

EFFECTIVENESS OF SINGLE DOSE POVIDONE IODINE SCLEROTHERAPY FOR THE TREATMENT OF CHYLURIA

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Abstract

Objective: To evaluate the effectiveness of single dose 5 % povidone iodine renal pelvic instillation sclerotherapy for the treatment for chyluria.

Methods: In a prospective study from January 2009 and till June 2013, 47 patients presenting with milky urine (chyluria and hematochyluria) were included. Patients with other co-morbid illness like diabetes, urinary infection, renal stone disease, chronic pyelonephritis were excluded from the study. Apart from ether test, the presence of lymphocytes in urine and urine triglycerides levels were also done to confirm chyluria. Under local anesthesia, cystoscopic evaluation revealed right-sided efflux in 11 (23.4%), left-sided in 36 (76.6%), and no bilateral involvement was detected. 5F open-ended ureteric catheter was introduced in the ureteric orifice of affected side. Freshly prepared 10 ml of 5 % povidone iodine solution was instilled over a minute with the patient in Trendelenburg position.

Results: Total of 47 patients were enrolled (26 males and 21 females; mean age 41 years, SD 8.4, range 29–71) with a mean follow-up of 12 months. Immediate clearance was seen in all patients and recurrence in 9 (19.15 %). Overall success rate 80.85%. Mean disease-free duration was 12 months. Three patients had moderate to severe flank pain.

Conclusion: Single dose 5 % povidone iodine sclerotherapy is a effective treatment for chyluria. As the patients discharged on the next day after procedure, it can be offered as a day care basis, so continuous ureteral and urethral catheterizations can be avoided.

Key Words: Chyluria, povidone iodine, sclerotherapy.

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Introduction

Chyluria, the passage of chyle in the urine, is due to the rupture of retroperitoneal lymphatics into the pyelocalyceal system, giving urine a milky appearance[1]. It is a common problem in subtropical and tropical countries such as India[2]. The most frequent cause is filarial parasitic infestation. In endemic areas, approximately 10% of the populations are infested, 10% of whom eventually develop chyluria[3]. In about 20% of individuals, the disease takes a relentless course[4].

Treatment with high protein and low fat diet is offered in most of the cases but is effective only in some patients,

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whereas antifilarial drugs are not helpful in this late manifestation of parasitic infestation by *Wuchereria bancrofti*[5]. In patients who do not respond to conservative management, renal pelvic instillation sclerotherapy (RPIS) is generally used to cause sclerosis of pyelolymphatic fistulae. Wood in 1929 noted the incidental disappearance of chyluria after retrograde pyelography[6]. Since then, various sclerosing agents have been instilled into the renal pelvis as an office procedure. Several investigators have used silver nitrate solution, with variable results.

Despite its widespread use, silver nitrate is often associated with severe side effects such as interstitial nephritis and pyonephrosis [7]. Various studies have been conducted to study the dose, efficacy and side

effect profiles of povidone iodine as sclerosing agent [7-13]. It has been used either as a single instillation of diluted solution or as a 8 hourly instillation of total 9 doses or in combination with 50% dextrose twice a day for 3 days or with a contrast agent as single instillation [8,10-12]. However there is no consensus in dose and frequency of the sclerotherapy using povidone iodine solution till date.

Materials and Methods

A total of 47 patients with chyluria and hematochyluria (26 men and 21 women, M:F =1:1.23) [Fig.2], with a mean age of 41 years (range 29 to 71, SD 8.4) [Fig.1], mean follow-up 12 months between January 2009 and June 2013 were included in the study. Patients with other co-morbid illness like diabetes, urinary infection, renal stone disease, chronic pyelonephritis were excluded from the study.

Milky urine was present in all 47 patients. The duration of chyluria had varied from less than 6 months to more than 9 years. All patients had previously received a course of diethylcarbamazine and single dose of albendazole. Urine for chyle was detected by ether test and by estimating triglycerides in urine samples and lymphocytes in urine. After a detailed clinical history taking all the patients underwent routine hematological investigations, renal function tests, routine urine test and culture and sensitivity testing of urine. Ultrasonography was done in all cases and found normal.

Patients were assessed by cystoscopy under local anaesthesia. All patients were advised to take fatty meal night before to help lateralizing the chylous efflux. A 5F open-ended ureteral catheter was introduced into the ureteric orifice of the affected side and passed up to the renal pelvis. A freshly prepared solution containing 10mL of 5% povidone iodine solution was instilled via ureteric catheter over a minute with the patient in Trendelenburg position. Patients remained in same position for five minutes with the ureteric catheter in situ to prevent sclerosant from being drained into the bladder. Routine prophylactic oral antibiotics and oral analgesics were given for 7 days after instillation.

Patients were followed up the next day to assess the persistence or clearance of milky urine and thereafter at 3 monthly intervals for one year. Clearance of chyluria up to the last follow-up was considered as success.

