STUDIES

STD TRENDS IN CHENGALPATTU HOSPITAL

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A retrospective data analysis was carried out to find the trends in frequency and distribution of different STDs at Chengalpattu during 1988-1994.Of the 4549 patients who attended the clinic 3621 (79.6%) were males and 928 (20.4%) were females. The commonest STD was Chancroid (24.4%) in men and Syphilis (29.0%) in women. Balanoposthitis (11.4%) ranked third among STDs in males. Though the STD attendance showed a declining trend, most diseases showed a constant distribution. The percentage composition of Secondary and Latent Syphilis, Genital Warts,Genital Herpes and the Non-Venereal group showed an increased composition in recent years. Primary syphilis in females showed a definite declining trend. The HIV sero-positive detection rate was 2.06%. Of the 1116 patients screened for HIV antibody, 23 patients were detected sero-positive. Time Series Regression Analysis was used to predict the number of patients who would attend the STD clinic with various STDs in 1995 and 1996 to help in the understanding of the disease load and pattern in future,in resources management and in developing and evaluating preventive measures.

Key Words : Sexually transmitted disease, Epidemiology, HIV serology

Introduction

Sexually Transmitted Diseases have created a great impact on the transmission of Human Immunodeficiency Virus. Cross sectional studies have shown a strong association between HIV infection and other STDs[1,2] especially those causing genital ulcers such as chancroid, syphilis and genital herpes.[3-6] Peter Piot expressed the view that a high prevalence of STD led to increased susceptibility to HIV which in turn led to a high prevalence of HIV which then interacted with a high prevalence of STD.[7] STD patients thus serve as early warning symptoms for HIV transmission. It is therefore essential to study the trends in STDs in order to develop effective preventive measures. Changing clinical patterns have been noted worldwide and this requires introspection by medical professionals.

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We have presented here a comprehensive study of the morbidity trends of STDs between 1988 to 1994, at the Chengalpattu hospital and have also tried to predict the likely future trends.

Materials and Methods

Medical record sheets of patients treated at the STD clinic between 1988 and 1994 were analyzed for the study. Trends among the various STDs were understood. Separate TimeSeries Regression Analysis was used to obtain an equation for the various groups of STDs. The method of least squares was used to plot straight line graphs. The graphs were then extrapolated to predict the likely number of patients in each group in 1995 and 1996. In order to match with the other studies conducted in India, the Non-venereal class (patients with h/o exposure who attended the STD clinic but with no clinical lesion and negative laboratory tests) was analyzed separately. Separate analysis was also carried out for males and females to remove the influence of one class over the other.

Results and Discussion

A total of 4549 patients who attended the STD clinic between '88 & '94 were studied. 3621 were males and 928 females. Of them 2491 men and 534 women suffered from STDs. Thus though the attendance ratio between males and females was found to be 3.9:1, that among STD patients was 4.7:1. This was probably due to the fact that most female patients with STD attend the Gynecology OPD.[8,16] Also, many females who attended the STD clinic were wives of the male attendees.

by trichomonas vaginalis (17.2%), chancroid (13.7%), gonorrhea (9.9%) and candidiasis (8.6%). Amoungst syphilis, primary syphilis accounted for 68.6% among men and 59.4% among females. Secondary and latent syphilis were responsible for 11.9% and 19.3% in males and 17.4% and 23.2% in females, respectively. One patient was diagnosed as suffering from neurosyphilis in 1989 and a female infant was diagnosed as congenital syphilis in 1993.

Differences in the proportions of the various STDs observed[8-12,14] is due to the

Table I. Distribution and frequency of STDs in STD clinic in Chengalpattu hospital

