroperitoneal abscess, tuberculosis, malignancy, pregnancy, and aortic aneurysm are among the uncommon causes.\(^3\) Although tuberculosis has remained a cause, chyluria presenting as first manifestation of disseminated tuberculosis has never been reported in the literature. We present here a case of disseminated tuberculosis with chyluria as the first manifestation.

Case Report

A 30 years old, previously healthy female, presented with 1-year history of passing milky urine and urinary retention for the last 6 months. She also complained of weight loss of 16 kg in the last 3 months and loss of appetite. There were no other symptoms. There was no history of tuberculosis, filariasis, malignancy, or any surgical intervention in the past. There was no family history suggestive of tuberculosis or any history of contact. Physical examination revealed a thin built female weighing 34 kg. Breath sounds were reduced in the left lung field. There were no other physical findings on examination. Investigations revealed hemoglobin-10.1 g/dl, leukocyte count-7800/mm\(^3\), and erythrocyte sedimentation rate - 46. The renal and liver profiles were normal. Urine appeared milky white [Figure 1] with 2–5 leukocytes, 5–6 red blood cells, and 2+ protein on dip stick test. Urine for acid-fast bacilli was negative and the culture was sterile. The 24 h urinary protein was 1123 mg. Urine for chylomicrons was positive. On subsequent work up for chyluria, microfilaria antigen was negative. The lipid profile was normal. Serum albumin level was 3.9 mg/dl. The chest X-ray revealed infiltrates in both upper zones with left-sided pneumothorax. The contrast-enhanced computed tomography of the chest and abdomen revealed consolidation with tree in bud nodules in both lungs with necrotic para-aortic and hilar lymph nodes and left-sided pneumothorax [Figure 2]. Multiple nonenhancing lesions were seen in liver [Figure 3]. Multiple heterogeneously enhancing lymph nodes were seen in...
retroperitoneum and in mesentery compressing the thoracic duct [Figure 4]. Disco-vertebral destruction was noted in D2 and L1 vertebrae with collection in the left paravertebral area and left psoas muscle suggestive of pott’s spine [Figure 5]. Lymphangiography could not be done due to refusal by the patient. Based on the clinical picture and the investigations, diagnosis of chyluria with disseminated tuberculosis was made and the patient was initiated on antitubercular therapy. On follow-up after one and half months, the appetite of the patient had improved with weight gain of 6 kg. Chyluria had subsided and 24-h urinary protein level had come down to 220 mg.

**Discussion**

Numerous etiologies have been implicated in chyluria with filariasis as the most common one and malignancy, tuberculosis, pregnancy, aortic aneurysm, and thoracic duct abnormalities listed as uncommon causes. Malignancy causes chyluria by extrinsic compression or by spread of neoplastic cells into lymphatic channels causing it to rupture. Pregnancy and aortic aneurysm cause chyluria by obstructing the lymphatic channels. Its most common differential diagnosis includes nephrotic syndrome due to heavy proteinuria. It, however, can be differentiated from nephrotic syndrome by the absence of other features such as lipid abnormalities, edema, and a normal serum albumin.

The clinical presentation is dominated by aggravation of milky urine following a fatty diet with normal renal function. The physical examination may reveal a low-normal blood pressure due to volume loss.

Review of literature revealed only very few cases with tuberculosis implicated as etiology. Le Dantrec had reported a case of chyluria associated with tuberculous peritonitis as cited in the article by Lazarus et al. Its pathophysiology was explained by the formation of lymphatic-urinary fistula. Tubercular lymphadenopathy can cause blockage of lymphatic vessels which in turn may rupture into urinary pathway causing chyluria. A similar case was reported by Wilson and White, in 1976, where tubercular lymph node enlargement was found to be causing chyluria.

The present case with clinical and radiological picture suggestive of disseminated tuberculosis with enlarged lymph nodes...
nodes compressing the thoracic duct along with the significant response to antituberculous therapy suggests that chyluria was related to lymph node tuberculosis.

Various diagnostic modalities can be employed which includes lymphangiography, lymphoscintigraphy, cystourethroscopy, and magnetic resonance imaging (MRI). Although lymphangiography appears to be investigation of choice as it can demonstrate the dilatation of the lymphatic channels and the site of the leakage, its preference is restricted owing to its cumbersome nature needing high technical expertise. Its nonavailability at many centers also restricts its usage. Of the other available modalities, MRI usage has increased in the recent past owing to its noninvasive nature as well as easy demonstration of the dilated lymphatic channels.

Although spontaneous remission may occur in almost 50% of cases, diagnosis, and treatment of the cause should be done as early as possible to prevent the significant loss of lipid and protein from the body as it can lead to dehydration, malnutrition, coagulation abnormalities, and immunodeficiency. Dietary modification with fat restriction is helpful, however, not curative. Endoscopic sclerotherapy using various agents such as povidone iodine and silver nitrate is being used. However, surgical intervention using open or laparoscopic lymphatic disconnection of the affected kidney remains the cornerstone of the definitive management. Other surgical methods such as nephrectomy and lymphovenous anastomosis have also been described in the literature.

**Conclusion**

Chyluria occurs secondary to the fistulous communication between the lymphatic channels and urinary tract with filariasis being the most common cause. Other uncommon causes include thoracic duct obstruction, trauma or congenital abnormalities, tuberculosis, malignancy, and pregnancy. Disseminated tuberculosis with thoracic duct obstruction by enlarged lymph nodes causing chyluria is a very rare manifestation and responds dramatically to anti tuberculous therapy. Clinicians should be aware of this rare presentation of tuberculosis and should always rule it out as a cause of chyluria especially in areas with high prevalence.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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**Conflicts of interest**

There are no conflicts of interest.

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