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Sclerotherapy for Chyluria Using Single Dose 0.2%Povidone-Iodine: A Prospective Study of 45 Patients.

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Aim:-*To assess the efficacy of single dose 0.2% povidone -iodine instillation in the management of chyluria. Materials & method: Forty-five patients who presented with chyluria to surgical out-patient department at Dr RML Combined hospital, Lucknow from JUNE 2014 to FEBRUARY 2015. There were 27 males and 18 females, between age groups 25 to 48 years. After taking informed consent for the study and detailed clinical history and by appropriate investigations and demonstrating chylous efflux at cystoscopy, all were planned for a day care procedure under local anaesthesia using 5Fr open-ended ureteric catheter, which was introduced in the ureteric orifice of affected side. Freshly prepared 10 ml of 0.2% povidone iodine solution was instilled within the renal pelvis while patient being in Trendelenburg position. Mean follow-up was for 12 months.*
Results: *There was remarkable disappearance of chyluria in all the 45 patients and 39 (86.6%) remained free of chyluria till their last follow up in FEBRUARY 2016. Two(4.4%) patients presented 4 and 6 weeks later with recurrence and were referred for other treatment modality on patient's request and Four (11.1%) patients lost for follow-up after 3months.*
Conclusion:*With the results of the above study, Single dose instillation of 0.2% Povidone iodine sclerotherapy is remarkably safe, inexpensive, effective, minimally invasive and can be done day care basis .However, further comparative studies are needed to establish its efficacy better.*

I. Introduction

Chyluria, recognized since the time of Hippocrates (400BC) is described as the passage of milky appearing white urine due to the presence of chyle composed of albumin, emulsified fat and fibrin in varying proportions that are absorbed by intestinal lacteals. It is associated with spontaneous remissions and exacerbations [1]. Although rare in the West, it is not uncommon in Asia. It has been recognized as a tropical disease more prevalent in the rural and poverty stricken population .It is a chronic condition characterized by passage of milky appearing chylous material in urine due to abnormal pyelolymphatic communications. 2 The symptoms are usually of sudden onset and mostly occur in young adults. Although not life threatening it often causes morbidity due to its presentation like hematochyluria, colics etc. It also leads to nutritional deficiency and a state of compensated immunosuppression[3].Chyluria is endemic in South-east Asia, China, India, Japan, Taiwan, parts of Africa, Australia and South America[4].In endemic areas, approximately 10% of the population are infested, 10% of whom eventually develop chyluria[5]Chyluria is associated with abnormal retrograde or lateral flow of lymph from the intestinal lymphatics of the kidney, ureter or bladder allowing chylous material to be discharged into the urinary collecting system [6]. Various causative factors have been implicated. Passage of chyle into the urine has been related to a consequence of the rupturing of the lymphatic varices leading to the aperture of one or more perirenal lymphatic vessels to the pyelocaliceal system, characterized by milky urine, rich in protein, lipids, cholesterol and triglycerides. A malformation of the chyliferous vessels of the small intestine associated to hypoplasia of Pecquet's cistern has also been suggested. On anatomical basis, the renal lymphatics follow the renal vein and end in lateral aortic glands; efferents from which flow to the lumbar trunks. The intestinal trunks receive lymph from stomach, intestine, pancreas, spleen and liver. Physiologically chyle travels from the lacteals to the cisterna chyli or thoracic duct. Pathological obstruction and/ or insufficiency of the valvular system of lymph channels leads to retrograde flow to lumbar lymph glands draining renal lymphatics. Thus there is a short circuiting of chyle drainage from intestinal lacteals to renal lymphatics.

Treatment with high protein and low fat diet is offered in most of the cases but is effective only in some patients, whereas antifilarial drugs are not helpful in this late manifestation of parasitic infestation by Wuchereriabancrofti[7] 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[8] Different sclerosing agents have been used since then for the treatment of chyluria. Although silver nitrate is one of the most commonly used agent it is associated with serious side effects even death[9] Because of these side effect profiles of silver nitrate, safe but

effective sclerosing agent is being sought. After Shanmugan et al reported their experience with povidone iodine as a sclerosant in 1998, various studies have been conducted to study the dose, efficacy and side effect profiles of this agent.[1,4,10-13] 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[1] However, there is no consensus in dose and frequency of the sclerotherapy using povidone iodine solution till date.

II. Materials And Methods

From JUNE 2014 till FEBRUARY 2015, forty five (45) patients presenting with milky urine were prospectively included in this study. Written and informed consent was taken before going ahead with the treatment. Chyluria was confirmed by estimating triglycerides in early morning urinary samples. After a detailed clinical history ,all patients underwent routine hematological investigations, renal function tests, routine urine tests and culture and sensitivity testing . Ultrasound of whole abdomen was done as a part of the protocol in all the patients.Chyluria was graded according to symptoms severity into 3 grades.

GRADE:I -patients passing milky white urine.

GRADE: 2 - milky white urine associated with whitish clots or episodes of clot retention,.

