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# "CLINICO-PATHOLOGICAL STUDY OF SURGICAL LESIONS OF FILARIASIS"

General Surgery

**Dr. Shinde Sagar Sambhaji** PG Student 3rd year, Department of General Surgery, Shyam Shah Medical College, Rewa (M.P.).

**Dr. Atul Kumar Singh** Associate professor, Department of General Surgery, Shyam Shah Medical College, Rewa (M.P.).

**Dr. Shailendra Singh*** Assistant Professor, Department of General Surgery, Shyam Shah Medical College, Rewa (M.P.).*Corresponding Author

**Dr. Abhilash Singh** Assistant Professor, Department of General Surgery, Shyam Shah Medical College, Rewa (M.P.).

**Dr. C.P. Lahariya** Senior Resident, Department of General Surgery, Shyam Shah Medical College, Rewa (M.P.).

## ABSTRACT

**Background:** Lymphatic filariasis, transmitted by mosquitoes is the commonest cause of lymphedema in endemic countries. Among 120 million infected people in 83 countries, up to 16 million have lymphedema. Microfilariae ingested by mosquitoes grow into infective larvae. These larvae entering humans after infected mosquito bites grow in the lymphatics to adult worms that cause damage to lymphatics resulting in dilatation of lymph vessels. This earliest pathology is demonstrated in adults as well as in children, by ultrasonography, lymphoscintigraphy and histopathology studies. Once established, this damage was thought to be irreversible. This lymphatic damage predisposes to bacterial infection that causes recurrent acute attacks of dermato-lymphangio-adenitis in the affected limbs. Bacteria, mainly streptococci gain entry into the lymphatics through 'entry lesions' in skin, like interdigital fungal infections, injuries, eczema or similar causes that disrupt integrity of skin.

**Methods-** This study was conducted among 124 patients who attended SOPD and Filaria clinic (103) and admitted in Surgical wards (21) of S.G.M Hospital Rewa. All incidence, surgical manifestations and clinical diagnosed of filariasis in surgical patients include the study. Children with <6 years of age, critically ill patients and cases where calcification has been established for the exclusion criteria. Follow up of the patients was done on 7th, 14th and 21th day and the treatment effects were recorded every time. Complications, progression / regression and over all effects were recorded.

**Results-** Filarial disease was diagnosed in 124 patients. The majority of the patients with Filarial disease 28.22% and Microfilaria positive 80% were in the age group of 21-30 years . Youngest patient was 7 years male with right thigh lymphedema and oldest patient was 74 years old male with bilateral hydrocele. male : female ratio with Filarial disease is 2.86:1. Regional lymphadenopathy was noted in 17.74%, overlying skin was inflamed and oedematous in 12.9%, hypertrophic or thick skin 4.03%, ulceration and nodularity was present in 2.41% each .Maculopapular eruption and blisters was present in 1.61 % cases each. The commonest manifestation constituted 54.03% of cases. Epididymoorchitis was present in 25%, lymphangitis in 13.71%, lymphadenitis in 11.29%, hydrocele in 7.26%, and cellulitis in 4.84% cases. Funiculitis and elephantiasis in 4.84% and 4.03% respectively.

**Conclusion-** Reducing the suffering caused by LF through morbidity management and disability prevention. The general population should be well educated and informed about the disease and prevention from mosquito bite. Patients who are already suffering from the disease should be made aware of the treatment modalities available and benefits of promoting self-hygiene and self-help regimens. From the current study we can conclude that prevalence of filaria in Vindhya Region is 0.11% which is less than 1% which was target under NPELF.

## KEYWORDS

Lymphatic filariasis, Lymphatic dilatation, Lymphedema, Elephantiasis, Dermato-lymphangio-adenitis, Entry lesions, Limb-hygiene.

## INTRODUCTION-

Lymphatic filariasis is second most common vector-borne disease after malaria, is found in over 80 tropical and subtropical countries. WHO estimates that 120 million people are infected with the parasite, with one billion at risk. Out of 120 million people, 48 millions of them live in India. In India, Filariasis is endemic in 17 States and six Union Territories, with about 553 million people at risk of infection. Globally estimate of people affected by lymphatic filariasis are 25 million people with hydrocele and over 15 million people suffering with lymphedema. Roughly about 36 million people remain with these chronic manifestations.

