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Morbidity trends in Lymphatic Filariasis: Analysis from a tertiary care center in Kerala, Southern India

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ABSTRACT

Lymphatic filariasis in India contributes to nearly 40% of the global endemic burden. There is paucity of data regarding the association of chronic lymphatic filariasis with diabetes, coronary heart disease and other co-morbidities. Case records over a period of ten years from 2001-2010 were reviewed and 113 diagnosed chronic filariasis cases from 13 districts of the state were identified.Prevalence of each of the morbidity with age and sex association was calculated. A total of 82(72.6%) of them were in the age group of 60-85 years. Hypertension was noted in 48, type II diabetes in 46 and coronary artery disease in 43. Filariasis had a significant association with type II diabetes mellitus and coronary artery disease (p value< 0.05). Secondary infection. of leg ranging from cellulitis to gangrene was seen in 33(29.2%). Lymphatic Filariasis may be linked as an inclining factor for the development of type II diabetes mellitus and coronary heart disease over 60 years. Secondary leg infections continue in diabetic patients. The immuno- modulatory mechanisms involved needs to be explored.

Key words: Lymphatic filariasis, co-morbidities, Southern India

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Introduction

Lymphatic Filariasis (LF) continues to be a major public health problem in India in spite of the functioning of the National Filarial Control Programme for over 6 decades. [1] Recent data suggests that there may be over 31 million microfilaraemics, 23 million cases of symptomatic filariasis and about 473 million (over 50%) of the population potentially at risk of acquiring infection. 11 of the 13 districts of Kerala are known endemic zones. [2] India being a tropical country, contributes to nearly 40% of the global endemic burden of LF and also the prevalence of type-2 diabetes is increasing in India. [3] The possible role of chronic LF in the etiology of non-communicable diseases has not been studied previously. There is paucity of data regarding the association of chronic lymphatic filariasis with diabetes, coronary heart disease and other co-morbid conditions. The primary objective of our study was to assess the morbidity pattern and associated factors of chronic lymphatic filariasis. Secondary objective was to analyze the role of age in the development of co-morbidities in LF patients.

Material and Methods

A hospital based retrospective cross-sectional study was undertaken and case records over a period of 10 years (2001-2010) were reviewed at the Amrita Institute of Medical Sciences, tertiary care super specialty teaching hospital, Kerala and all the 113 Lymphatic Filariasis (LF) cases diagnosed were included without any exclusion criteria. The districts they hailed from were noted. The time trend of LF over the ten-year duration was analyzed. Prevalence of those who developed each of the morbidity (diabetes, obesity, systemic hypertension, dyslipedemia, coronary artery disease, bronchial asthma, liver cirrhosis, renal failure, arthritis) was noted and their association with age was calculated by univariate analysis, chi-squared test. Diabetic patients with secondary infections were tracked and the association was analyzed.

Results

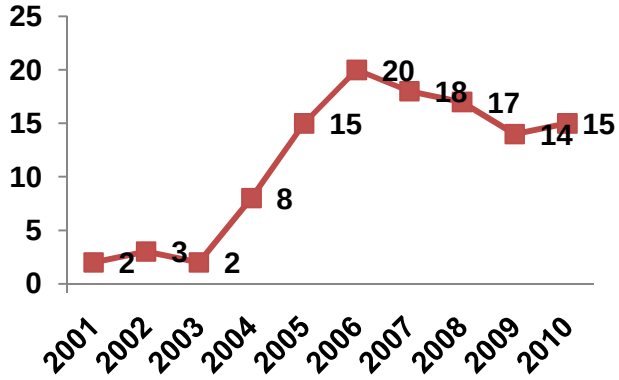
About three quarters 82(72.6%) of the filariasis patients were in the age group of 60-85 years and about 50% of all LF cases were females (48). Prevalence of Hypertension was noted in 48, type II Diabetes in 46, Coronary artery disease in 43, dyslipidemia in 26, bronchial asthma in 16 and liver cirrhosis in 10. Filariasis had a significant association with type II diabetes mellitus and coronary artery disease (*p* value< 0.05) (table 1) with the progress in age of the patient.