Disease	Males		Females		Total		M:F
	Nos.	% STD	Nos.	% STD	Nos.	% STD	
Chancroid	607	24.4	73	13.7	680	22.5	8.3 : 1
Syphilis	481	19.3	155	29.0	636	21.0	3.1 : 1
Genital herpes	62	2.5	9	1.7	71	2.3	7.0 : 1
GI	45	1.8	9	1.7	54	1.8	5.0 : 1
Gonorrhoea	269	10.8	53	9.9	322	10.6	5.1 : 1
NGU	239	9.6	22	4.1	261	8.6	10.9 : 1
LGV	106	4.3	14	2.6	120	4.0	7.6 : 1
Genital warts	193	7.7	46	8.6	239	7.9	4.2 : 1
Balanoposthitis	283	11.4	-	-	283	9.4	-
T vaginalis	61	2.4	92	17.2	153	5.1	1 : 15
Candidiasis	25	1.0	46	8.6	71	2.3	1 : 1.8
Others	120	4.8	15	2.8	135	4.5	1 : 1.1
Total	2491	100.0 %TOT	534	100.0 % TOT	3025	100.0 %TOT	4.7 : 1
Non-venereal	1130	31.2	394	42.5	1524	33.5	2.9 : 1
Net total	3621	-	928	-	4549	-	3.9 : 1
STD : NV	2.2:1		1.35:1		2:1		

The frequency and distribution of the various STDs is illustrated in Table I.The commonest STDs were chancroid (22.5%), syphilis (21.0%), gonorrhea (10.6%), balanoposthitis (9.4%), NGU (8.6%), and genital warts (7.9%), Among males,however the order was chancroid (24.4%), syphilis (19.3%), balanoposthitis (11.4%), gonorrhea (10.8%), and NGU (9.6%) and among females, syphilis (29.0%) ranked first followed

regional variations in the incidence and distribution of STDs due to biological, technical, environmental, cultural and socio economic factors. Though the proportion of balanoposthitis varies between 1.25%[12] to 5.6%[9] of males in the various studies in India, it ranked fourth among STDs with a proportion of 11.4%. Very few reports are available on this entity. Elderly individuals (>40 years) and diabetics commonly

presented with this condition. Further research is essential to elucidate the factors responsible for balanoposthitis.

The analysis of the data in Tables II-VI clearly reveal an overall decreasing trend in the clinic attendance and also among STD sufferers. The percentage composition and trends of various STDs are well depicted in the tables.[5-8] The salient features of the trends are discussed below :

Table II. Trends in STD clinic attendance among major groups

	Males						Females					
	STDS		Non Venereal		Total		STDS		Non Venereal		Total	
	Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%
1988	445	70.7	184	29.3	629	100	114	61.0	73	39.0	187	100
1989	495	70.6	206	29.4	701	100	99	61.5	62	38.5	161	100
1990	424	67.8	201	32.2	625	100	77	52.0	71	48.0	148	100
1991	347	68.7	158	31.3	505	100	83	62.9	49	37.1	132	100
1992	306	72.0	119	28.0	425	100	72	64.9	39	35.1	111	100
1993	272	71.0	111	29.0	383	100	46	52.9	41	47.1	87	100
1994	202	57.2	151*	42.8	353	100	43	42.8	59	57.8	102	100
Total	2491	68.8	1130	31.2	3621	100	534	57.5	394	42.5	928	100

The decreasing trend in STDs was in accordance with the findings elsewhere in India[8-10] and has been implicated to the decreasing promiscuty due to the fear of AIDS and due to the different measures to prevent HIV transmission,[8,9] though this trend has been observed even before preventive measures and awareness programmes for AIDS and STDs were introduced. The sudden rise in NV group in 1993-94 could however explain the 'fear' theory, since a wide media coverage was given in Chengalpattu during '92-94 as part of the AIDS awareness programme. Another factor that could have contributed to the STD decline is the widespread use of antibiotics and greater number of physicians and quakes treating STDs.[10] The reasons for the lower STD: NV ratio among females has been explained earlier.

Syphilis : Syphilis was the commonest STD diagnosed among females. There is an overall decreasing trend in syphilitics attending the clinic since 1989 with an abrupt rise in 1992. However, it showed a constant proportion among STDs throughout the period of study. Primary syphilis showed a pattern similar to the group with a spurt in '92.

Secondary syphilis showed an unique distribution with peaks every even year ('88, '90, '92, '94). Though the average composition of secondary syphilis was 11.9% amongst males, the peak average was 16.25% and trough average was 5.6%. Females too showed a similar trend with secondary syphilis comprising 17.4% among female syphilitics and peak average and trough average being 21.7% and 12.5% respectively. The increase in '92 of syphilis is essentially due to an increase in secondary syphilis in both sexes.

Latent syphilis showed variations in absolute numbers but within the syphilis group, it showed an increasing trend from 10.4% in'88 to 26.2% in '94 among males and 11.5% in '88 to 60.0% in'94 with a dip in '92 (15.38%) among females.