The Government of India (GOI) has accorded a high concern for elimination of LF through mass chemotherapy programme (annual, single dose of Diethyl carbamazine citrate, i.e. DEC - 6 mg/kg of bodyweight, plus Albendazole repeated four to six times). This course has become a part of the National Vector-Borne Disease Control Programme in 2003 under the National Health Policy 2002.

Lymphatic filariasis is caused by infection with parasites categorised as nematodes (roundworms) of the family Filariodidea. There are 3 kind of these thread like filarial worms. Wuchereria bancrofti, Brugia malayi and Brugia Timori . In India W. bancrofti has the widest distribution and accounting for about 98% of microfilarial carriers. The symptoms of bancroftian filariasis can be divided into inflammatory and obstructive. Brugian filariasis has a restricted distribution and is reported to occur in Kerala, Assam, Madhya Pradesh, Tamil Nadu, Andhra Pradesh and Orissa.Bancroftian filariasis is transmitted by culex quinquefasciatus (ubiquitous breeder in polluted habitats) while massonioides mosquito that breed in close association with hydrophytes such as Pistia. Eichhornia and Salvinia are the vectors of brugian filariasis. Man is a natural host and all ages are susceptible to infection with male predominance. Adult worm living in lymphatic vessels while their off spring microfilarae circulate in peripheral blood.

The entry of microfilariae and presence of adult worms of various sites and tissue response to presence of worm is responsible for various clinical manifestation. The disease manifestations range from none to both acute and chronic manifestations and inflammatory changes such as lymphangitis, lymphadenitis, epididymitis, orchitis, Filarial ascites and filarial fever. Obstructive features are result of progressive inflammatory reactions and include elephantiasis, lymphvarix, chyluria, chylous diarrhoea, chylous ascites and hydrocele.

Over all most common surgical lesions are lymphedema (54%), epidydimorchitis (20%), lymphangitis and lymphadenitis (13%), hydrocele (3%),cellulitis and funiculitis (6%) and elephantiasis (3%). This study is planned for making public awareness about the disease so that they are diagnosed, treated, cured and rehabilitated as early as possible.

**AIMS AND OBJECTIVES-**

To study the various site, degree and type of surgical manifestations of filariasis. To study the effect of treatment in the progression and regression of disease.

**MATERIAL AND METHODS-**

The present study has been carried out in Department of Surgery and filaria clinic of S.S Medical college and associated S.G.M Hospital, Rewa. This study was conducted among 124 patients who attended SOPD and Filaria clinic (103) and admitted in Surgical wards (21) of S.G.M Hospital Rewa.

**INCLUSION CRITERIA-**

- All incidence of filariasis in surgical patients.
- All surgical manifestations of filariasis.
- Clinical diagnosed patients of filariasis.
- To include Progression and regression of disease.

**EXCLUSION CRITERIA-**

1. Children with <6 years of age
2. Critically ill patients.
3. Cases where calcification has been established.

Name, age, sex, religion, area of residence and occupation was recorded in each case attending with complain of swelling of limbs, scrotum, penis etc pain, fever, itchiness and other symptoms. All the patients were interrogated regarding the detail history present and past, with special attention over similar complaint and filariasis in past. Various type of indigenous preparation used such as hot fomentation, oil application; massage and local application over the affected parts were also interrogated and recorded. A detailed physical examination of each patient was done including General systemic and local examination also photographs of some cases were taken.

**INVESTIGATIONS AND TREATMENT**

The following investigations were done in all the patients.

1. Night blood film for microfilariae.
2. Routine blood examination including Hb, TLC and DLC.
3. Peripheral smear for malarial parasite.
4. Blood sugar and blood urea.
5. Routine urine examination.

**PROVOCATIVE TEST**

A number of patients were tested for microfilariae after provocation with DEC 100 mg tablet. Tablet was taken by the patients orally and blood sample was collected after 30 minutes.

***Blood collection technique:***

Three drops of peripheral blood was obtained by pricking sterilised finger pulp with the help of needle on the centre of the glass slide and with the help of another glass slide a thick smear was prepared covering an area of about half inch diameter. This was dried, labelled and put in the slide box to be examined in the laboratory. Simultaneously a second blood film was made for differential white cell count. For this, a drop of blood was taken on the slide and spread with the edge of the another glass slide, keeping at an angle of 45 degree, thus making a thin blood film and numbered. Also blood for total WBC count was taken with the help of WBC pipette and was poured into vials containing measured amount of WBC diluting fluids and vials were numbered. Similarly Hb. was done by Sahil's method.

