Original article

Surveillance of lymphatic filariasis in selected districts of Nepal

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Abstract: Lymphatic Filariasis has been identified by the World Health Organization as a public health problem worldwide including Nepal and targeted for elimination. The present study aimed to determine the prevalence of Lymphatic filariasis in Palpa, Tanahun, Syangja, Gorkha, Sindhupalchok, Rupendehi and Nawalparasi districts as identified by Fiariasis Elimination Programme, World Health Organization/Epidemiological Disease Control Division, Teku, Kathmandu for launching Diethyl carbamazine administration campaign and to develop the better strategies for the delivery of intervention measures in filariasis endemic areas of Nepal.

Materials and Methods: A Sentinel surveillance study was carried out among 7,000 (Male-3319, Female-3681) cases and tested for microfilaraemia. The total number of Microfilaraemia positive cases was 55, and the number were 20, 5,10,4,5,7 and 4 in Sindhupalchok, Nawalparasi, Rependehi, Palpa, Tanahu, Syangja and Gorkha districts respectively. The total number of cases having symptoms and signs is 176 and the number were 138,0,28,4,1,5 and 0 in Sindhupalchok, Nawalparasi, Rependehi, Palpa, Tanahu, Syangja and Gorkha districts respectively.

Result: The highest microfilariae infection rate was 2.0% in Sindhupalchowk district which is significant in number as compared to other districts and lowest 0.40% in Palpa and Gorkha districts. The highest number of symptomatic cases was found in Sindhupalchowk district 138 (13.8%). One significant finding was that **55** persons were found to be microfilaraemia positive but only **41** persons had symptoms of Lymphatic Filariasis and **14** microfilaraemia positive cases did not have symptoms and signs of filariasis.

Conclusion: From these findings it is recommended that diethyl carbamazing administration campaign should be launched in Sindhupalchok, Nawalparasi, Rependehi, Palpa, Tanahu, Syangja and Gorkha districts.

Key words: Filariasis, diethyl carbamazine, endemic

Introduction

Lymphatic Filariasis is a major cause of morbidity in 73 endemic countries, in which 1.1 billion people are at risk and 120 million are infected. Lymphatic Filariasis is one of the common public health problems in Nepal. It is identified as government priority program. The aim of this study was to develop and validate rapid epidemiological assessment tools for the community diagnosis of Wuchereria bancrofti that may be used in the future to determine the distribution of the disease and identify high-risk communities in Nepal. The present study aimed to determine the prevalence of Lymphatic filariasis in Palpa, Tanahun, Syangja, Gorkha, Sindhupalchok, Rupendehi and Nawalparasi districts as identified by Fiariasis Elimination Programme, World Health Organization/Epidemiological Disease Control Division, Teku, Kathmandu for launching Diethyl carbamazine administration campaign and to develop the better strategies for the delivery of intervention measures in filariasis endemic areas of Nepal and also for minimizing the reporting biases and for providing the feed-back of information to the providers. Genital damage especially hydrocele and elephantiasis of the penis and scrotum in men, and the breasts in women, occurs much more frequently but is generally kept hidden. The incidence of Bancroftian filariasis is increasing in Nepal as a result of the poor sanitary conditions that often accompany rapid urbanization,

polluted water, blocked open drains, roadside ditches, broken septic tanks, and accumulation of sewage effluents. In Nepal, few studies have been done in Lymphatic Filariasis. These findings of the studies were different indicating the need of further study to clarify it. So, it was very imperative to conduct the study on the prevalence of this disease and also to find out the proportion of asymptomatic cases to symptomatic cases so that a background can be given for the further study to develop the best strategy for the delivery of intervention measures in filariasis endemic areas of Nepal

Materials and Methods

A Sentinel surveillance study was carried out among 7,000 (Male-3319, Female-3681) cases. The descriptive statistics (percentage and proportion) were used. Microfilaremia testing was performed at two sentinel sites in each of the district as identified by Fiariasis Elimination Programme, World Health Organization/Epidemiological Disease Control Division, Teku, Kathmandu. The research was carried out within the period of February 22, 2007 to July 15, 2007. The populations of these areas were more than 1,000 so as to select 500 populations from each VDC and hence 1,000 populations from each district accordingly. A total of 71,000 blood samples were collected from the community people of 7 districts, 100 samples were excluded meeting exclusion criteria. Children below two years age were excluded in this surveillance study. The eligible respondents were requested for consents after explaining the objectives of the study. Consent from respondents was taken. Prior to commencement of the survey, a training programme of one day was organized in each site. Standard methods for the administration of the questionnaire in the field as well as techniques for the collection of the blood sample from the lobe of ear pinna was instructed with the help of theoretical and practical approaches.