The ulcerative lesions of syphilis thus showed a declining trend with a steady rise among secondary and latent syphilis. Though there are reports of secondary syphilis being

Table III. Trends among various STDs in males

year	syphilis		Chancroid		GI		G. Herpes		Gonorrhea		NGU		LGV		G warts		B. posthitis		T vaginalis		Candidiasis		Other		STDs
	nos	%	nos.	%	nos.	%	nos.	%	nos.	%	nos.	%	nos	%	nos.	%	nos.	%	nos.	%	nos.	%	nos.	%	nos.	%
1988	77	17.3	111	24.9	12	2.7	7	1.6	60	13.5	46	10.3	30	6.7	29	6.5	39	8.8	12	2.7	4	0.9	18	4.0	445	100
1989	100	20.2	129	26.1	20	4.0	10	2.0	58	11.7	37	7.5	19	3.8	33	6.7	45	9.1	17	3.4	2	0.4	25	5.1	495	100
1990	77	18.2	123	29.0	5	1.2	8	1.9	55	13.0	36	8.5	17	4.0	28	6.6	53	12.5	8	1.9	4	0.9	10	2.4	424	100
1991	57	16.4	79	22.8	4	1.2	9	2.6	30	8.6	47	13.5	10	2.9	26	7.5	50	14.4	10	2.9	7	2.0	18	5.2	347	100
1992	87	28.4	74	24.2	0	0.0	9	2.9	23	7.5	33	10.8	11	3.6	20	6.5	38	12.4	2	0.7	1	0.3	8	2.6	306	100
1993	41	15.1	58	21.3	3	1.1	8	2.9	19	7.0	28	10.3	13	4.8	32	11.8	35	12.9	2	0.7	6	2.2	27	9.9	272	100
1994	42	20.8	33	16.3	1	0.5	11	5.4	24	11.9	12	5.9	6	3.0	25	12.4	23	11.4	10	5.0	1	0.5	14	6.9	202	100
total	481	19.3	607	24.4	45	1.8	62	2.5	269	10.8	239	9.6	106	4.3	193	7.7	283	11.4	61	2.4	25	1.0	120	4.8	2439	100

the commonest presentation in females[14,18] and latent syphilis being common in the civilian population,[11] the change in trend observed here is more significant. This could be due to a variant presentation probably because of antibiotics prescribed for other conditions. This may abort or delay the early stage of infection, minimising or abolishing early symptoms.[3] Reasons for the rise in secondary syphilis every alternate year needs further investigation.

Chancroid: The patients with chancroid attending the clinic showed a progressive downward trend. Chancroid which was the commonest STD among males till '91 was replaced by Syphilis in '92 and '94. However, it still continues to be the commonest cause of genital ulcer in men. The high prevalence of chancroid in males (M:F=8.3:1) has been attributed to the existence of asymptomatic carrier state in women, transmitting the infection to a number of men.[10] Increasing AIDS awareness, and improvement of local hygiene could have led to the observed declining trend.

Granuloma Inguinale : Having dropped from 20 cases in '89 among males to 5 in 90, GI got stabilised with just few cases every year. Females did not report with GI for 3 consecutive years from '90. Later one patient reported with GI every year. Improvement in the level of sanitation, economic development and health awareness could be responsible for the decline. The absence of cases in males in '92 and among females for 3 consecutive years from '90 followed by few cases in '93 and '94 could possibly point to importation of the disease from elsewhere by truck drivers and the like.

Genital Herpes : Though the number of patients attending the clinic was more or less constant, there was a slow rise in the proportion of genital herpes from 1.6% in '88 to 5.4% in '94. Females with genital herpes showed variation in attendance.