GRADE: 3-patients with haematochyluria

Patients were assessed by rigid cystoscopy under local anesthesia. Cystoscopy showed chylous efflux on the right side in 21 patients and 24 on the left side. None had bilateral involvement. All the patients were advised to take a fatty meal 6hours before, to help lateralizing the chylous efflux. A 5Fr. open ended ureteric catheter was introduced into the ureteric orifice of the affected side and passed up to the renal pelvis. Freshly prepared 10 ml of 0.2% povidone- iodine solution was instilled via a ureteric catheter with the patient in Trendelenburg position. Povidone iodine 0.2% was prepared by adding 8ml of distilled water in 2 ml of 5% povidone iodine solution. Clearance of chyluria after RPIS up to the last follow up was considered as success whereas failed therapy is the persistence of chyluria. Relapse of the milky urine after an initial clearance of chyluria was recorded as recurrence. The interval between instillation and recurrence or last follow up (if the patient is recurrence free) was documented as the disease free duration (DFD). All patients were discharged on the same day after 4 hours of observation on oral antibiotics and analgesics. Patients were followed up the next day to assess the persistence or clearance of milky urine .Mean follow-up was upto 12months

III. discussion

Surgical management of chyluria is indicated when conservative measures fail. Conservative measures include dietary manipulations with omission of long chain triglycerides(TG) ,drug therapy with diethyl carbamezine, bed rest, abdominal binders etc. Median chain TG's (<12 C atoms)are advocated as they are directly reabsorbed via the portal vein bypassing the lacteals and lymphatics.

Endoscopic sclerotherapy with 1% silver nitrate has been the initial modality when conservative treatment failed. However, this may be associated with serious complications like acute renal failure, papillary necrosis, massive hematuria and even death. Even though not as extensively tried as silver nitrate, povidone iodine has been shown to be effective[14]. Instillation of povidone iodine initially results in inflammatory oedema and blockage of the lymphatics. Later ,inflammatory fibrosis leads to permanent obstruction of the lymphatic channels and cure of chyluria. Povidone iodine is iodine complexed with the non ionic surfactant polymer polyvinyl pyrrolidone and has a local sclerosant action. As a sclerosant it has been used in the management of renal cyst[15]and lymphocele following renal transplantation[16]. Our study of 45 patients, showed

povidone iodine to be an effective agent in curing chyluria. However, it may be associated with serious iodine hyprsensitivity reactions. Other agents that have been tried are 50% glucose, normal saline,10-25% sodium iodide and 15% potassium iodide. The reported success rate varies from 59-68% with recurrence rate of 51%[17].

Surgical treatment is indicated in patients with severe symptoms i.e. severe anemia, hypoprotenemia, anasarca and chyluria not responding to conservative measures. Retroperitoneoscopic or laparoscopic nephrolympholysis, ureterolympholysis ,hilar stripping, fasciectomy etc. have been proved to be effective[18].Tandon et al believe that definite surgical ablation of the lymphatic urinary fistula is better than conservative medical treatment as it has higher success rate, more dietary freedom and better patient acceptability [19] . Endoscopic coagulation has been shown to be highly effective[20] .

Chyluria is milky urine due to the presence of chyle entering the urinary tract due to fistulous communication with the renal lymphatics. It is mostly due to filarial infection and commonly seen in tropical countries. Chyle is composed of albumin, emulsified fat and fibrin in varying proportion. The natural history of chyluria is not known. It has a waxing and waning course. Chyluria occurs in young adults with or without microfilaremia and earlier in the natural history of filariasis than genital elephantiasis. Dying worms provoke

lymphatic obstruction with proximal lymphangiolar obstruction leading to lymphatic fistula near the renal calices.Urine examination for chylomicrons,TG's and staining for fat help in the diagnosis of chyluria. Intravenous urography ,as shown by Hemal et al was not helpful in our study also9.

It was Morgagni who first associated chyluria with a disturbance in lymphatic circulation. Two theories have been proposed in the causation of chyluria. The first is a generalized obstruction and rupture theory stating that obstruction occurs between the lacteals of the small intestine and the thoracic duct resulting in lymphatic hypertension; lymph stasis, with lymphatic valvular incompetence, varices, finally spills into the urinary system. The second hypothesis states that in the local obstruction theory occurrence of a local blockage from retroperitoneal fibrosis and replacement results in chylous reflux into the urinary system; actual rupture is not necessary. The communication between the urinary tract and the lymphatics can occur at the renal level, ureteric level and bladder level. The surgical treatment of chyluria is indicated only when the process is relentless resulting in large losses of protein and fat from the urine with loss of body weight; chyluric fibrous clots may result in ureteral obstruction or urinary retention necessitating surgical intervention.

IV. Results

A total of 45 patients presented with chyluria during the study period. Out of them 60% were male and 40% were females (M:F = 27:18). Majority of the patients were in the 2nd and 4th decades of their lives (fig. 1). Between the age groups 25 to 48 years. 32 patients(71.1%)had grade I chyluria,10 patients(22.2%) had grade 2 and 3 patients (6.6%) presented with grade 3-hematochyluria with passage of chylous clots. All the patients had immediate clearance. Out of 45patients 39 (86.6%) had complete disappearance of milky urine after single dose and were symptom free till the last follow up. Whereas, 2 patients presented 4 and 6 weeks later with recurrence and were referred for other treatment modality on patients request .4 patients(11.1%) lost follow-up after 3 months. Mean DFD was 8.2months (range 3-12 months). Whereas those patients who experienced recurrence had a mean DFD of 1.1months only. No serious complications nor mortality had occurred in any of the patients during the study period. All the patients were discharged on the same day. Two patients had moderate discomfort during procedure and were relieved by reassurance and mild analgesics.

V. Conclusion

With the results of the above study,Single dose instillation of 0.2% Povidoneiodine sclerotherapy is a remarkably safe, inexpensive, effective, minimally invasive procedure and can be done on day care basis.However,further comparative studies are needed to establish its efficacy better.

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