Later, trained parasitologists conducted a training programme in each site of the district to all the staffs involved in the project prior to commencement of the survey at that particular site. The questionnaire were pre-tested among the participants and piloted during the practical session. Among them the best ones was selected as the project staff. The same method was applied for the rest. The survey team visited the households in between 22:00 pm to 2:00 am for the sample collection. The technician collected six drops of blood i.e. about 20 micro-liters from each of the household members by pricking the lower lobe of the ear pinna on thorough supervision of parasitologist. Blood smear was spread by the help of pointed tip of small wooden stick to prepare 3 separate thick blood film on a micro slide. The smears were then allowed to dry and labeled and arranged properly in the slide box. Slides were processed and interpretation of slides as well as presenting the final results were done according to WHO, Lab manual observed by parasitologists and medical technologists.

Results

Parasitological findings

The total number of Microfilarimea positive cases age wise and sex wise were as follows:-(a) 2-14 yrs:- total-2, male-1, female-1 (b)15-64yrs:- total-43, male-20, female-23 (c) 65 yrs and above:- total-10, male-3, female-7. The total number of microfilaraemia positive cases was 55 (0.79%), Male-24 (0.72%), Female-31(0.84%). In Sindhupalchok district the total microfilaraemia positive cases were 20 (2.00%), M-9(1.85%), F-11(2.14%). In Nawalparasi district the total microfilaraemia positive cases were 5 (0.50%), M-2 (0.41%), F-3 (0.59%). In Rupendehi district the total microfilaraemia positive cases were 10 (1.0%), M-5 (1.03%), F-5 (0.97%). In Palpa district the total microfilaraemia positive cases were 4 (0.40%), M-1 (0.23%), F-3 (0.54%). In Tanahun district the total microfilaraemia positive cases were 5 (0.50%), M-2 (0.41%), F-3 (0.58%). In Syangja district the total microfilaraemia positive cases were 7 (0.70%), M-3 (0.69%), F-4 (0.71%) and in Gorkha district the total Microfilarimea positive cases were 4 (0.40%), M-2 (0.40%), F-2 (0.40%).

Symptomatic findings

The total numbers of symptomatic cases were 176 (M-83, F-93). Among them 2-14 yrs were 23 (M-11, F-12), 15-64 yrs were 138 (M-68, F-70) and 65 yrs and above were 15 (M-4, F-11). The lymphoedema, thick skin and swelling glands and chyluria are considered as acute symptoms while hydrocoele, other effects on genital organs and elephantiasis are considered as chronic symptoms. The total acute symptomatic cases were 84 (M-27, F-57) and the total chronic symptomatic cases were 92 (M-56, F-36). In Sindhupalchok district the total symptomatic cases were 138 (M-58, F-80) of which acute-63 (M-19, F-44), chronic-75 (M-39, F-36). In Nawalparasi district the symptomatic cases were not found. In Rupendehi district the total symptomatic cases were 28 (M-22, F-6) of which acute-13 (M-7, F-6), chronic-15 (M-15, F-0). In Palpa district the total symptomatic cases were 4 (M-1, F-3) of which acute-3 (M-00, F-3), chronic-1 (M-1, F-00). In Tanahun district the total symptomatic cases were 1 (M-00, F-1) of which acute-1(M-00, F-1). In Syngja district the total number of symptomatic cases were 5 (M-2, F-3) of which acute-4 (M-1, F-3), chronic-1 (M-1, F-00). In Gorkha district the symptomatic case was not found.

