Effective Concentration of Povidone Iodine Renal Pelvis Instillation in the Treatment of Chyluria.

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I. Introduction

Chyluria is the presence of chyle in the urine. This has been recognized since the time of Charak (300 BC) who described it as 'Shuklameha' Hippocrates recognized and described chyluria (1, 2). Following discovery of the lymphatic circulation by JEAN Pecquet in 1651, Moellenbrogii (13) ascribed chylous urine to an abnormal junction of the lymphatic and urinary systems. Nearly 100 years later Otto wucherer, working in Brazil in 1866, found microfilaria in the urine of a patient with hematuria. Wood in 1929 first demonstrated pyelolymphatic backflow in retrograde pyelography. KITTREDGE and Associates and others utilized lymphangiography to demonstrated the anatomic involvement seen in this condition. It is not uncommon in the Asia especially in India, Japan, Hong Kong and Taiwan. It is rare in western countries. (4,11). It is believed to occur as a result of communication between the lymphatics and the renal collecting system. (3, 5, 6, 11) Although not life threatening in most cases, it can be disturbing and sometimes debilitating if the chyle loss in urine is profuse. The disease is largely the chronic stage of filarial disease and is therefore an endemic disease.(7) Management includes conservative measures like avoidance of fat, anti filarial drugs etc; minimally invasive techniques like renal pelvic instillation of sclerosing agents and invasive procedures like renal decapsulation, retroperitoneoscopic nephron lympholysis etc.

Instillation of 1% silver nitrate into the renal pelvis has been the initial treatment modality if conservative measures failed. However, this procedure may be associated with serious complications like acute renal failure (8), life threatening hemorrhage (9) and death (10). Povidone iodine as a sclerosing agent has been shown to be effective and safe in the management of chyluria. Herein, we present our experience of treating chyluria with povidone iodine instillation in to the renal pelvis in the Department of Urology Stanley Medical College, Chennai, Tamilnadu, India.

II. Aim And Objective

1. To determine the percentage of Povidone Iodine required for cure of chyluria after single dose renal pelvis instillation.
2. To compare efficacy of percentage of Povidone Iodine versus side effects

III. Materials And Methods

Between September 2012 and April 2015, all patients who presented with complaints of milky white colored urine (chylous) were evaluated. Patients were asked to bring freshly voided urine in a transparent bottle. After inspection Ether test was done to demonstrate chyluria.

IV. Investigations

Ether test
5cc of ether is added to 5 cc of urine added to see the solubility.
Urine - albumin
- Sugar
- Deposits
Urine culture and sensitivity
Blood
- TC
- DC
- ESR
Blood smear for microfilaria
Blood urea
Sr.Creatinine

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Blood sugar
- fasting
- Post prandial
Ultrasound KUB
X ray KUB.
IVU done in selected cases who presented with
1. Haematuria
2. haemotochyluria.
3. Ultrasoundgram showing subtle changes in the kidney
4. Episodes of febrile illness

Dietary Advice
To avoid saturated fatty acids fatty diet - avoiding ghee,butter,ground nut oil. Advised to take sunflower oil.

Medical Treatment
Diethylcarbazine (6 mg/kg Body weight) for - 3 weeks. restriction of strenuous activity. If urine culture was positive they were treated according to the sensitive drugs before povidone iodine instillation.

Study Design
Our study is a prospective study undertaken in our institution from September 2015 to April 2015. Ethical committee approval was obtained and around 72 patients with chyluria are stratified into 4 groups as stated below. The concentration of povidone iodine used
Group I - 0.5 % - 18 Patients
Group II - 1 % - 18 Patients
Group III - 2.5 % - 18 Patients
Group IV - 5% - 18 Patients

The commercially available form povidone iodine is 5 %. It is diluted with distilled water to get the required concentration. For each patient povidone iodine from a newly opened bottle was used. Patients were selected according to registration in the order of 0.5, 1, 2.5, 5 % concentration.