All the Patients were given Diethyl Carbamazepine (DEC) in a dose of 6mg/kg body weight in a divided schedule for 21 days and repeated and prolonged treatment was given depending upon the Symptomatology of the patient.

Single dose Albendazole 400mg was given routinely. Antibiotics and symptomatic and supportive treatment was given like analgesics, antihistamines and enzymes like trypsin chymotrypsin or serratiopeptidase. Magnesium sulphide and glycerine dressing, few cases needed relaxing incisions and few were needed incision and drainage, foot end elevation, crepe bandage, regular dressing was done in few cases with hydrogen peroxide, betadine and normal saline and collagenase ointment local application was done as per the necessities of the patient.

Follow up of the patients was done on 7th, 14th and 21th day and the treatment effects were recorded every time. Complications, progression / regression and over all effects were recorded.

**RESULTS-**

The present study was carried out in 124 patients of filariasis, who attended surgical OPD, filaria clinic and was admitted in Surgical Wards of Sanjay Gandhi Memorial Hospital associated with Shyam Shah Medical College, Rewa (MP) during the period from 1 June 2019 to 31st May 2020 (12 Months).

**Table No. 1 Pattern of Filariasis in Surgical Patients**

| | Total number of patients examined | Filariasis | | Infection ( Microfilaria positive) | |
|---|---|---|---|---|---|
| | | No. | Percentage | No. | Percentage |
| SOPD | 70220 | 103 | 0.14 | 83 | 0.11 |
| Wards | 10346 | 21 | 0.20 | 9 | 0.08 |
| Total | 80566 | 124 | 0.15 | 92 | 0.11 |

As it is evident from above table that out of 70220 patients who attended S.O.P.D. Filarial disease was diagnosed in 103 patients and Filarial infection was noticed in 83 patients. Out of patients admitted in surgical wards filarial disease was noticed 21 patients and Filarial infection in 9 patients. (Table-1)

**Table no. 2 Age and sex distribution of patients of filarial disease and microfilaria positive patients**

| Serial no. | Age Group (Years) | Patients with Filarial disease | | Patients with Microfilaria positive | |
|---|---|---|---|---|---|
| | | No. | Percentage | No. | Percentage |
| 1 | 0-10 | 4 | 3.23 | 2 | 50 |
| 2 | 11-20 | 24 | 19.35 | 19 | 79.17 |
| 3 | 21-30 | 35 | 28.22 | 28 | 80 |
| 4 | 31-40 | 18 | 14.52 | 14 | 77.78 |
| 5 | 41-50 | 21 | 16.94 | 15 | 71.43 |
| 6 | 51-60 | 12 | 9.68 | 8 | 66.67 |
| 7 | Above 60 | 10 | 8.06 | 6 | 60 |
| **SEX** | | | | | |
| 1 | Male | 91 | 73.38 | 71 | 78.02 |
| 2 | Female | 33 | 26.62 | 21 | 63.64 |
| | **Total** | **124** | **100.0** | **92** | **74.19** |

The majority of the patients with Filarial disease 28.22% and Microfilaria positive 80% were in the age group of 21-30 years . Youngest patient was 7 years male with right thigh lymphedema and oldest patient was 74 years old male with bilateral hydrocele. male : female ratio with Filarial disease is 2.86:1 and male : female ratio with Microfilaria positive is 1.13:1. (Table-2) it is noted incidence of filariasis is higher in urban (61.29%) as compared to rural (38.71%) population.

**Table no. 3 Clinical Presentation of Filariasis patient**

| Symptoms | No. of Cases | Percentage |
|---|---|---|
| Swelling | 118 | 95.16 |
| Pain | 81 | 65.32 |
| Fever | 54 | 43.55 |
| Itching | 41 | 33.06 |
| Discharge | 27 | 21.77 |
| Cough | 11 | 8.87 |
| Breathlessness | 5 | 4.03 |
| **Duration of symptom** | | |
| Upto 15 days | 61 | 49.19 |
| 15-30 days | 19 | 15.32 |
| 1 month- 3 months | 16 | 12.90 |
| 3 months - 6 months | 10 | 8.06 |
| 6 months - 3 years | 14 | 11.29 |
| Above 3 years | 4 | 3.23 |
| **Clinical Sign** | | |
| Thickening of cord and epididymis | 29 | 23.38 |
| Regional lymphadenopathy | 22 | 17.74 |
| Inflammation and oedema | 16 | 12.9 |
| Abscess | 5 | 4.03 |
| Hypertrophic skin | 5 | 4.03 |
| Ulceration | 3 | 2.41 |
| Nodularity | 3 | 2.41 |
| Maculo papular eruption | 2 | 1.61 |
| Blisters | 2 | 1.61 |