Districts	VDCs/	Age 2-14				Age 15-64			Age 65 above			Grand Total	
	Municipality	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
Sindhu palchowk	Melamchi VDC	140	84	56	343	157	186	17	8	9	500	249	251
	Symptomatic	13	4	9	94	42	52	9	0	9	116	46	70
	Paracitological	2	1	1	9	5	4	2		2	13	6	7
	Total	**15**	**5**	**10**	**103**	**47**	**56**	**11**	**0**	**11**	**129**	**52**	**77**
	Bansbari VDC	137	70	67	335	155	180	28	13	15	500	238	262
	Symptomatic	3	2	1	17	10	7	2		2	22	12	10
	Paracitological	0			6	3	3	1		1	7	3	4
	Total	**3**	**2**	**1**	**23**	**13**	**10**	**3**	**0**	**3**	**29**	**15**	**14**
Total Samples		**277**	**154**	**123**	**678**	**312**	**366**	**45**	**21**	**24**	**1000**	**487**	**513**
Nawalparasi	Kudia VDC	154	78	76	326	146	180	20	12	8	500	236	264
	Symptomatic	0			0			0			0	0	0
	Paracitological	0			2		2	1	1		3	1	2
	Total	**0**	**0**	**0**	**2**	**0**	**2**	**1**	**1**	**0**	**3**	**1**	**2**
	Rani Nagar VDC	140	69	71	347	180	167	13	6	7	500	255	245
	Symptomatic	0			0			0			0	0	0
	Paracitological	0			1	1	0	1		1	2	1	1
	Total	**0**	**0**	**0**	**1**	**1**	**0**	**1**	**0**	**1**	**2**	**1**	**1**
Total Samples		**294**	**147**	**147**	**673**	**326**	**347**	**33**	**18**	**15**	**1000**	**491**	**509**
Rupendehi	Bayarghat VDC	150	81	69	319	147	172	31	16	15	500	244	256
	Symptomatic	0			2	2		0			2	2	0
	Paracitological	0			4	2	2	1		1	5	2	3
	Total	**0**	**0**	**0**	**6**	**4**	**2**	**1**	**0**	**1**	**7**	**4**	**3**
	Bishnupurwa VDC	185	91	94	283	134	149	32	16	16	500	241	259
	Symptomatic	5	4	1	18	13	5	3	3		26	20	6
	Paracitological	0			4	2	2	1	1	0	5	3	2
	Total	**5**	**4**	**1**	**22**	**15**	**7**	**4**	**4**	**0**	**31**	**23**	**8**
Total Samples		**335**	**172**	**163**	**602**	**281**	**321**	**63**	**32**	**31**	**1000**	**485**	**515**
Palpa	Dovan VDC	145	74	71	353	158	195	2	2		500	234	266
	Symptomatic	0			1	1		0			1	1	0
	Paracitological	0			2		2	1	1		3	1	2
	Total	**0**	**0**	**0**	**3**	**1**	**2**	**1**	**1**	**0**	**4**	**2**	**2**
	Kachal VDC	193	103	90	288	97	191	19	8	11	500	208	292
	Symptomatic	0			3		3	0			3	0	3
	Paracitological	0			1		1	0			1	0	1
	Total	**0**	**0**	**0**	**4**	**0**	**4**	**0**	**0**	**0**	**4**	**0**	**4**
Total Samples		**338**	**177**	**161**	**641**	**255**	**386**	**21**	**10**	**11**	**1000**	**442**	**558**