Results

All the patient had immediate clearance. Out of 47 patients 38 (80.85%) had complete disappearance of milky urine after single dose and were symptom free till last follow up. The remaining 9 (19.15%) patients

underwent single dose RPIS after 3 months of initial instillation (Fig.4). Three patients developed recurrence even after second dose and underwent RPIS after 3 months of second instillation. Two patients had persistence of symptoms till last follow up. The complications observed in our study included urinary tract infection in 4 (8.52%) patients and colicky pain moderate to severe in intensity in 3 (6.38%) patients (Fig.5). All responded to conservative treatment.

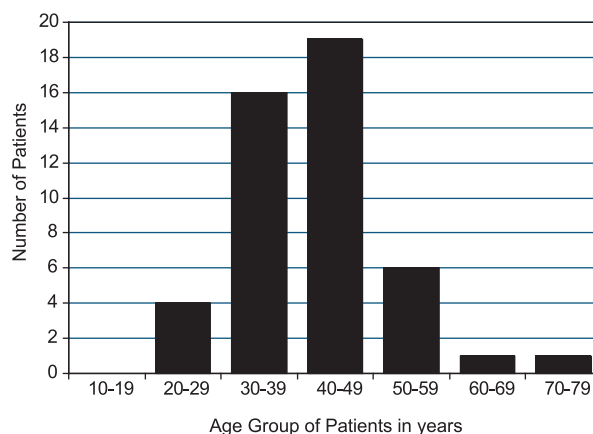


Fig.-1: Distribution of patients according to age group

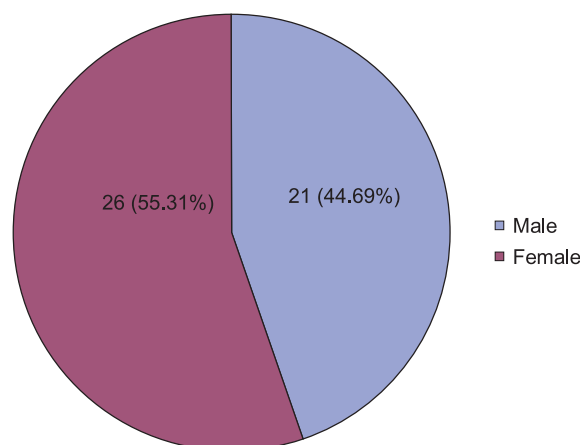


Fig.-2: Distribution of patients according to sex

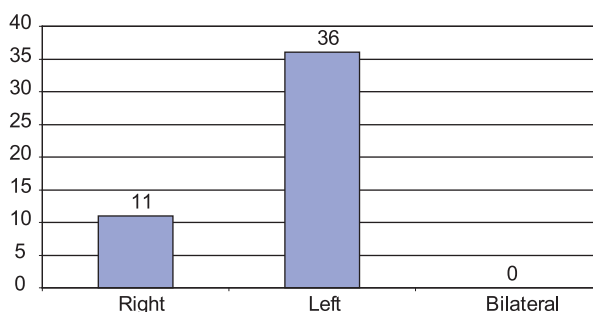


Fig.-3: Distribution of affected kidneys.