The above table that swelling and pain were the main symptoms which constituted 95% and 65% respectively .Filarial fever was noted in 43% and itching in 33% .Discharge at the site of lesion was seen in 22% patients. Cough and breathlessness was found in 9% and 4% respectively. 49% patients presented within 15 days of illness, 15% presented between 15 days to 3 months of illness and 34% patients had symptoms for more than 3 months. 23.38% patients had thinking of cord and epididymis of affected side. Regional lymphadenopathy was noted in 17.74%, overlying skin was inflamed and oedematous in 12.9%, hypertrophic or thick skin 4.03%,ulceration and nodularity was present in 2.41% each .Maculopapular eruption and blisters was present in 1.61 % cases each. (Table-3)

**Table-4 Surgical Lesion of Filariasis**

| Surgical Lesion | No. of Cases | Percentage |
|---|---|---|
| Lymphedema | 67 | 54.03 |
| Epididymoorchitis | 31 | 25 |
| Lymphangitis | 17 | 13.71 |
| Lymphadenitis | 14 | 11.29 |
| Hydrocele | 9 | 7.26 |
| Cellulitis | 6 | 4.84 |
| Funiculitis | 6 | 4.84 |
| Elephantiasis | 5 | 4.03 |
| Urticaria rash | 5 | 4.03 |
| Epididymal cyst | 3 | 2.42 |
| **Site of Lesion** | | |
| Lower limbs | 62 | 50 |
| Testis + Epididymis | 24 | 19.35 |
| Upper limbs | 16 | 12.90 |
| Lower abdomen | 6 | 4.84 |
| Scrotum | 6 | 4.84 |
| Breast | 4 | 3.23 |
| Face | 3 | 2.42 |
| Neck | 2 | 1.61 |

The above table, lymphedema was the commonest manifestation constituted 54.03% of cases. Epididymoorchitis was present in 25%, lymphangitis in 13.71%, lymphadenitis in 11.29%, hydrocele in 7.26%, and cellulitis in 4.84% cases. Funiculitis and elephantiasis in 4.84% and 4.03% respectively. Incidence of rash and epididymal cyst was 4.03% and 2.42% respectively. The lower limbs ( 50%) were commonest site affected by filariasis followed by testis and epididymis (19.35%). Upper limbs were involved in 12.90% cases. Lower abdomen and scrotum were involved in 4.84% each. Breast, face and neck were involved in 3.23%, 2.42% and 1.61%each while penis. (Table-4)

**Table No. 5**

| Treatment given in filariasis patients Group | No. of Cases | % |
|---|---|---|
| Diethyl Carbamazine (6mg/kg wt.) with antibiotics (Doxycycline, Ampiclox, Ciprofloxacine, Cephalosporins) | 52 | 41.94 |
| Diethyl Carbamazine (6mg/kg wt.) with Albendazole (400 mg Stat.) | 64 | 54.84 |
| Diethyl Carbamazine (6mg/kg wt.) | 8 | 6.45 |
| **Duration** | | |
| 3 weeks | 119 | 95.96 |
| 6 weeks | 5 | 4.03 |
| **Surgical Interventions** | | |
| Eversion of sac | 6 | 4.83 |
| Dressing | 5 | 4.03 |
| Incision and Drainage | 4 | 3.23 |
| Fasciotomy | 2 | 1.61 |

It is evident from the above table that all patients received Diethyl Carbamazine in doses of 6 mg/kg wt. Majority of patients 54.84% received DEC along with Albendazole. Next As common group was DEC (6mg/kg wt.) along with antibiotics (41.94%) and 6.45% were kept on DEC only. The majority of patients (95.96%) were given DEC for 3 weeks, 4.03% required a course of DEC for 6 weeks. 15.32% of patients required surgical interventions in the form of eversion of sac (6.45%), dressing (4.03%), incision and drainage (3.23%) and fasciotomy (1.61%) cases.