Districts	VDCs/	Age 2-14				Age 15-64			Age 65 above			Grand Total	
	Municipality	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
Tanahun	Byas Municiplity -11	120	59	61	369	200	169	11	7	4	500	266	234
	Symptomatic	0			1		1	0			1	0	1
	Paracitological	0			2	1	1	1	0	1	3	1	2
	Total	**0**	**0**	**0**	**3**	**1**	**2**	**1**	**0**	**1**	**4**	**1**	**3**
	Jammune VDC	148	73	75	325	133	192	27	10	17	500	216	284
	Symptomatic	0			0			0			0	0	0
	Paracitological	0			2	1	1	0			2	1	1
	Total	**0**	**0**	**0**	**2**	**1**	**1**	**0**	**0**	**0**	**2**	**1**	**1**
Total Samples		**268**	**132**	**136**	**694**	**333**	**361**	**38**	**17**	**21**	**1000**	**482**	**518**
Syangja	Chaapakot VDC	162	82	80	323	134	189	15	7	8	500	223	277
	Symptomatic	1	1		0			0			1	1	0
	Paracitological	0			4	2	2	1		1	5	2	3
	Total	**1**	**1**	**0**	**4**	**2**	**2**	**1**	**0**	**1**	**6**	**3**	**3**
	Walling VDC	194	110	84	293	95	198	13	8	5	500	213	291
	Symptomatic	1		1	2		2	1	1		4	1	3
	Paracitological	0			2	1	1	0			2	1	1
	Total	**1**	**0**	**1**	**4**	**1**	**3**	**1**	**1**	**0**	**6**	**2**	**4**
Total Samples		**356**	**192**	**164**	**616**	**229**	**387**	**28**	**15**	**13**	**1000**	**436**	**568**
Gorkha	Prithvinarayan												
	Municipality -6	153	87	66	315	122	193	32	13	19	500	222	278
	Symptomatic	0			0			0			0	0	0
	Paracitological	0			1	1		0			1	1	0
	Total	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**1**	**1**	**0**
	Aaruchanaute VDC	161	91	70	319	172	147	20	11	9	500	274	226
	Symptomatic	0			0			0			0	0	0
	Paracitological	0			3	1	2	0			3	1	2
	Total	**0**	**0**	**0**	**3**	**1**	**2**	**0**	**0**	**0**	**3**	**1**	**2**
Total Samples		**314**	**178**	**136**	**634**	**294**	**340**	**52**	**24**	**28**	**1000**	**496**	**504**
		2182	1152	1030	4538	2030	2508	280	137	143	7000	3319	3685
	Symptomatic	23	11	12	138	68	70	15	4	11	176	83	93
	Paracitological	2	1	1	43	20	23	10	3	7	55	24	31
	Total	**25**	**12**	**13**	**181**	**88**	**93**	**25**	**7**	**18**	**231**	**107**	**124**

Discussion

Present study revealed that the prevalence of Microfilarimea is 20 (2.00%) in Sindhupalchowk district which is significant in number as compared to other districts. In Sindhupalchowk district there was many symptomatic cases found. This may be because of no any previous administration of DEC in Sindhupalchowk and the site of study is on the bank of Indrawati River. The low prevalence in Rupandehi and Nawalparasi districts may be due to two time's previous DEC administration in these districts by WHO/EDCD. The highest number of symptomatic case was found in Sindhupalchowk district and lowest in Tanahun. In Nepal, there is no study conducted so far on the prevalence and distribution of Lymphatic Filariasis except the brief and patchy epidemiological survey that was carried out in the central part of the country covering transact of it in the year 1973, 1997 & 1999 (Jung, Pradhan et. al. & Bhusal respectively). In these surveys, prevalence of lymphatic filariasis was recorded in all the study localities. Filariasis is also recorded in hospitals and health institutions of the country. In limited study in Nepal the incidence of …..

These findings of the studies were different indicating the need of further study to clarify it. Hence, it is planned to carry out a study in these semi-urban areas but at different places. As no definite prevalence rate is available to determine the magnitude of the problem and foci of transmission, the control measures could not be planned until now. So, it is very imperative to conduct the study on the prevalence of this disease and also to find out the proportion of asymptomatic cases to symptomatic cases so that a background can be given for the further study to develop the best strategy for the delivery of intervention measures in filariasis endemic areas of Nepal.

Conclusions

A total of 7,000 subjects were examined and looked for the Microfilaraemia in blood film. Of the total, 55 subjects were positive for the parasite. The highest Microfilarimea density per individual blood sample was recorded to be 27 and lowest 01(Microfilarimea Density per 20 µl Blood Samples). The highest Microfilarimea infection rate was 2.0% in Sindhupalchowk district and lowest 0.40% in Palpa and Gorkha districts. The total acute symptomatic cases are 84 (M-27, F-57) and the total chronic symptomatic cases are 92 (M-56, F-36). One significant finding which is worth to be highlighted is that **55** persons were found to be Microfilarimea positive but only **41** persons have symptoms of Lymphatic Filariasis.

Recommendations

1. DEC administration campaign should be conducted.
2. Mass Awareness and public education campaign of LF should be launched.
3. Improve hygiene and sanitation in and around the areas, housing complexes, roads, water supply, drainage, garbage disposal, ponds and toilets.

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