EPIDEMIOLOGY OF MICROFILARAEMIA AMONG RECRUITS AND SERVING SOLDIERS

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ABSTRACT

A retrospective cross-sectional study among recruits and troops stationed in Lucknow was carried out for the period 1991-95, to detect the microfilaraemia rate among them, with the aim to define high risk groups. Out of 8859 recruits screened in the five year period 151 (1.7%) were positive for microfilaria (MF), whereas out of 13,131 serving soldiers 88 (0.67%) were positive (Relative risk 2.54, 95% CI between 1.96 and 3.30). Only 0.47 per cent of recruits and 0.26 per cent of soldiers from non endemic states were found positive for MF which highlights the need to review the policy of indiscriminate mass screening of soldiers in military stations for microfilaraemia.

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KEYWORDS : Epidemiology; Filariasis; Screening; Microfilaraemia.

Introduction

Screening for disease among apparently healthy people has long been an important activity in preventive medicine. Hailed as a breakthrough in preventive technology, it soon became apparent that screening for disease needed a critical evaluation because it was not producing the results hoped for, nor was it leading to economies in health manpower [1]. Indiscriminate mass screening is not a useful preventive tool and often results in counterproductive health effects, is costly and thus it is wiser to limit screening to high risk groups and high risk periods of life based on epidemiological knowledge. One form of screening invariably carried out in all military stations is night blood survey for microfilaraemia. Translated into action what actually happens is that the screening is carried out as a parade among the troops and hardly any screening is done among the civilian population.

The present study was carried out with a view to evaluate the relevance of mass screening for microfilaraemia and to find out whether certain high risk groups agewise or statewide based on the geographical distribution of filariasis in our country could be defined so that screening for microfilaraemia can be confined only to such groups to make it more cost effective.

Material and Methods

Retrospective data pertaining of results of night blood surveys for microfilaraemia among recruits enrolled for training in AMC Centre and School and similar data pertaining to serving soldiers stationed in Lucknow were analysed for the years 1991 to 1995. The positivity rates were worked out separately for the recruits and

serving soldiers. Positivity rates for recruits/personnel from the so called high risk states namely Uttar Pradesh, Bihar, Andhra Pradesh, Orissa, Tamil Nadu, Kerala and Gujarat [2], were worked out and tabulated separately.

Results

The microfilaraemia positivity rate among recruits and serving soldiers are shown in Tables 1 and 2. Among recruits, the overall prevalence of MF positivity varied significantly from between lowest of 0.81 per cent in 1993 to 2.26 per cent in 1994 as shown in Table 1 (chi square=15.15, df=4, p value=0.00440463). It is seen in Table 2 that the recruits hailing from the so called endemic states had significantly higher rate than other states combined, except for Kerala and Gujarat which showed low positivity (Chi square=158.33, df=7, p value=0.000000).

The MF positivity rates among soldiers varied from 0.24 per cent in 1993 to 1.11 per cent in 1992 as depicted in Table 1 (Chi square=18.57, df=7, p=0.00095592). Among serving soldiers also those from endemic states had significant higher rates than those from non endemic states as is evident from Table 2 (Chi square=53.77, df=7, p value=0.000000).

The cumulative prevalence 1991-95 among recruits and soldiers statewide are summarised in Table 2. Out of 8859 recruits screened in the five year period 151 (1.7%), were positive for MF whereas out of 13,131 serving soldiers 88 (0.67%) were positive. Thus a recruit was more than two and half times likely to be positive for microfilaraemia than a soldier (Relative risk=2.54, with a 95% confidence interval between 1.96 and 3.30). Only 0.47 per cent of recruits and 0.27 per cent of soldiers from non-endemic states were found positive.