Table 1: **Age related morbidity pattern of patients with lymphatic filariasis (*** p<0.05 statistically significant)

Morbidities(n=113)	No. of patients <60 years	No. of patients >60 years	p-value
Hypertension(n=48)	11	37	0.117
Type 2 Diabetes mellitus(n=46)	10	36	0.008 *
Coronary artery disease(n=43)	5	38	0.001 *
Dyslipedemia(n=26)	6	20	0.541
Bronchial asthma(n=16)	2	14	0.178
Liver cirrhosis(n=10)	4	6	0.315
Acute renal failure(n=9)	2	7	0.409
Osteo/rheumatic arthritis(n=8)	3	5	0.659
Iron deficiency anemia(n=7)	2	5	0.330
Hyponatremia(n=7)	1	6	0.507
Hypothyroidism(n=5)	1	4	0.641
Parkinsonism(n=3)	0	3	0.530
BPH(n=2)	0	2	0.657
Obesity(n=2)	0	2	0.657
Cerebrovascular accident(n=2)	1	1	0.366

Secondary infection of leg was seen in 33(29.2%) - 3 had gangrene, 24 had cellulites and 6 had leg ulcers. The traceable 25 microbiology records of wound infections showed moderate to heavy growth of coliforms (*E.coli, Klebsiella Spp, Enterobacter Spp*-12), ESBL producing *E.coli* (4), *Pseudomonas aeruginosa* (5) and others (4). The odds ratio of acquiring secondary infection in diabetic patients with filariasis was 2.2 (CI 0.97 - 5.08). None of the morbidities were statistically associated with sex. There was a rising trend of LF cases seen over the ten-year duration. Mapped endemic zone Ernakulam and Alapuzha districts of the state recorded the highest number of cases.

Ten year- time trend of patients from Kerala, Southern India



Discussion

Co-existence of LF with HIV, malaria, TB has been quoted in literature[4, 5, 6]. This is the first study in the country to suggest a link between LF with non-communicable epidemiology like the coronary artery disease, systemic hypertension and dyslipidemia. Our results like the CURES 83 [7] suggest a possible link between filariasis with diabetes. However, the Chennai study results showed an inverse relationship with the prevalence of LF and diabetics through the evaluation of pro- inflammatory cytokine responses. Results may not reflect the true picture of the diabetes and coronary heart disease association with LF as sampling is based on the incoming patients to our super-specialty 1200 bedded hospital. Majority of the patients who had cardiac and endocrine co-morbidities belonged to the elderly age group. Hence age could be an important confounding factor. The sample number was relatively small for age-adjusted multivariate analysis and is considered as the limitation of the study. Nevertheless, this is one of the few studies to assess the secondary infections in type II diabetes and its association with chronic filariasis patients. The cultivable bacteriology of secondary infection was noted to be not any different from the other routine wound infections. The increasing trend of an increase in the LF cases noted over ten years in this study could be attributed to the greater public awareness about the ongoing *National Filariasis Control Program* activities of the country. LF is considered a negected tropical disease but the programme has generated awareness and therefore has probably increased the treatment seeking behaviour of the patients. This can be looked upon as a positive fallout of the national programme with the rounds of Mass Drug Administration.

Conclusion

Patients with chronic LF face the dual problems of other co-morbidities also. LF may predispose the patient to the development of type II diabetes mellitus and coronary heart disease over the course of time(> 60 years), but more studies are required to assert the same. Global Elimination program of LF may extend to address these co-morbidities too in morbidity management of filariasis. Other morbidities listed also show an increasing trend with advanced age. Secondary leg infections continue to trouble the patients with diabetes. The immuno-modulatory mechanisms involved in the elderly needs to be explored further.

Authors' disclaimer: The opinions expressed in this paper are those of the authors and may not reflect the position of their employing organizations

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