V. Procedure
On the day of procedure Patients were advised to take butter 25 gms with bread and if non vegetarian 2 boiled eggs 2-3-hours prior to cystoscopy. They were asked to collect urine and show it to us just before putting the patient on table. If the urine is clear then the procedure is postponed. If the urine is chylous Injection Cefataxime 1 gram is given IV after test dose. Under local anesthesia with 20 F cystoscopewith 30 degree telescope was done with Normal saline for irrigation. The side of efflux was noted carefully. If reflux was found on both sides then right side is selected for treatment and the left side instillation after a period of 3 weeks with the same dose.

A 5 F ureteric catheter was passed into the selected ureter and Positioned in the pelvis. 5 - 7 ml of selected prepared concentration of povidone iodine was instilled into the renal pelvis slowly over a period of 1 to 2 minutes. During the procedure any pain or other reaction was noted. Patients were observed for 24 hours and discharged the next day. At the time of discharge the following were noted
1. Fever
2. Loin pain
3. Haematuria.
4. Urine sample for culture.

All patients were reviewed after 3 weeks and if still symptomatic and the urine chyle is positive then the same procedure was repeated with the next higher concentration of povidone iodine on the same side in unilateral cases and in bilateral cases on both sides in 2 sittings with a time interval of 3 weeks. The maximum concentration used was 5 % and if there was no response then povidone iodine double wash was given i.e. 5 % given as usual followed by another wash after a time interval of 6 to 8 hours. If still not responding then we group them as refractory. All the cases were reviewed at 1, 3, 6 and 12 months.

VI. Observation
Age Incidence
A Total of 72 patients were included in this study, of these the maximum incidence of chyluria occurs between the third and fourth decade.

1 patient - less than 20 years
13 patients - 20 to 30 years
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25 patients - 30 to 40 years
15 patients - 40 to 50 years
12 patients - 50 to 60 years
6 patients - 60 to 70 years.

Sex Incidence
Of the total 72 patients
Females - 44 / 72 patients (61.11 %)
Male - 28 / 72 patients (38.88 %).
The sex incidence ratio was almost 1.6: 1.

Presenting Complaints
The duration of complaints of passing milky urine varied from 1 month to 20 years and most of the patients had symptom free interval in between. Haematochyluria was present in 8 patients and history of passing chylous clots was found in 11 patients. Obstructive voiding symptoms were found in 3 cases. Acute urinary retention was found in 3 cases. Of the 28 male patients 2 has bilateral hydrocele and none of the 72 patient had filarial limbs.

Cystoscopy Findings
chylous efflux On the right side - 27 cases
chylous efflux on the left side - 23 cases
chylous efflux bilateral - 22 cases.

Urine Culture- Positive
Total - 7 cases
E.Coli - 5 cases
proteus - 1 case
klebsiella - 1 case
Renal function was normal in all patients. Of the 72 patients 2 were diabetic and after povidone iodine instillation there was no significant side effects. Disappearance of chyle after 3 weeks of Povidone Iodine instillation was noted as success. Appearance of chyle at any time during the study period was considered as failure.

Group I
Povidone iodine concentration - 0.5 %
Total number of cases -18 cases
Success - 13 cases
Failure - 5 cases
Percentage of success - 72.22 %
Complications
immediate - nil
Late - nil
Group II
Povidone iodine concentration -1%
Total number of cases - 18 cases
Success - 7 cases
Failure - 11 cases
Percentage of success - 33.33 %
Complications
immediate - nil
Late - nil
Group III
Povidone iodine concentration - 2.5 %
Total number of cases - 18 cases
Success - 15 cases
Failure - 3 cases
Percentage of success - 83.33 %
Complications
immediate - nil

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Late - nil  
Group IV  
Povidne iodine concentration -5%  
Total number of cases - 18 cases  
Success - 17 cases  
Failure - 1 case  
Percentage of success - 94.44 %  
Complications immediate - severe pain (38.8 %)  
Late - nil  
Of the 20 failures 8 cases had bilateral reflux and 12 had unilateral reflux. Failure was not influenced significantly by unilateral or bilateral reflux. In our study of 72 cases no patient developed anaphylaxis following povidone iodine instillation. In our study 2.5 % concentration of povidone iodine has more success rate (83.33 %) with no significant side effects.

