

Amyloidosis in Leprosy¹

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There are not many publications on the occurrence of amyloidosis in leprosy from India. Autopsy studies have shown that the incidence of amyloidosis is not very high (^{2,3}). Elsewhere in the world, e.g., the U.S.A., the incidence is found to be high (⁴). Williams *et al* (⁷), conducted a comparative prospective study in the U.S.A. and Mexico and found that in the U.S.A. the incidence of amyloid was around 31% and in Mexico only 6%. A preliminary study done by Reddy *et al* (⁵), at Kurnool, about 500 miles southwest of Andhra Pradesh, showed that the incidence was low. It was found that only 3 of 37 lepromatous cases had amyloidosis.

In the present investigation a larger number of cases from Visakhapatnam, another area where leprosy is very prevalent in South India, are studied for the presence of amyloidosis. A brief report on the results is presented.

MATERIALS AND METHODS

Seventy-nine cases of lepromatous leprosy were available for study. Age; sex; duration of disease; duration of ulcers, if any; enlargement of liver, spleen and lymph nodes; duration of treatment, if treated; and whether the treatment was regular or irregular was noted in each case. Skin bacterial smears, complete urine examination, I.V. Congo red test and skin and gingival biopsies were done in all the cases. The gingival biopsies were examined for evidence of amyloidosis by staining the sections with Congo red and examining them between crossed polarizers for green birefringence. The intravenous Congo red test was done according to the method of

Taran and Eckstein (⁶). The evaluation of the results of the Congo red test was done according to Cohen (¹). It was almost certain that amyloid was present when there was 20% or less serum retention of Congo red (80% or more adsorption). It was taken to be properly present with 21%-40% of serum retention (60%-80% adsorption). It was not regarded as diagnostic when more than 40% of the dye was retained in the serum (less than 60% adsorption).

RESULTS

The clinical data of the lepromatous cases and also the cases with amyloid are given in Table 1. Table 2 gives the particulars of the Congo red test and the gingival biopsy tests.

All the cases now studied had lepromatous leprosy proven by bacterial smears. There was no correlation between bacterial indices and the occurrence of amyloid. It is seen from the clinical data that more than 50% of the cases had the disease for more than five years. Ulcerated lesions were not very frequent in these people. No urine albumin could be detected in any of the cases. The treatment employed in all the cases was sulphone therapy, but less than 50% had regular treatment.

There were only four cases showing suspicion of amyloidosis by the intravenous Congo red test and only 2 of the 79 gingival biopsies showed amyloid. None of the skin biopsies, stained by Congo red, revealed any amyloid. Thus, there were six cases showing amyloid and the overall incidence was only 7.6%. In none of the cases were both the Congo red and gingival biopsy test positive.

Five of the six amyloid positive cases were younger than 40 years and all were males, four had ulcerated lesions, four had irregular treatment, two had no treatment at all, and all six had had leprosy for ten

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TABLE 1. *Clinical status of patients.*

Clinical categories	Total cases		Cases with amyloid		
	Years	No.	%	No.	%
Age: 10-20		6	7.6	1	16.67
21-30		28	35.4	2	7.14
31-40		26	32.9	2	7.69
41-50		12	15.2	—	—
51-60		5	6.3	—	—
61-70		2	2.5	1	50.00
Sex: Males		75	94.93	6	8.00
Females		4	5.06	—	—
Duration of disease (in years):					
1-5		33	41.7	1	3.01
6-10		11	13.8	5	45.45
11-15		13	16.4	—	—
16-20		8	10.1	—	—
Above 21		14	17.7	—	—
Duration of ulcers (in years):					
1-5		4	5.06	2	50.00
6-10		6	7.6	2	33.34
Hepatomegaly		13	16.4	—	—
Hepatosplenomegaly		6	7.6	—	—
Lymphadenopathy		25	31.6	—	—
Albumin in urine		nil	nil	—	—
Duration and type of treatment (in years):					
Regular treatment					
1-2		15	19.00	—	—
3-5		2	2.5	—	—
6-10		8	10.1	—	—
11 and above		5	6.3	—	—
Irregular		23	29.1	4	17.39
No treatment		26	32.9	2	7.69

TABLE 2. *Evidence of amyloidosis.*

Test for amyloid	No.	%
Serum retention of Congo red:		
Positive (0%-20%)	nil	—
Suspicious (21%-40%)	4	5.06
Negative (41% above)	75	94.94
Gingival biopsy positive	2	2.53
Incidence of amyloid	6	7.6

years or less. In those who had ulcers, the ulcers were of the toes which had been present for 2, 4, 6 and 10 years respectively.

DISCUSSION

In the present study only six of seventy-nine cases of lepromatous leprosy (7.6%) showed amyloidosis. In a previous study, 27

cases of lepromatous leprosy were investigated for amyloid and it was seen that there were only 3 showing amyloid (5). The previous study was done at Kurnool, about 500 miles southwest of Visakhapatnam. At Vellore (about 700 miles south of Visakhapatnam), in an autopsy study of 37 cases of leprosy, there were only 4 with amyloid (2). In Mexico the incidence was

low. It was found by Williams *et al* (⁷), to be around 6%. The same group of workers found the incidence of amyloidosis in the U.S.A. to be 31%. Williams *et al* (⁷), commented that the differences in the incidence of amyloidosis between the U.S.A. and Mexico may be due to the differences in their diets, especially in the animal fat consumption—the Mexicans consuming much less animal fat. We have not made a particular study of diet pattern of the present series of cases. Most of them have a very low socio-economic background and almost all of them belong to the beggar community. In the general population meat and milk products are low except in the higher classes. But in the beggar community the diet consists only of carbohydrates with little fat or protein. Milk and meats products are also absent in the beggar community.

The low incidence of amyloidosis as seen at Vellore, Kurnool, and Visakhapatnam, as noted above, could be a general pattern in South India. Therefore, it may be said that amyloidosis in leprosy is rather uncommon in South India.

SUMMARY

In a study of the incidence of amyloidosis in 79 cases of lepromatous leprosy, it was found that in only 6 cases amyloidosis was present. This confirms previous findings of a low incidence of amyloidosis in leprosy patients in South India.

RESUMEN

En un estudio sobre la incidencia de amiloidosis en 79 casos de lepra lepromatosa, se encontró que la amiloidosis estaba presente solamente en seis casos. Esto confirma hallazgos

anteriores sobre la baja incidencia de amiloidosis en los enfermos de lepra en el Sur de la India.

RÉSUMÉ

Dans une étude portant sur l'incidence de l'amyloïdose dans 79 cas de lèpre lépromateuse, on a constaté que six cas seulement d'amyloïdose étaient présents. Cette observation confirme des résultats antérieurs, qui soulignaient l'incidence peu élevée de l'amyloïdose chez les malades atteints de lèpre en Inde Méridionale.

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