

## SEROLOGICAL CHANGES IN LEPROSY

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### Introduction :

Leprosy is a disease of antiquity, the earliest mention of which was made in Sushruta Samhitha, Manusmriti and later in Bible. The etiology of the disease could not be understood for a long time until Hansen in 1874 isolated the causative organism, *Mycobacterium leprae*. Since this discovery down to the present day, rapid strides have been made in the understanding of the disease, in its manifestations, and in its therapy. However, lacunae still exist in establishing several serologic parameters either to assess the severity of the disease or to differentiate the various types. The present study aims at the detailed investigation of several components in the sera of leprosy patients. These include the two transaminase Enzymes (SGOT and SGPT), Cholesterol, Blood group and the VDRL test. In a select few, the biopsy of liver is also investigated. Evaluation of the liver damage in leprosy forms part of this study. It is hoped that the pooling of these data may reveal some interesting pointers.

### Material and Methods :

100 cases comprising different types of Leprosy from the Out-patient clinic of the Dermatology Department, Government General Hospital, Guntur were subjected for this study. Patients

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of either sex, and belonging to different age groups were chosen. Control observations were also made in 25 apparently healthy individuals.

S.G.O.T. and S.G.P.T. were estimated by the Colorimetric method of Reitman and Frankel (1956) and the results were expressed in terms of units of activity.

Serum Cholesterol was determined by the method of Zak (1957) and the values expressed as mg. per 100 ml. Blood group was determined by the usual agglutination technique employing anti-sera. The VDRL test was performed by slide flocculation method. Biopsy of liver was done employing a vim-silvermann needle. The results are tabulated in the next page :—

### Discussion :

The above data reveal that the prevalence of Leprosy is more in the age group of 20-40. Males are more predominant. The Lepromatous, tuberculoid and Maculoanaesthetic types were uniformly distributed in the cases we have studied. The polyneuritic type appears to be less common. These findings bear semblance to the existing reports. In as much as the distribution of Blood groups conforms to the normal pattern, one can infer that blood group does not bear any relevance in this context. The values of serum Cholesterol fit into the normal range in majority of cases. However in 20 cases values less than 150 mg% are encountered. This may be due to the possible liver damage. The damage might have occurred to the extent of interfering with the hepatic synthesis of Cholesterol.

**Table I—Incidence of Leprosy during the last 5 years**

Year	Total No. of New Leprosy cases	No. of Lepromatous cases	No. of Non-Lepromatous cases
1966	1022	312	710
1967	947	296	651
1968	941	295	646
1969	1109	328	781
1970	907	256	651

**Table II—Present Series Total Number of Cases 100 Age Groups**

0-20 years — 30
20-40 years — 47
40 years and above — 23

**Table III Sex Distribution**

Males — 80
Females — 20

**Table IV—Clinical Types**

Lepromatous	Non-Lepromatous (68 cases)		
	Tuberculoid	Maculoanaesthetic	Polyneuritic
32	27	30	11

**Table V—Blood Groups & VDRL**

O	Blood Groups			VDRL	
	A	B	AB	Positive	Negative
40	25	28	7	36	64

**Table VI Serum Cholesterol, S.G.O.T. & S.G.P.T.**

Serum Cholesterol (mg%)				S.G.O.T. 77 Cases			S.G.P.T. 23 Cases		
				Units			Units		
100-150	150-200	200-250	250 & above	0-20	20-40	40 & above	0-20	20-40	40 & above
22	45	29	4	23	39	15	10	10	3

**Table VII—Serum Cholesterol, S.G.O.T. & S.G.P.T. in 25 Healthy Individuals**

Serum Cholesterol (mg%)				S.G.O.T. (Units)			S.G.P.T. (Units)		
100-150	150-200	200-250	250 & above	0-20	20-40	40 & above	0-20	20-40	40 & above
Nil	13	10	2	2	22	1	9	16	Nil

The values of Serum Glutamic Oxaloacetic transaminase (S.G.O.T.) are elevated beyond 40 units, in 15 cases. Two contributory factors may be accounted for. One, the subnormal hepatic damage and secondly the destruction of skeletal muscle. The serum Glutamic Pyruvic transaminase (S.G.P.T.) showed elevation only in 2 cases out of 17 we have investigated. These are clearly due to the hepatic damage and extended observations are required to confirm this view. The V.D.R.L. test is positive in 36 cases only, while it is negative in 64 cases. The positive nature of the test is not due to syphilitic condition but should account for the false positives that are usually noticed in leprosy individuals.

There have been several reports on the enzymologic changes in leprosy. Ramanathan et al (1963) reported higher levels of S.G.O.T. in lepromatous leprosy. The values of S.G.P.T. were normal in these cases. The same authors investigated the alkaline phosphatase and found it to be in the normal range. Serum copper oxidase was definitely elevated. Shivde and Junnarkar (1967) reported a relative rise in S.G.P.T. and suggested a toxic effect of leprosy bacilli on the hepatic cells. In the light of these observations S.G.P.T. seems to be a more sensitive index of hepatic involvement in leprosy than the routine liver function tests. The observations of Mohanty and Murti are also identical with these findings. Contrary to these reports Mitra (1968) concluded from his studies that the value of serum transaminases in leprosy patients is very limited.

Lowered serum Cholesterol values were reported earlier by Kusaka, Tarabine, and Ramu and Nagarajan. Our findings closely run parallel with these.

Ten cases of Leprosy were subjected to liver biopsy. Out of these, one case showed normal pattern whereas in the rest changes of fatty infiltration were demonstrable. There have been several reports about the histologic alterations in liver in leprosy. Shivde and Junnarkar reported 58 cases. Periportal fibrosis, nutritional atrophy, and focal inflammation were observed by them in 22 cases. Cirrhosis was observed in 8 cases. Earlier reports on this aspect showed the presence of granulomata, fatty changes and patchy fibrosis. The changes in liver closely correspond with the biochemical alterations in the serum.

#### Summary and Conclusion :

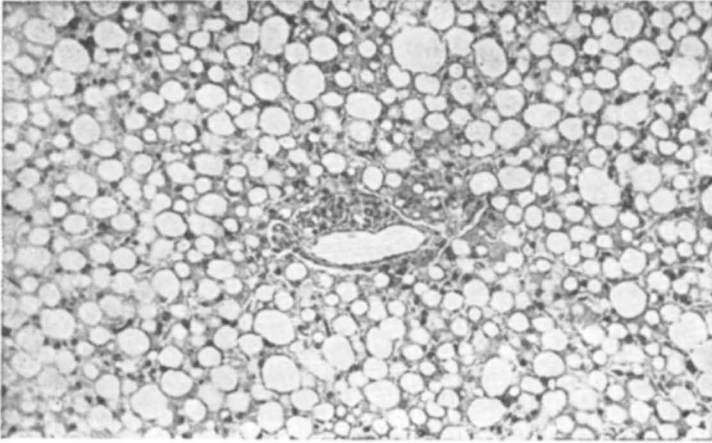
100 cases of Leprosy were investigated. In these cases, males were predominant. The age group 20-40 represented a sizeable section. The blood groups and V.D.R.L. tests remained as in the normal pattern. Serum Cholesterol values were found to be low in 22 cases. S.G.O.T. was found to be elevated in 15 cases and S.G.P.T. in 3 cases. The possibility of liver and muscle damage was discussed. Work done in this field by several workers is reviewed.

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Photomicrograph of liver of case No. 2 showing fatty change

Liver lobule showing central vein surrounded by a few inflammatory cells. The hepatic cells are clear and in most of the cells the nuclei are pushed to the periphery. A few cells are coalesced to form fatty cysts.

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