Table IV. Trends among STDs in females

year	syphilis		Chancroid		GI		G. Herpes		Gonorrhea		NSV		LGV		G. warts		T. vaginalis		Candidiansis		other		STDs
	nos	%	nos.	%	nos.	%	nos.	%	nos.	%	nos.	%	nos	%	nos.	%	nos.	%	nos.	%	nos.	%	nos.	%
1988	26	22.8	11	9.6	4	3.5	0	0.0	7	6.1	4	3.5	2	1.8	6	5.3	29	25.4	25	21.9	0	0.0	114	100
1989	33	33.3	13	13.1	3	3.0	2	2.0	11	11.1	5	5.1	2	2.0	8	8.1	16	16.2	3	3.0	3	3.0	99	100
1990	21	27.3	10	13.0	0	0.0	2	2.6	8	10.4	3	3.9	3	3.9	8	10.4	11	14.3	10	13.0	1	1.3	77	100
1991	25	30.1	14	16.9	0	0.0	0	0.0	10	12.0	4	4.8	2	2.4	7	8.4	16	19.3	4	4.8	1	1.2	83	100
1992	26	36.1	14	19.4	0	0.0	4	5.6	9	12.5	2	2.8	0	0.0	4	5.6	8	11.1	1	1.4	4	5.6	72	100
1993	14	30.4	7	15.2	1	2.2	1	2.2	6	13.0	2	4.3	2	4.3	9	19.6	2	4.3	0	0.0	2	4.3	46	100
1994	10	23.3	4	9.3	1	2.3	0	0.0	2	4.7	2	4.6	3	7.0	4	9.3	10	23.3	3	7.8	4	9.3	43	100
total	155	29.0	73	13.7	9	1.7	9	1.7	53	9.9	22	4.1	14	2.6	46	8.6	92	17.2	46	8.6	14	2.8	534	100

Rise in genital herpes has been observed worldwide.[9,14] The constant attendance with increasing proportion, point to a relative increase due to the fact that most bacterial diseases are treated at the primary level with a large number of newer antibiotics.[19] The lower prevalence among women is because of the disease being not easily recognisable in them.

Ulcerative STDs : In order to analyse the trends in the genital ulcers which has been predicted to form a high risk group for HIV transmission and to overcome misclassification, symptomatic ulcerative conditions like syphilis, herpes, chancroid, GI and erosive balanitis were grouped and analyzed.

Ulcerative STDs comprised 53.3% of STDs in males and 34.3% in females. It showed a declining trend in the absolute number of cases falling from 282 in '89 to 87 in '94 among males and 43 in '89 to 7 in '94 in females. Among STDs too, this group indicated a declining trend from '89 till '94 except for a spurt in '92 in both sexes. Chancroid (45.7%) was the commonest cause of ulcerative STDs among males while primary syphilis (50.3%) ranked first among females. The spurt in '92 appears to be due to a rise in primary syphilis in males and genital herpes in females.

LGV: Among males, LGV showed a steady decline from 30 cases in '88 to 6 in '94, with a constant percentage composition since '89 and an average composition of 4.3% among STDs. A constant reporting rate of 2-3 cases was observed in the clinic among females. In males, the inguinal nodes are commonly affected and among females, the iliac. Females with LGV therefore, present to the Gynaecology clinic with pelvic complaints. This could explain the lower reporting of females in the clinic.

A higher incidence of LGV is reported in this study in contrast to those presented in North Indian studies where it ranges from 0.1% to

Table V. Trends in the subgroups of syphilis

Year	PRIMARY						SECONDARY						LATENT					
	Males			Females			Males			Females			Males			Females		
	Nos.	% STD	% SY	Nos.	% STD	% SY	Nos.	% STD	% SY	Nos.	% STD	% SY	Nos.	% STD	% SY	Nos.	% STD	% SY
1988	57	12.8	74.0	16	14.0	61.5	12	2.7	15.6	7	6.1	26.9	8	1.8	10.4	3	2.6	11.5
1989	78	15.8	78.0	25	25.3	75.8	2	0.4	2.0	2	2.0	6.1	19	3.8	19.0	6	6.1	18.2
1990	52	12.3	67.5	14	18.2	66.7	9	2.1	11.7	3	3.9	14.3	16	3.8	20.8	4	5.2	19.0
1991	43	12.4	75.4	13	15.7	52.0	4	1.2	7.0	5	6.0	20.0	10	2.9	17.5	7	8.4	28.0
1992	55	18.0	63.2	16	22.2	61.5	13	4.2	14.9	6	8.3	23.1	19	6.2	21.8	4	5.6	15.4
1993	26	9.6	63.4	6	13.0	42.9	5	1.8	12.2	2	4.3	14.3	10	3.7	24.4	6	13.0	42.9
1994	19	9.4	45.2	2	4.7	20.0	12	5.9	28.6	2	4.7	20.0	11	5.4	26.2	6	14.0	60.0
total	330	13.2	68.6	92	17.2	59.4	57	2.3	11.9	27	15.1	17.4	93	3.7	19.3	36	6.7	23.2

0.6%[4] of STDs. It is however much lower than North-East Indian report (10%) and comparable to the reported incidence by Rangiah (3.3%).