## DISCUSSION-

The knowledge of filariasis owes much to investigations carried out towards the end of the nineteenth and the beginning of the twentieth centuries[1,2]. Microfilariae, recovered in hydrocele fluid from a Cuban patient, were first described by Jean-Nicolas Demarquay in Paris in 1863. Three years later, microfilariae were found in chylous urine in a patient in Brazil by Otto Wucherer, who was unaware of the earlier French report. T.Lewis, was working in India in 1872 first reported microfilariae in human blood. Joseph Bancroft in Australia in 1876 recovered adult filaria in blood and named Filaria bancrofti. In 1921 this species was included in the genus Wuchereria[1,2,3].

### FILARIA INFECTION IN RELATION TO AGE:

Iyengar (1953) in Thailand showed that there was a steady rise of filarial infection in later age groups and maximum number (31.1%) occurred in 51-60 years age group[4]. Shrivastava and Prasad (1967) in Lucknow showed maximum number of filarial diseased cases (8.3%) among 21-30 years age group and 19.6% cases over 50 years of age. Disease rate was absent in the earlier age groups i.e. 0-10 years. Ghooi et al (1972) studied 90 cases in Bhopal, the maximum people affected were in the age group of 15-30 years (70 cases) followed by age group of 30-50 years (15 cases ), while in the age group of 10-25 years only 5 cases were reported. No cases were reported below the age of 10 years. In the year 2006 Agnihotri reported maximum Filarial positive cases between the age group of 21-30 years (32.55%).

In a limited survey Patnayak and Nayak in a W. bancrofti area in Orissa, reported a ratio of 1.6:1 for infection and 2.3:1 for disease between males and females. Ghooi et al (1972) reported ratio of 8:1 between males and females. In the year 2006 Agnihotri[8] reported a ratio of 1.96:1 for infection and 2.36:1 for disease between males and females. In the present study male: female ratio with Filarial disease is 2.86:1 and male : female ratio with Microfilaria positive is 1.13:1.

### ANALYSIS OF MANIFESTATIONS OF FILARIASIS

Iyengar (1953) reported 48.06% cases of elephantiasis of the limb among the filarial diseased cases[4]. Shrivastava and Prasad (1967) in Lucknow found 24 cases (46.15%) of elephantiasis out of 52 filarial diseased cases. Ghooi et al (1972) reported 60% of cases of elephantiasis of limbs. Swelling of the limbs was the commonest presenting complaint (47.5%) in a study carried out by Mathew et al (1986) in Rewa town. In a study carried out by Agnihotri in 2006 the commonest presentation was limb swelling (60.84%). In present study swelling of the lower limbs was the commonest presentation (54.03%).

Gurendra Singh et al (1983) in Rewa town reported Lymphangitis in 3 cases and lymphadenitis in 4 cases out of 10 cases with percentage of 30 and 40 respectively. Ghooi et al (1972) reported 10 cases (44.44%) of lymph gland enlargement. In a study done by Wijers et al in 1976 in East African coast, it was found that Lymphangitis and lymphadenitis were the rare manifestations. In study carried out by Agnihotri in 2006 Lymphangitis was found in 10.84% cases and lymphadenitis was noticed in 8.49% cases. In present study Lymphangitis was seen in 13.71% that is 17 cases and lymphadenitis was noted in 11.29% that is 14 cases.

Wijers et al (1976) in their description of early signs and symptoms of bancroftian filariasis in males of East African found that the commonest manifestation was the recurrent attack of pain and swelling of the spermatic cords and testis, gradually leading to formation of hydrocele. Dondero et al (1976) in their study in Calcutta reported Epididymitis or orchitis as common presenting feature.

M.C. Dandapat et al (1979) reported 20% cases of Epididymoorchitis. A.M. Ghooi et al (1972) reported 17.77% of cases in a study conducted in Bhopal. Agnihotri in 2006 reported that Epididymoorchitis was seen in 29.24% of cases. In the present study 25.00% cases reported Epididymoorchitis.

