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Chyluria in Pregnancy-A Decade of Experience in a Single Tertiary Care Hospital

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Background: Chyluria i.e. passage of chyle in urine, giving it milky appearance, is common in many parts of India but rare in west. Very few case of chyluria in pregnant female has been reported in literature. Persistence of this condition may have deleterious effects on health of child and mother. In the present study 43 cases of chyluria during pregnancy and their management seen over a period more than 10 years have been presented.

Objectives: The study aims to present our experience of managing 43 cases with chyluria during pregnancy over a period of ten years from July 2003 to June 2014.

Patients and Methods: Forty three pregnant patients with chyluria, who presented between July 2003 to June 2014 to the department of Urology, Indira Gandhi Institute of Medical Sciences, Patna were included. Patients underwent conservative management and/or sclerotherapy after evaluation. Follow-up of all patients was done by observation of urine color, routine examination of urine and test for post prandial chyle in urine up to 3 months after delivery.

Results: Conservative management by dietary restriction of fat and physical rest was successful in six patients. Thirteen patients improved after first course of sclerotherapy with 10% povidone iodine and 25% dextrose and 19 patients improve after second session. In non-responders, three patients who were near term underwent caesarian section while two patients opted for medical termination of pregnancy at their own will. After sclerotherapy, minor complications like clot retention, fever, hematuria, and abdominal pain were observed in small number of patients and managed symptomatically.

Conclusions: Sclerotherapy for symptomatic relief of chyluria during pregnancy showed high response rate (86.2%) in short term follow-up. Sclerotherapy with 10% povidone iodine and 25% dextrose combination have been proved safe and effective during pregnancy. Medical termination of pregnancy and cesarean section (those near term) may be the options in resistant cases not responding to sclerotherapy.

Keywords: Chyluria; Pregnancy; Sclerotherapy

1. Background

Chyluria is passage of milky white urine due to presence of chyle. This disease is known since time of Hippocrates (400 BC). Chyle is composed of albumin, emulsified fat and fibrin. In tropical country like India,chyluria is a chronicsequelae of filariasis. Up to 10% patient with filariasis may experience chyluria in tropical countries (1). Chyluria is rare in west but endemic in many parts of India. About one third of infected people live in India. Chyluria has no sex predilection; but young adult male from poor socio-economic background are mainly affected (2). It is recognized as tropical disease associated with spontaneous remissions and exacerbation (3). In our state, it is not uncommon to find pregnant females with chyluria.

2. Objectives

The study aims to present our experience of managing 43 cases with chyluria during pregnancy over a period of ten years from July 2003 to June 2014.

3. Patients and Methods

Forty three pregnant female patients, who presented to the department of Urology, IGIMS, Patna, from July 2003 to June 2014, were evaluated for chyluria (Tables 1 - 3). Pregnant patient suffering from other medical illness and isolated hematuria were excluded. All the patients were evaluated by history, physical examination, routine examination of urine for chyle and chylomicron, culture sensitivity of urine, complete blood count (CBC) tests, blood sugar, renal function test, post prandial glucose test for chyle in urine, Zeihl-Nelson staining for Acid fast bacilli, ultrasonography, cystourethros copy for lateralization and to exclude other pathology.

All the patients were managed initially by conservative

means-bed rest, high protein diet, and avoidance of fat, oil, milk, and milk product. Non responders to dietary restrictions were subjected to sclerotherapy. Before sclerotherapy, all patients were administered Isoxsuprine Hydrochloride (10 mg) 1 tab twice daily for two days prior to the procedure and continued two days after completion of procedure. The night before sclerotherapy, patients were given 75 g butter with meal. Ceftriaxone l gwas injected just before the procedure. Under local an aesthesia (2% Xylocaine jelly instilled in urethra), Cystoscope was passed into the bladder, bladder washed and cleared of clots and side of chylus efflux determined. With the help of ureteric catheter 10 mL solution of sclerosant (5 mL of 10% povidone iodine was mixed with normal saline in equal amount to make it 10 mL) instilled slowly into renal pelvis. After eight hours, 5 mL of 25% dextrose mixed with normal saline in equal amount to make it 10 mL was again instilled. Ureteric catheter was left indwelling and for next two days and same solution was instilled alternately at an interval of eight hours. Thereafter, catheter was removed. Follow-up was done up to three months after delivery. Color of urine, routine examination of urine including test for chyle was noted. Minor complications were observed and treated (Table 5). Two patients underwent MTP after failure of sclerotherapy or because of personal preference in desperate cases.

