

Status of lymphatic filariasis in parts of East Godavari district of Andhra Pradesh, India

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Lymphatic filariasis (LF) commonly known as elephantiasis is considered as a major public health problem due to its considerable morbidity and social stigma. National health policy 2002 aims at elimination of transmission and the prevention of disability due to LF by the year 2015¹. Sixteen out of twenty three districts of Andhra Pradesh, India are under the grip of LF and 54 million population of the state is under “Mass drug administration” (MDA) programme with annual single dose of diethylcarbamazine citrate (DEC) tablets once a year¹. East Godavari district is one of the worst LF affected districts in Andhra Pradesh. As per the Government of Andhra Pradesh report a total of six rounds of MDA programme were conducted between 1999 and 2005 covering approximately five million population². Therefore, night blood surveys and partial entomological surveys were conducted in two MF endemic towns and six endemic villages between January to May 2004 and again July to November 2005 to note the recent prevalence (mf) and disease incidence in the district.

The study area, East Godavari district is situated in the eastern bank of the Godavari River. The land surface of the study area is more or less plain with some undulations and with high subsoil water. Rice and sugarcane are major crops. Five localities (wards) each reporting high LF cases were selected each from Rajahmundry and Mandapeta towns for the study in urban areas. Similar to other major towns, Rajahmundry and Mandapeta towns and their

surroundings are also affected by rapid, haphazard urbanisation and industrialisation, causing mosquito-genic conditions, specially breeding of *Culex quinquefasciatus* (Diptera : Culicidae) mosquitoes. Six filaria endemic villages namely Choppella (PHC–Alamuru), Muggalla (PHC–Seethanagaram), Bhaskarnagar (PHC–Kadiyam) were surveyed from January to May 2004 and villages Baduguvani Lanka (PHC–Atreyapuram), Kesavaram (PHC–Kesavaram), Bobbarlanka (PHC–Atreyapuram) were included in the study from July to November 2005. Night peripheral blood survey was conducted in the study area between 2030 and 2300 hrs. About 20 cmm of peripheral blood was drawn on clean glass slides, randomly from each individual by finger prick method. Slides were brought to laboratory, numbered, dried, de-haemoglobinised, fixed and stained in Giemsa’s stain. The stained slides were examined under microscope for the presence of microfilaria. The species of the parasite was identified and number of microfilaria was counted^{3,4}. The persons were also examined for lymphoedema/ hydrocele cases if any. Patients found positive for mf infections were administered with DEC tablets @ 6 mg/kg body weight as per National Vector Borne Disease Control Programme guidelines⁵. After 30 days of completion of treatment, their blood was re-examined for the presence of microfilaria infection.

Adult culicine mosquitoes were collected from human dwellings between 0600 and 0800 hrs with the

help of aspirator and flash light from Rajahmundry town, Choppella, Muggalla and Bhaskarnagar villages. Mosquitoes were brought to laboratory and identified. Head, thorax and abdomen of each female *Cx. quinquefasciatus* mosquito were dissected separately in 0.68 percent physiological saline. The slides were examined under microscope for L1, L2 and L3 stages of larvae in order to calculate infection and infectivity rates⁵.

Area wise results on microfilaria carriers, their age wise distribution and LF cases are shown in Table 1. Altogether 12.2 percent populations in Rajahmundry Corporation and 4.4 percent population in municipality area of Mandapeta town were covered for the survey. As per records of NFPC Units, 0.43 and 0.51 percent mf rates respectively have been shown for Rajahmundry and Mandapeta towns in 2005 (Personal communication National Vector Borne Diseases Control Programme, Delhi, 2006). In our present study mf and disease rates worked out to be 2.84 and 2.68 percent respectively from selected areas of Rajahmundry town. Out of 36 mf carriers recorded from Rajahmundry town two carriers each

were in the age groups of 0–5 and 6–15 years. Eight were in the age group between 16–25 years and 24 were above 25 years of age. Mf and diseases rates from Mandapeta town were calculated as 2.29 and 1.14 percent respectively. Out of eight mf carriers from Mandapeta town seven were above 25 years of age, which roughly corroborates with the findings of Singh *et al*⁴. From six selected rural areas of East Godavari district, as high as 27.7 percent population of village Muggalla was surveyed. The lowest 3.5 percent population from village Kesavaram was surveyed. It may be seen from the Table 1, that high mf rates were observed in villages Muggalla (7.77%), Kesavaram (6.64%) and Choppella (5.0%). Low mf and disease rate was noted from village Bobbarlanka as 0.42 and 0 percent respectively. Disease rate was also noted as 3.2, 3.0 and 2.15 percent from villages Muggalla, Choppella and Bhaskarnagar respectively. A total of 5056 out of 46,378 (10.9%) population of East Godavari district was screened for LF cases in 2004–05. Average mf and disease rate was noted as 4.43 and 2.43 percent respectively. Out of 224 mf carriers, 3 (1.3%) were between 0–5 years of age group, 22 (9.8%) and 60 (26.7%) were between the age

