

COMPARATIVE STUDY OF THERMAL OEDEMA IN NORMAL AND LEPROTIC SUBJECTS

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Roche, Silva and Antonio (3) showed that there is production of oedema in animals exposed to a temperature of 44°-45°C for twenty to thirty minutes and there is release of body bradykinin. The possibility of 5-HT and histamine being responsible for such an oedema is ruled out firstly by the fact that the mast cells get stabilized at this temperature and secondly the antihistaminic and antiserotonin drugs have no influence on such oedema. They have, however, shown that sympatholytic drugs have significant reducing effect on this type of oedema. This points to the involvement of adrenergic nerves. The exact mechanism is not clear but it is possible that catecholamines may by some process activate the release of bradykinin. The object of this study was to find out if there was any gross difference in the production of oedema in normal persons with intact peripheral nerves and the patient of leprosy with ulnar nerve involvement.

METHODS AND MATERIAL

The hand and forearm of normal and leprotic patients were immersed in a large metal cylinder respectively upto a mark drawn on the arm, with a skin pencil. The level of water when the vessels was full and the skin pencil mark on the arm, were same. This was first measured. This procedure was repeated at 37°C and then on normal and leprotic patients, after their hands and forearms were immersed in water between 46-48°C for 20 minutes, and the difference in volume before and after the heating was noted.

RESULT AND DISCUSSION

Perusal of Table 1 shows that there is statistically less significant edema in the patients of leprosy with ulner nerve involvement. The difference in the formation of edema may be due to absence of some neurohormones which are released due to thermal stimuli in the intact peripheral nerves and which might be activating the process of edema formation. The axon reflex may also be contributing a part to the edema formation and this reflex cannot operate appreciably in the patients of neural leprosy. Champman *et al* (2) pointed out that during flare phase of axon reflex in normal subjects the subcutaneous fluids increased three to nine folds. Mitchell (1) has shown that bradykinin liberated due to thermal stimuli increased the digital effective blood flow and it is possible that some substance or substances released from the nervous element may be implicated in the liberation of bradykinin.

This work requires further investigation in the field in order to throw light on the mechanism of oedema formation.

TABLE I

Normal subjects	Total volume of cylinder minus volume of water displaced by Limb			Mean	Standard Derivation	Standard Error	t Test
	Before heating	After heating	Difference in volume				
No. 1	595 ml	540 ml	55 ml	52	2.40	1.07	
2	600 ml	650 ml	50 ml				
3	580 ml	630 ml	50 ml				
4	575 ml	520 ml	55 ml				
5	540 ml	590 ml	50 ml				
Leprosic patients				22	12.6	3.05	P<.01
1	600 ml	590 ml	10 ml				
2	580 ml	570 ml	10 ml				
3	545 ml	510 ml	35 ml				
4	520 ml	500 ml	20 ml				
5	575 ml	550 ml	25 ml				
6	570 ml	560 ml	10 ml				
7	550 ml	540 ml	10 ml				
8	560 ml	520 ml	40 ml				
9	590 ml	550 ml	40 ml				
10	540 ml	530 ml	10 ml				
11	560 ml	640 ml	20 ml				
12	564 ml	530 ml	35 ml				
13	560 ml	540 ml	20 ml				
14	560 ml	530 ml	30 ml				
15	550 ml	510 ml	40 ml				
16	540 ml	530 ml	10 ml				
17	550 ml	540 ml	10 ml				

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