Gonorrhoea: Gonorrhoea showed a definite decline in attendance among both males and females. It showed a high composition among STDs during the period '88-'90, declined between '91-'93 and then rose to 11.9% in '94 comparable to that in the initial years of study. The percentage composition among females remained constant till '93 and then dipped in '94.

Drug resistance could have contributed to the sudden rise of Gonorrhoea in males in '94. Further studies are essential in order to identify the cause. Asymptomatic nature, difficulty in diagnosis, absence of culture facilities and smaller attendance to the STD clinic prevents an inference on the decline observed in females.

Genital Warts: The number of patients with genital warts attending the STD clinic did not show significant change. Though it ranged from 20 to 33 in males, the overall composition showed a constant distribution among STDs till '92 with a steady rise from '93 onwards. Females too showed a constant percentage composition with a sporadic rise in '93.

As with genital herpes, genital warts too showed an increasing composition since '93, among STDs. Bhushan Kumar attributes this trend to the increasing antibiotic use to treat bacterial diseases, thereby increasing the reference rate of these diseases. Increasing self reporting by patients in the propaganda era could have played a role in the observed trend.

Trichomonas vaginalis: The number of patients attending the STD clinic showed wide variations. After a dramatic fall in attendance in '92-'93, it rose back in '94. The disease which is essentially female dominated, was identified in a large proportion of males who were either asymptomatic or had presented with some other STD. Screening of the female or male spouse as the case may be led to the observed data.

Trends in HIV Seropositives : The number of HIV seropositives following up in this department have gradually increased. The present HIV detection rate is 2.06%.

Presenting Complaints : Of the 23 patients diagnosed HIVseropositive, I male died due to surgical complications and 3 patients (2 M and 1 F) were reported missing with loss of their record sheets. Of the remaining 19 patients, 8 presented with

Table VI. Trends in ulcerative STDs

Year	Males							Females						
	Pri. Syph % USTD	G. herpes % USTD	BP % USTD	GI % USTD	Chan % USTD	G. Ulcers Nos.	G. Ulcers % STDS	Pri syph. % USTD	G.herpes % USTD	GI % USTD	Chan % USTD	G.Ulcers Nos.	G.Ulcers % STDS
1988	25.2	3.1	17.3	5.3	49.1	226	50.8	51.6	0.0	12.9	35.5	31	27.2
1989	27.7	3.5	16.0	7.1	45.7	282	57.0	58.1	4.7	7.0	30.2	43	43.4
1990	21.6	3.3	22.0	2.1	51.0	241	56.8	53.8	7.7	0.0	38.5	26	33.8
1991	23.2	4.9	27.0	2.2	42.7	185	53.3	48.1	0.0	0.0	51.9	27	32.5
1992	31.3	5.1	21.6	0.0	42.0	176	57.5	47.1	11.8	0.0	41.2	34	47.2
1993	20.0	6.2	26.9	2.3	44.6	130	47.8	40.0	6.7	6.7	46.7	15	32.6
1994	21.0	12.6	26.4	1.1	37.9	87	43.1	28.6	0.0	14.3	57.1	7	16.3
Total	24.9	4.7	21.3	3.4	45.7	1327	53.3	50.3	4.9	4.9	39.9	183	34.3

syphilis (4 M and 4 F) while two each with warts, gonorrhoea and chancroid (1 M and 1 F) and one each with extensive fungal infection of the groin, fatigue with vaginal discharge (F), scabies and generalised lymphadenopathy. One male with history of genital warts was detected HIV positive. A history of genital ulcer within six months of presentation was given by two patients-one with scabies and the other with generalised lympadenopathy. One patient with early latent syphilis gave a history of genital ulcer six years back and another a female with multiple painful ulcers over the labia majora with profuse vaginal discharge and cervicitis and positive VDRL. Thus, 11 of 19 patients either presented with a genital ulcer or of its history supporting claims of higher seropositivity among ulcerative STDs.[27] Age group analysis revealed that 55.6% of all HIV positive patients (46.1% in males and 80.0% in females) belonged to the 25-30 year age group.