In a study done by Iyengar in 1953 in Thailand only 2 cases of hydrocele were diagnosed out of 215 cases of filarial disease and out of 4112 cases examined[4]. Apart from those 2 hydrocele cases, genital lesions like elephantiasis of scrotum and penis, epididymitis , orchitis or funiculitis were absent. Shrivastava and Prasad[5] in 1967 found 29 cases (55.76%) of hydrocele out of 52 filarial diseased cases and it was the most common manifestation and it was highest in the age group of 21-30 years. In 1972 Ghooi et al showed 44.44% cases of hydrocele.

Dandapat et al in 1979 reported total 40 cases of hydrocele suggestive

of filariasis out of total 100 cases that were studied. C.N. Dedhia et al (1982) reported 63 cases of hydrocele in which 16 cases (25.39%) were of right side. 15 cases (23.80%) were of left side and 32 cases (50.79%) were involving bilateral scrotum. None of their patients had Microfilaria in their blood. It was highest in the age group of 41-50 years. 48% cases were Filarial in origin, 14% were highly suspicious of filariasis and 38% were non filarial in origin. According to Manson-Bahr (1950) absence of Microfilaria in the peripheral smear does not rule out filariasis and in filarial hydrocele the fluid may be clear, straw coloured which may or may not contain microfilaria, since this is not a medium particularly favourable to them. In the study carried out by Agnihotri in 2006 incidence of hydrocele was 5.66% (24 cases). In the present study total of 9 cases of hydrocele were seen (7.26%).

In the study conducted by Agnihotri in 2006, genital affection is the second most common manifestation in filaria caused by W. Bancrofti. 39.62% of cases showed genital affection. In present study of 2020, genital affection is again the second most common manifestation of W. bancrofti. Total of 39.52 % cases showed genital affection.

In the study done by Iyengar (1953) in Thailand out of 4112 cases examined 125 patients had Filarial disease elephantiasis of the leg was the most common manifestation, sometimes associated with elephantiasis of one or both arms, there were 204 cases of elephantiasis of one or both legs, 9 cases of elephantiasis cases of the leg associated with elephantiasis of one or both arms [4]. Shrivastava and Prasad (1967) in Lucknow reported 24 cases (46.15%) out of 52 diseased cases found in 1346 cases examined. Ghooi et al (1972) reported 50% cases of elephantiasis of limbs. Mathew et al (1986) reported 47.5% cases of elephantiasis of the limbs. In 2006, study conducted by Agnihotri, lymphedema of the limbs was the most common manifestation and 58.9% of cases showed lymphedema of the limb. 8 cases of elephantiasis were noted. In the present study, lymphedema was the most common manifestation seen in 54.03% cases (67) and elephantiasis was seen in 4.03% cases (5).

Total of 19 patients required surgical interventions like incision and draining was done in 4 cases of abscess (3.23%). Fasciotomy was done in 2 cases (1.61%). Out of 6 cases of hydrocele, eversion of sac was done in all 6 cases and during the operation thickened tunica vaginalis was found in 4 cases and testis were enlarged in 3 cases. Out of 124 patients surgical intervention was needed in 19 patients only.

Incidence of less common lesions of filariasis in the present study was found to be 8.87% (11 cases ) out of which 4 cases were of retroperitoneal Lymphangitis, 3 cases of myositis and 2 cases of arthritis and Lymphangitis (Breast) each.

Tablet Diethylcarbamazine Citrate 6 mg/kg/day in 3 divided doses for 3 weeks was given to 115 (95.96%) cases and for 6 weeks for 5 cases (4.03%) either alone, with antibiotics or albendazole. 45 cases of lymphedema out of 67 cases showed reduction in oedema and improvement in symptoms after anti Filarial therapy.

## CONCLUSION-

Filaria is endemic in many regions of India and this study shows us various manifestations of filariasis. Filariasis is the most common cause of lymphedema in India. Southeast Asia region harbouring India as a major endemic nation is estimated with approximately 700 million people living in endemic areas constituting about 64% of the global burden with about 60 million people(50% of the global burden) either harbouring microfilaria or suffering from clinical manifestation. Reducing the suffering caused by LF through morbidity management and disability prevention. The general population should be well educated and informed about the disease and prevention from mosquito bite. Patients who are already suffering from the disease should be made aware of the treatment modalities available and benefits of promoting self-hygiene and self-help regimens. From the current study we can conclude that prevalence of filaria in Vindhya Region is 0.11% which is less than 1% which was target under NPELF.

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