

## STUDY OF THE SKIN IN THE VICINITY OF WELL MARGINATED LESIONS OF TT AND BT LEPROSY

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### Summary

Well defined margin in a patch of leprosy indicates good cell-mediated immunity (CMI) and containment of the disease process within the lesion. A study was hence undertaken to ascertain if histological changes in well marginated lesion are confined to the involved area alone or extend into the surrounding normal-looking skin.

It was seen that a well defined margin does show confinement within the involved area as compared to lesions with illdefined margin. Involvement of surrounding normal skin was greater in patients with multiple lesions as compared to those with single lesion.

**KEY WORDS:** Well marginated lesions, TT and BT leprosy, CMI status, Histological containment.

### Introduction

Well-marginated lesions are a feature of tuberculoid (TT) and border line tuberculoid (BT) leprosy (Dharmendra<sup>1</sup>, Jopling<sup>2</sup>). A sharp nonsloping margin indicates good CMI status and suggests confinement of the disease process to the involved area. The study was hence undertaken to ascertain whether histological changes seen in the lesion are confined to the clinically involved skin or extend to the

normal looking skin well beyond the sharp edge, and to correlate histological confinement with other clinical features.

### Material and Method

Eighteen adult male leprosy patients with well defined lesions were investigated. Only those patients whose disease could be clinically classified as TT or BT on Ridley-Joplings<sup>3</sup> scale, who had positive lepromin test, and were bacteriologically negative on routine scraping for 3 days, were included in the study. The histopathology from the lesions was studied and patients classified according to histological criteria of Ridley and Jopling.

Normal looking skin at a distance of 0.5 cm was biopsied and histology studied with H and E and Zeihl Neelson stains under light microscope.

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Normal skin was defined as having normal colour, texture, sensibility and hair growth.

Normal looking skin at a distance of at least 1 cm beyond lesions with ill-defined margin from cases of LL/BL leprosy was similarly studied for comparison.

The histological changes in the normal looking skin were graded as under :-

	Grade
(1) No histological abnormality or negligible infiltrate not suggestive of leprosy	0
(2) Mononuclear infiltrate suggestive of leprosy due to periappendageal localisation or attempt at granuloma formation	1
(3) Changes similar to grade 1 but also showing definite infiltration of nerves	2
(4) Changes similar to grade 1 or 2 but also showing AFB	3
(5) Histology essentially similar to the histology of the lesion observations	4

Clinical details of the patients are given in Table 1. Duration was less than one year in all the cases. The patients either had taken no treatment or had treatment for less than one month. Histologically 11 cases were classified as TT and 7 as BT.

Table 2 gives the grading of histological changes in surrounding normal skin in study group and controls.

Correlation of histological changes in normal skin relative to morphology and number of lesion is shown in Table 3.

### Discussion

Classification of leprosy by research workers is usually based on criteria

TABLE 1  
Clinical Details of Patients Studied

Case No.	No. of patches	Morphology	Surface	Histological classification
1.	2	Flat	Rough & dry	TT
2.	1	Raised	- do -	TT
3.	3	Raised	- do -	BT
4.	1	Flat	smooth	TT
5.	1	- do -	- do -	TT
6.	2	- do -	Rough & dry	TT
7.	4	- do -	- do -	BT
8.	2	Raised	- do -	TT
9.	3	Flat	- do -	BT
10.	1	- do -	- do -	TT
11.	1	Raised	- do -	TT
12.	2	- do -	- do -	BT
13.	2	Flat	Smooth	TT
14.	1	- do -	Rough & dry	TT
15.	1	Raised	- do -	BT
16.	2	Flat	Smooth	TT
17.	3	- do -	- do -	BT
18.	3	- do -	Rough & dry	BT

TABLE 2  
Grading of histological changes in surrounding normal skin in TT and BT cases

Histology of lesion	Total No	Grading of changes-No of cases				
		Gd0	Gd1	Gd2	Gd3	Gd4
TT	11	6	3	2	-	-
BT	7	-	3	2	2	-
Control (BL and LL)	10	-	-	-	3	7

Figures indicate number of cases.

TABLE 3  
Grading of histological changes in normal skin in relation to morphology and number of lesions.

Morphology/number of lesion	Total Number	Gd0	Gd1	Gd2	Gd3	Gd4
Flat lesion	12	4	4	2	2	-
Raised lesion	6	2	2	2	-	-
Single patch	7	5	2	-	-	-
Multiple patch	11	1	4	4	2	-

given by Ridley and Jopling<sup>3</sup>. It is however seen that clinico-pathological correlation is available only in 60 to 70% cases<sup>4</sup>. While discussing "the meaning of clinical picture" Ridley<sup>5</sup> has grouped the number, distribution

of lesion and sharpness of edge of the lesion together. Shakuntala et al<sup>6</sup>, have also reported variable degree of infiltrate in the normal skin of TT and BT lesions of leprosy when the normal skin was studied as far as 8 cm from the lesions.

In TT and BT Leprosy the CMI status is good and lesions are sharply margined. It is reasonable to assume that better the confinement of the disease within the lesion the better the CMI status. The present study was hence done to see if sharp non-sloping margin does indicate confinement within the margin and if so attempt correlation of histological confinement with other parameters used for classification of leprosy.

In all the 18 cases studied, the histopathological changes beyond the sharp edge were less than grade 4, while 7 out of 10 patients in control group showed grade 4 changes well beyond the ill defined margin, indicating that sharpness of edge does indicate an attempt at localising the lesion to the area confined within the edge.

17 out of 18 cases having 3 or less lesions would be classified as TT leprosy on clinical ground. However histologically 11 cases were classified as TT histologically had grade 0 changes in surrounding skin while no case of BT leprosy had a grade 0 histology in surrounding normal skin. Histopathology is hence considered a better guide to immune status at this end of spectrum of leprosy.

4 out of 12 macules had grade 0 change, and 2 out of 6 raised lesions also showed grade 0 change in surrounding normal skin. Two out of 12 macules had grade 3 changes, but none out of 6 raised patches had grade 3 changes. It would be clear that raised

lesions toward BT/TT end of the spectrum indicate better containment than flat lesions.

5 out of 7 single lesions had grade 0 change in normal skin. Only 1 out of 11 multiple lesion cases had grade 0 change. This one patient had only two lesions. It is evident that number of lesions is good indicator of an individual's immune status. Six out of these 7 cases having single lesion had histology grouped as TT and only one had a histology grouped as BT. Amongst the multiple lesion cases, 6 out of 11 had histology classified as BT and 5 out of 11 had histological picture of TT leprosy. Evidence of grade 1 to 3 changes in surrounding normal skin, however were seen in as many as 10 out of 11 cases. We feel that immunological status of patients with more than one patch should be considered nearer BT rather than TT as histological containment within margin was poor.

Based on above findings, it is considered that while there is no doubt that sharp edge indicates attempt at containment of the lesion within the margin the number of lesions, where margins are sharply defined, gives a good indication of immune status. True tuberculoid label should only be reserved for those well-margined lesions which are single and also have a tuberculoid histology. "It is, hence, proposed that at this end of classification, the final classification should be the lower of the two classifications as assessed by histology or by clinical features. This aspect requires further studies".

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