VII. Discussion

Yamauchi (11) has reported the usual occurrence of chyluria between the second and fifth decade of life. In our study out of 72 patients 54 were in between the second and fifth decade of life. (75 %). According to Torres and associates, no sex predominance exists (42). In our study out of the 72 patients 44 were females and 28 were male. The sex incidence ratio was 1.6: 1. The duration of symptoms ranged from 2 month to 20 years. Most of them had symptom free interval in between. The symptom free interval varies from months to years. Shanmugam used single instillation of .2 % povidone iodine in five patients and there was no recurrence in 6 months follow up. (10) Singh had studied two-types of dosage schedule in chyluria patients. In the first protocol, 8 h instillation of the povidone iodine was done for 3 days (total of nine doses) while in the second protocol weekly instillation of the povidone iodine was done for 6 weeks. The total number of patients included in the study was 27 in first protocol and 25 in the second protocol. At median follow-up of 32 months in 8 h instillation group there was 85% response rate with mean disease free duration of 27 months. While in weekly instillation group a response rate of 75% with disease free duration of 22 months were observed. (88) Shailendra conducted a randomized prospective and comparative study to evaluate the efficacy and toxicity of 1 % silver nitrate, 0.2% povidone iodine and 50% dextrose as RPIS for treating chyluria. The dextrose treatment was discontinued at mid-term because of poor success. Of 85 patients, 44 received silver nitrate and 41 povidone iodine; both groups were well matched and the mean follow-up was 28.4 and 23.3 months, respectively. 'Immediate clearance' was recorded in 91% and 98%, and recurrence in 21% and 22% of patients after the first course of RPIS, after silver nitrate and povidone, respectively; Kaplan-Meier estimates of 'disease-free duration' in the two groups (23.6 vs 20.1 months) were also similar (P = 0.7906). The cumulative success rate after two courses of RPIS was 82% (silver nitrate) and 83% (povidone; P = 0.1). Five (11%) patients in the silver nitrate and one (2%) in the povidone group had significant flank pain during treatment. He concluded that Povidone iodine 0.2% is as effective for RPIS as 1% silver nitrate.

In our study 5° Povidone iodine concentration (Group IV) had a Success rate of 94.44 % with severe pain as immediate Complication (38.8 %), with a recurrence rate of 3.6 %. With 2.5 % Povidone iodine concentration (Group III) the Success rate was - 83.33 % with recurrence 16.67. The manifestation of chyluria depends upon the site of involvement and the anastomotic variation of lymphatic system in the individual patient. The anastomotic variation primarily occurs at the cisterna chyli where the lumbar trunks and the intestinal trunks join. The classical cisterna chyli is seen in only about 47% of normal individuals, and the intestinal trunk in such cases drains in the lumbar trunks of one side or directly in the thoracic duct either as a single trunk or as multiple smaller ones. This may explain the presence of unilateral chylousoedema of only one extremity or unilateral chyluria. The unilateral findings are more common on the left side.(76,77) In our study of the 72 cases chylous efflux on the right side was for 27 cases and for the left side 23 cases and bilateral efflux in 22 cases with a ratio of the ratio Right : left = 1.17 : 1 with a slight shift to right side.

VIII. Summary

Between September 2012and April 2015 all patients of chyluria were studied with single dose renal pelvis instillation of PovidoneIodine 5 % PovidoneIodine had the best success rate in clearing chluria (94.4 %). The most common complication was severe pain which occurred in 38.8 %) 2.5 % PovidoneIodine had a success rate of 83.33 % with no significant during and after the procedure. 1 % PovidoneIodine had the most failure. The success rate was 33.33 %, which was worse than .5 % PovidoneIodine. There was no significant complication we cannot come to a conclusion why this variation happened. 0.5 % PovidoneIodine had a the success rate of 72.2 % with no significant complications.
IX. Conclusion

We conclude that 2.5 % Povidone iodine single pelvis instillation is the ideal dose, which gives good success with no major complications.

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