Table 1. The prevalence of lymphatic filariasis due to *Wuchereria bancrofti* infection in selected areas of East Godavari district of Andhra Pradesh

Area / pop. under survey	Total pop. examined	Total (+) ve mf	Age-wise distribution of mf patients				mf rate %	Av. density	Disease cases
			<5 yr	6–15 yr	16–25 yr	>25 yr			
Rajahmundry town/10410 (U)	1266 (12.2)	36	2	2	8	24	2.84	3.88	34 (2.68)
Mandapeta town/8000 (U)	349 (4.4)	8	0	0	1	7	2.29	9.5	4 (1.14)
Choppella/6083 (V)	1080 (17.7)	54	0	7	11	36	5.0	11.5	33 (3.05)
Muggalla/3935 (V)	1093 (27.7)	85	1	9	29	46	7.77	10.42	35 (3.2)
Bhaskarnagar/1750 (V)	417 (23.8)	10	0	2	2	6	2.39	10.10	9 (2.15)
Baduguvani Lanka/4000 (V)	272 (6.8)	7	0	0	1	6	2.57	10.14	1(0.36)
Kesavaram/10000 (V)	346 (3.5)	23	0	2	8	13	6.64	14.21	7 (2.02)
Bobbarlanka/2200 (V)	233 (10.6)	1	0	0	0	1	0.42	16.0	0
Total/46,378	5056 (10.9)	224	3	22	60	139	4.43	9.99	123 (2.43)

U—Urban area; V—Village; Figures in parentheses are percentages.

groups of 6–15 and 16–25 years, respectively. As per WHO⁶, certain individuals in the population of an endemic area develop microfilaraemia but with no recognisable clinical manifestation which remain asymptomatic for years. In the present study, all 224 mf carriers due to *Wuchereria bancrofti* infection were noted apparently as without any recognisable clinical symptoms. It was noted that none of the 224 mf carriers consumed full doses of DEC tablets during MDA programme which was held during 2004 and 2005. This was due to lack of knowledge regarding the programme. All the 123 lymphoedema cases, however, had consumed DEC tablets.

In 1998 mf and disease rate in East Godavari district was 2.21 and 1.61 percent, respectively, which came down to 0.48 and 0.37 percent, respectively in 2005². In the present study mf and disease rate in selected study areas of East Godavari district was as high as 4.43 and 2.43, respectively.

Adult *Cx. quinquefasciatus* were collected from Rajahmundry town and villages Choppella, Muggalla and Bhaskarnagar. Ten man hour density of the mosquito was noted as 180, 224, 300 and 20 for the above mentioned towns and villages respectively. The mean 10 man hour density was noted as 228.5 which is considered high potency for transmission of LF. A total of 462 mosquitoes dissected. L1, L2 and L3 stages of larvae was found in 17 mosquitoes. Only two mosquitoes showed presence of L3 infective stages of larvae. Overall infection and infectivity rate was calculated as 3.6 and 0.4 percent, respectively.

This finding clearly indicates active transmission of Bancroftian filariasis in the study area⁶ of East Godavari district of Andhra Pradesh. A high mf rate, 4.43 percent is a matter of concern, and therefore, there is an urgent need to develop strategies to imple-

ment the MDA programme such a way that MDA is really effective by increasing the drug compliance.

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References

1. Operational guidelines on elimination of lymphatic filariasis. Delhi: Directorate of National Vector Borne Disease Control Programme 2004; p. 10.
2. National filaria day report. *Mass drug administration of DEC, East Godavari district, Andhra Pradesh*. Annual Report. Kakinada, East Godavari District : Govt. of Andhra Pradesh 2005; p. 1–20.
3. Control of lymphatic filariasis, a manual for health personnel. Geneva: World Health Organization 1987; p. 10.
4. Singh S, Bora D, Sharma RC. A study on filarial transmission in non-endemic area of Pathankot (Punjab). *J Com Dis* 2000; 32(1): 61–4.
5. Sharma R, Biswas H, Saxena N.L. *Operational manual: National Filarial Control Programme in India*. Delhi: Directorate of National Malaria Eradication Programme 1995; p. 45.
6. Lymphatic filariasis. The disease and its control. *WHO Tech Rep Ser* 1992; 821: p. 8.
7. Guidelines for certifying lymphatic filariasis elimination. WHO/Fil/99/197.1998: 20.

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