The lower seropositive rates in our study is due to the screening of all STD attendees. It is however too premature to comment upon as the screening has just started. All patients with HIV seropositivity gave atleast a history of a STD.

Predictions for the years 1995 and 1996

Assuming the prevailing trends, we have attempted to predict the number of patients who would present with various disorders to the STD clinic at the Chengalpattu hospital. As the number of samples and sample size is small, the confidence interval is quite large. However, the worst has to be anticipated in order to be better equipped. We emphasize that the epidemiological factors should remain constant for the prediction to hold true. Regression analysis does not account for changes in the factors responsible for a disease.

The data analysis shows a decreasing trend amongst most STDs in both sexes. However, in the absence of an epidemiological study, this observation cannot be used to represent the

Table VII. Trends in HIV seropositives

Year	Nos. screened			Seropositives			(+)/Total	(+)/STDS
	M	F	Total	M	F	Total	%	%
1992	84	22	106	5	1	6	5.66	5.66
1993	383	87	470	2	3	5	1.06	1.57
1994	438	102	540	10	2	13	2.22	4.89
Total	905	211	1116	17	6	23	2.06	3.44

Table VIII. Patient attendance in '95-'96

	Prediction '95		Max. for '95		Prediction '96		Max. for '96	
	M	F	M	F	M	F	M	F
Attendees	224	67	421	121	172	51	364	109
STD	145	27	227	57	88	16	179	47
NV	99	40	247	80	83	36	244	78
Ulcers	78	9	231	51	50	5	215	50
Discharges	25	1	42	46	13	0	31	42
LGV	2	2	23	7	0	2	22	8
HIV (Total)	24		56		31		69	

population.[10] The view that there is a distribution of patients among the increasing doctors and quacks necessitates further study, involving all STD therapists in an effort to identify the true incidence and also enable the preventive measures to reach the grass root level. Proper maintenance of records is essential for a meaningful analysis. Gynaecology department should be actively involved in the identification of STDs and a better coordination with the STD department is desired.

All patients with STDs, especially syphilis, should undergo a test of cure. Atleast two repeat VDRL is recommended at 1 and 6 months after therapy. Reports variously describe a 4 or greater fold decrease in the titres among patients with primary or secondary syphilis in 3[23] to 6[24] months. In early latent syphilis, the decrease of only 4 fold at 12 months is described.[24] A reasonable conclusion of a treated syphilis, therefore, could be a decrease in titres in the two specimens at 1 and 6 months.

The asymptomatic nature of herpes in a large number of patients, especially females,[27] could be the reason for the constant number of patients attending the STD clinic. The true incidence can only be found by performing serological tests. Wagner[25] reports that the age specific HSV-2 seroprevalence rate could provide a sensitive and objective measure of sexual behaviour in adolescence and may thus be a useful tool for evaluating behavioural interventions against the AIDS epidemic.

The rising HIV infection is a cause for great concern. Suniti Solomon[20] reports a rise in HIV infection among antenatal mothers and voluntary blood donors suggesting that the virus has trickled into the general population. Control measures are therefore suggested for the population as a whole. Behavioural changes are thought to have contributed for the decreasing number of new patients with AIDS in UK. Emphasis should therefore be laid on fidelity. Counseling of patients with genital ulcers and its prevention is essential to bring down the rates of transmission. Proper counseling and follow-up of HIV seropositive patients is necessary

to prevent them from transmitting the infection.

Though our studies showed that only patients with STDs attending the STD clinic were HIV seropositives, it is always better to screen all STD attendees for HIV antibody. Further studies of HIV antibodies in urine may throw light on the pathophysiology of HIV infection and also its role in early diagnosis.

Acknowledgement

We sincerely thank Dr Thirumalai, Dean, Chengalpattu Medical College and Hospital, for having given us the permission to use the hospital data for this study. We convey our gratitude to the staff members of the STD clinic for their cooperation in the collection of data required for this study. We are grateful to Dr K Swaminathan, Associate Professor, IIT Madras; Dr Rajagopalan Distinguished Fellow, MSSRF and Mrs Anathalakshmi for their encouragement and valuable advise.

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