4. Results

In overall, 67.44% of patients were in the age group of 20 to 30 years followed by 30.23% in the age group of 30 to 40 years. 74.41% of the patients were referred to us in their second trimester followed by third trimester (13.95%) and least in first trimester. Thirteen patients (30.33%) had chyluria before pregnancy. In our series, about half (n = 21) patient presented with chyluria only while others presented with other associated symptoms like dysuria (n = 6), chyluria mixed with hematuria (n = 3), urinary retention (n = 10), fever/UTI (n = 4), and decreased fetal movement (n = 4) (Table 4). Eighty one percent of the patients were multigravida while 18.6% patients were primigravida. Conservative management was successful in 13.95% patient. After one course of sclerotherapy thirteen patients improved, 19 patients needed second course of sclerotherapy, while two patients who presented in first trimester underwent medical termination of pregnancy at their own choice. Caesarian section was done in three patients, two of them at 37 weeks of pregnancy and one at 40 weeks of pregnancy after failure of sclerotherapy. One patient who did not improve even after caesarean section responded to conservative management and four weeks course of diethyl carbamazine (100 mg three times a day). Complication of sclerotherapy was transient self-limiting hematuria which occurred in 10 patients. Colicky pain developed in eight patients just after sclerosant instillation and in four patient urine output decreased while four patients developed transient fever and two patients developed urinary tract infection (Table 4).

Table 1. Age Distribution (N = 43)

Age Group	No of Patients	Percentage
20 – 30	29	67.44
30 – 40	13	30.23
40 – 50	01	02.32

Table 2. Number of Patients in Different Trimester (N = 43)

Trimester	No. of Patients	Percentage
1st	05	11.62
2nd	32	74.41
3rd	06	13.95

Table 3. Clinical Features (N = 43)

Presentation	No. of Patients	Percentage
Chyluria alone	21	48.83
Dysuria	06	13.95
Urinary retention	10	23.25
Fever	04	09.30
Decreased fetal movement	04	09.30
Hematuria	03	06.97

Table 4. Complications of Sclerotherapy

Complication	No. of Patients	Percentage
Transient hematuria	10	23.25
Pain abdomen	08	18.60
Decreased urine output	04	09.30
Fever	04	09.30
Nausea and vomiting	02	04.65

Table 5. Success Rate of Sclerotherapy[a]

Sclerosant	No of patients	Response	Recurrence
Silver Nitrate ($AgNo_3$)			
Okamoto and Ohi (4)	129/217	59	40
Tan et al. (5)	46/45	83	16
Sabnis et al. (6)	51/62	82	18
Povidone iodine			
Shanmugam et al. (7)	05/5	100	
50% Dextrose			
Goel et al. (8)	36/41	88	98
Povidone iodine + Dextrose			
Nandy et al. (9)	40/46	87	13
Present study	32/37	86	

[a] All the value are presented as %.

5. Discussion

Chyluria is a state of lymphourinary reflux via fistulous communications secondary to lymphatic stasis caused by obstruction of the lymphatic flow (10). It is a form of chronic filarial syndrome, caused by intermittent discharge of intestinal lymph (chyle) into the renal pelvis and finally into the urine (2). Chyluria occurs only in 2% of the filarial infected patients (11). Filaria is common in tropical and subtropical areas. It is not uncommon finding pregnant patient with chyluria and its associated symptoms. Chyluria is generally thought as harmless conditions in majority but in our part of state fatal outcome has been seen when not properly managed. Persistent chyluria can lead to malnutrition due to loss of protein and lipid (12). It becomes more important to diagnose and aggressively treat pregnant patient to prevent morbidity and mortality of mother and child. Chyluria is a urological manifestation of lymphatic system disease which may lead to nutritional deficiency, recurrent clot colic, urinary retention, urinary tract infection, hematuria and a state of compensated immunosuppression. Chyluria may lead to serious immunological and hemostatic deficit due to IgG and IgA deficiency (13). There are various theories regarding development of chyluria; but nowadays, two theories have been implicated as causative factors them:

A) Obstructive theory [Aye and Aung, 1975 (14)]

B) Regurtitative theory [Ngan and Leong, 1977 (15)]

5.1. Classifications

5.1.1. Parasitic-Predominent Forms

This is the commonest form in india and mainly associated with wuchereria bancrofti infection.

5.1.2. Non Parasitic

Non parasitic causes includes tuberculosis, congenital lymphangioma of urinary tract, trauma, pregnancy, malignant infiltration of lymphatics (13).

5.2. Etiopathogenesis

The most common etiological factor for chyluria is filariasis and should be considered filarial unless proven otherwise particularly in filarial belt (10). Chyluria is the end result of impairment of retroperitoneal lymphatics due to vicious cycle of infection sclerosis obstructive retrograde dilatation, stasis backflow and spontaneous rupture with fistualisation into the urinary tract.

5.3. Clinical Features

Pregnant female with chyluria may present as monosymptomatic or may be polysymptomatic. In the present study we encountered half of the patients (n = 21) were suffering from chyluriaalone followed by urinary retention (n = 10) dysuria (n = 6) fever and decreased fetal movement (n = 4 each) and hematuria (n = 3).