Discussion

The phenomenon of higher statistically significant MF positivity among recruits as compared to older soldiers could be explained by the fact that the MF rate is at peak in the 15-20 year age group [3]. However, filarial disease occurs in only a small percentage

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TABLE 1

Yearwise microfilaraemia positivity rates among recruits and serving soldiers

Year	Recruits			Serving soldiers		
	Slides examined	Number positive	% +ve	Slides examined	Number positive	% +ve
1991	1800	32	1.78	2658	22	0.83
1992	1697	25	1.47	2679	30	1.11
1993	1830	15	0.81	2908	7	0.24
1994	1895	43	2.26	2736	19	0.69
1995	1637	36	2.20	2150	10	0.46
Total	8859	151	1.70	13,131	88	0.67

Chi sq = 15.15, df = 4, p = 0.00440463 Chi sq = 18.57, df = 4, p = 0.000955

TABLE 2

Cumulative statewide microfilaria positivity rates among recruits and serving soldiers for the year 1991 to 1995

State	Recruits			Serving soldiers		
	Slides examined	Number positive	% +ve	Slides examined	Number positive	% +ve
UP	2486	42	1.69	4296	34	0.79
Bihar	1202	37	3.07	1335	25	1.87
AP	637	19	2.98	176	—	—
Orissa	322	29	9.00	317	4	1.26
TN	735	10	1.36	311	2	0.64
Kerala	500	1	0.20	480	7	1.46
Gujarat	227	—	—	79	—	—
Others	2750	13	0.47	6137	16	0.26
Total	8859	151	1.70	13,131	88	0.67

Chi sq = 158.33, df = 7, p = 0.000000 Chi sq = 53.27, df = 7, p = 0.0000
Overall relative risk recruits : soldiers = 2.54 (95% CI = 1.96 to 3.30)

of infected individuals. Not all infected show disease and many diseased show no MF [3]. Therefore as an individual screening test night blood survey has no relevance. The only utility of this exercise is for the public health reasons as MF positive individuals act as reservoirs of filarial infection in the community. However, even this has its drawbacks because of its low sensitivity [3]. Moreover, though a course of diethylcarbamazine will rapidly clear the MF from the blood same may reappear after six months since the adult worms are not affected [3], and the individual will revert back to the carrier state.

The fact that in the five year period the rates of positivity both among recruits and serving soldiers from nonendemic states was very low (with the differences statistically very significant) questions the rationality of mass blood screening for microfilaria. Besides statistical significance, the sheer work load on the laboratory is tremendous, for instance 6137 slides of serving soldiers from non endemic states were ex-

amined to yield just 16 positive slides over the five year period (Table 2).

Another major lacunae in MF screening noted is the almost exclusion of families and civilians staying in and around the cantonment which is the case in most cantonments because of the problems of logistics/compliance. The flight range of the vector mosquito is 5 km [4]. Civil localities surrounding garrisons are more unhygienic and overcrowded with more chances of local transmission, if any. Once they are excluded from the screening, in spite of their being more likely to cause transmission in the station, it is not very ethical to subject the poor soldier (who is already observing anti-mosquito precautions), to the inconvenience and attendant risk of a pin prick around mid-night, more so as individually he is not benefited even if positive as diethylcarbamazine will not change the clinical prognosis.

In view of above reasoning, it may be recommended that screening for MF be undertaken only among recruits in regimental centres and that too preferably in those who come from endemic areas. Indiscriminate mass screening among troops is wasteful use of resources in light of low case yield, which could be better diverted for vector control. If population surveys are indicated only 5-7 per cent of the population for routine surveys and 20 per cent for evaluation surveys should suffice as per NICD and WHO guidelines [2,5]. The samples should of course be random, representative and cover all ages and both sexes of civil/military population in the cantonment.

Recent reports claim very good results with a combination of a single dose of diethylcarbamazine and ivermectin [6]. Administration of this to high risk groups such as recruits from endemic areas may also be considered as an alternative to screening for MF.

REFERENCES

1. Park K. Screening for disease. In Park's Text Book of Prev and Soc Med. 14th ed. M/s Banarsidas Bhanot. Jabalpur. 1995; 107-13.
2. Park K. Lymphatic Filariasis. In Park's Text Book of Prev and Soci Med. 14th ed. M/s Banarsidas Bhanot. Jabalpur. 1995; 185-90.
3. Manson-Bahr PEC, Apted FIC. Filariasis. In : Manson's Tropical Diseases. 18th ed. ELBS. 1982; 148-80.
4. Hati AK. Medical Entomology. Allied Book Agency, Calcutta 1979 : 47.
5. WHO. TRS No 542. 1974.
6. WHO. The World Health Report. 1996. WHO Geneva. 55.