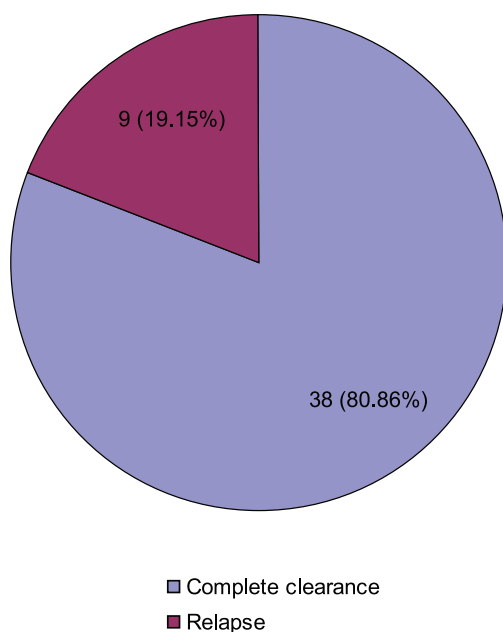


Fig.-4: Outcome till last follow-up

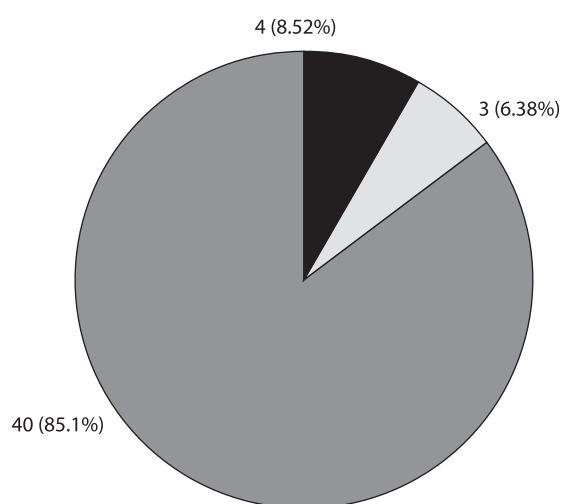


Fig.-5: Complications

Discussion

Chyluria is classified as parasitic and nonparasitic [1]. In tropical countries, such as India, filarial parasitic infestation is the most common cause. Chyluria or hematochyluria mainly develops as a late complication of filarial infection, causing hypoproteinemia, weight loss, and immunologic disorders from severe proteinuria [3]. Because chyluria is a late manifestation of filariasis, active microfilarial infestation is rarely demonstrable, and hence, it is often difficult to prove the association between the two [14].

Ether test is less sensitive (31%) but lymphocyturia is a more sensitive tool to confirm the diagnosis of chyluria than the ether test [8]. In our study ether test was positive only in 35% of the patients. However, lymphocyturia was present even in the patients with a negative ether test. Post prandial urinary lipids especially urinary triglycerides is a reliable marker in the evaluation of chyluria with 100% sensitivity and specificity [15,16]. Urinary triglycerides were routinely done in all our patients and it was positive in all patients.

In our study majority patients were in the a Conservative management with antifilarial and dietary fat restriction is sometimes successful in patients with mild symptoms [2,3]. Hashim and associates advocated substitution of fat with medium-chain triglycerides [17].

Patients with chyluria resistant to conservative treatment often respond to RPIS using various sclerosant (ie, silver nitrate [0.5% to 2%], dextrose [50%], saline, bromide [10% to 25%], sodium iodide [15%], contrast agents, or povidone iodine [5% to 10%]) [1,18–20]. Recently, other minimally invasive procedures such as endoscopic treatment (guide tube method) and laser ablation of chylolymphatic communications have also been tried [20]. Surgical treatment in the form of renal pedicle lymphatic disconnection and nephropexy, although most effective, are often reserved for severe cases of chyluria resistant to RPIS [1–3].

Silver nitrate as a sclerosant has been used by most and is often associated with a number of serious side effects, including sepsis, interstitial nephritis, pyonephrosis, ureteral strictures, arterial hemorrhage, chemical cystitis, papillary necrosis, acute renal failure and even death [7, 21-23]. Povidone iodine as sclerosant was found to have less of these side effects and was equally effective [1]. It is nontoxic, a nonirritant, economical, and easily available. It has local sclerozing action as well as antiseptic, antibacterial and antifungal actions and it is easy to prepare in desired concentration [11]. To date the problems regarding best dose, frequency and total number of instillation and concentration of povidone iodine RPIS remains unanswered.

In a study by Shanmugam et al, 0.2% povidone iodine was used in five patients, all considered successful at 6 months [12]. Although there were few patients and a short follow-up, these initial results prompted others to use povidone iodine as an alternative to silver nitrate. In another study a combination of 5 ml povidone iodine with 5 ml of 50% dextrose was used, which was instilled

twice a day for 3 days. Observed results were complete remission in 87%, persistence in 13% and noted recurrence in 2 out of 47 patients [10]. Sharma et al reported the efficacy of single instillation of combination of 5% povidone iodine with contrast agent (Urograffin 76%) diluted with sterile water in a ratio of 1:1:3. They had a success rate of 87.5% and was comparable with the results of other series with extended instillations [13]. Similarly, Murthy shared their experience of povidone iodine instillation. When total of 9 doses were given at 8-hour intervals for 3 days, 21 of 26 patients showed complete clearance. In 4 patients, recurrence was noted and a repeat injection was given after 4 weeks, with success, in 2 patients [24].

Since Shanmugam achieved complete response with this new agent, though the number of cases and follow up duration was short we decided to study the efficacy of single dose 5% povidone iodine in the management of patients with chyluria. Complete clearance just after instillation and success rate of 80.85% with single dose povidone iodine sclerotherapy in our study is comparable to the result of other studies using mostly 9 doses or combination sclerotherapy. Single dose sclerotherapy has certain advantages over 9 dose regimens. Single dose protocol does not require admission for subsequent instillations and also keeps patients catheters and tubes free. So, it is performed as a day care procedure with good results. For this reason, cost effectiveness and patients' satisfaction is higher with this treatment modality.

Conclusions

In conclusion single dose 5% povidone iodine sclerotherapy in chyluria has comparable efficacy to other regimens of RPIS. It is a safe, cost-effective, minimally invasive office procedure for chyluria refractory to conservative treatment and offers the treatment on a day care basis so continuous ureteral and urethral catheterizations are not necessary. However, randomized control studies will confirm its efficacy better.

Conflict of Interest : None declared

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Abbreviations:

RPIS : Renal pelvic instillation sclerotherapy