5.4. Diagnosis

There are so many investigations for diagnosis and management of chyluria apart from routine examination of blood and urine. Specialized tests are test for chyle in urine i.e. ether test, methylene blue test, AFB in three consecutive morning sample of urine. Microfilaria in centrifuged preparation of urine. Detection of microfilaria is described in centrifuged preparations of cystoscopically catheterized urine, but very rarely in normally voided urine samples specially the chylous sample (16). Other tests are radiological i.e. Retrograde pyelography, Lymphangiography, Lymphangioscintigraphy, Intravenous pyelography, CT-scan, MRI, ultrasonography, enzyme linked immunosorbent assay (ELISA) for filarial antigen in blood and antibodies specific to recombinant filarial antigen wbsxp-I have been used to develop in ELISA for detecting circulating antigen filarial in serum of patient with filariasis (17). Another ELISA to detect specific IgG4 antibodies in un-concentrated urine has been developed (18). Serum type one collagen and type III procollagen. Urethrocystos copy and lateralization of chylous efflux forms important diagnostic modality for management. Recently, triglyceride has been demonstrated to be universally present in chyluria, even in clear urine. The amount of triglyceride has been found to be directly proportional to haziness of chylous urine. Triglyceride might be used as marker for evaluation of chyluria. Urine albumin is abnormally high in most cases (19). We tailored investigation to routine examination of urine, acetic acid test, AFB in three morning sample of urine, investigation to Test for chyle in urine after injestion of 75 g of butter on night before the test and send first morning sample of urine (Ether test) and Urethrocystos copy and lateralization. Ingestion of fat enhances the chyluria and helps in diagnosis.

5.5. Acetic Acid Test

Addition of few drops of 10% acetic acid in 1 mL of chylous urine clears the opacity in cases of phosphaturia, while opacity persists in chyuria (20).

5.6. Ether Test

Equal part of chylous urine and ether mixed in a test tube and shaken vigorously. Cleared urine indicates chyluria.

5.7. Management

By conservative management with rest, high protein diet, hematinic multivitamins some patients improve (n = 6) but this should not be tried for more than two weeks. If symptoms not improve, because of devastating squeal due to loss of protein and immunoglobulinssclero ther-

apy should started without delay. Diethyl carbamazine should not be used in pregnant patient because its safety has not been established in pregnancy; although, it is being used by some physician in these cases without reported ill effect on foetus. In our study we found that most of the patient (32/37) improved by three day regimen of sclerotherapy with 10% povidone iodine mixed with equal amount of normal Saline and 25% dextrose. Outcome of pregnancy was not affected with this regime and all the patient deliver full term healthy baby. There are various agent used for sclerotherapy such as $AgNO_3$, Povidone iodine, dextrose and radiographic contrast material in different concentrations. Severe and fatal complications such as interstitial nephritis, papillary necrosis, acute tubular necrosis are associated with use of silver nitrate as sclerosant in chyluria. Mortality has been reported due to acute tubular necrosis on instillation of silver nitrate in both ureters (21, 22). Povidone iodine is safe and effective for managing chyluria (23). It is as effective as 1% $AgNO_3$ but not associated with severe and fatal complications such as interstitial nephritis, papillary necrosis and acute tubular necrosis. Apart from this, it has antiseptic, antibacterial and antifungal properties. Combination of sclero therapy using a 5% Povidone iodine and 50% Dextrose solution has been found to be safe and cost-effective minimally-invasive therapy for chyluria refractory to conservative treatment. A 5 mL of 50% dextrose combined with 5 mL 0.2% povidone iodine provides stronger and better fibrotic response (9). Different workers (8, 9, 23, 24) found 87-100% success rate of sclerotherapy with betadine alone or in combination with dextrose. Our success rate with combination sclerotherapy of betadine and dextrose was 86.2%, which is similar to result of other workers (Table 5).

5.8. Complications of Sclerotherapy

Complications of sclerotherapy was transient hematuria (n = 10) which developed after two days of sclerotherapy, which was managed by abandoning the procedure, hydration of patient and antibiotic coverage. Colicky pain developed in 8 patients just after instillation of sclerosant which subsided in 10 minutes period. Few patients required antispasmodic Decreased urine output developed in 4 patients which was managed by of of diuretics for two to three days and adequate hydration. Fever and Urinary tract infection was managed with antipyretics and appropriate antibiotics. Nausea and vomiting developed in two patients managed by antiemetic drugs.

By dietary restriction and bed rest some of the pregnant patient with chyluria may improve. Sclerotherapy with 10% povidone iodine and 25% dextrose is a safe and effective method with high cure rate. Very few and complications are associated with this mode of treatment. Medical termination of pregnancy and caesarian section may be the option in resistant cases.

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