Summary of the Results of a Search of the Skin Surface for *Mycobacterium leprae**

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The surface of the skin of 24 patients with active lepromatous leprosy was searched for the presence of Myco. leprae by the method of taking composite skin contact smears (C.S.C.S.) as described in the author's previous paper in Leprosy Review (1970) 41, 31; the patients included 11 of those previously examined by this method. The total area searched was 813 sq. cm (a page of Leprosy Review is approximately 450 sq. cm in area). The results are shown in Table 1.

TABLE 1

Region	Area	No. of AFB
Face	505 sq. cm	25
back back	308 sq. cm	3
Total	813 sq. cm	28

COMMENTS

In order to search the total area of 813 sq. cm 86 C.S.C.S. were used. This took about 50 hours of microscope work. It will be noted that, of this area, 505 sq. cm were face skin, in which there are probably more sweat and sebaceous glands than anywhere else in the body. Because Myco. leprae are sometimes seen in these glands, it has been supposed that they emerge in great numbers on to the surface of the skin-many of them being in "live" or active form. However, only 25 acid-fast bacilli (AFB) in this area of face skin were found. These were all present in 4 of the patients, all of whom had infected nasal mucus secretion. In addition, one of them had a small discharging sore on the border of one ear; a smear from the discharge

showed that it was heavily loaded with Myco. leprae, mostly in solid-rod form. A C.S.C.S. compiled from both sides and the edge of the enlarged lobe of this ear showed 5 solid staining bacilli. When I took the smear from this ear the sore was not discharging, but was sealed off by a hard serous crust which had to be removed to make the smear (of the discharge). Thus it would not be unreasonable to suppose that these 25 bacilli had found their way on to the skin surface from the infected nasal secretion present in each of these 4 cases, and from the discharging sore. These 4 patients accounted for 85 of the 505 sq. cm of face skin examined. Thus there remained 420 sq. cm of face skin from which no bacilli were picked up by the C.S.C.S. method. The 3 remaining rather doubtful acid-fast organisms are referred to in Case 8 of the author's previous paper (Lepr. Rev. (1970) 41, 31).

DISCUSSION

The belief that Myco. leprae are discharged on to the surface of the skin from sweat and sebaceous glands of lepromatous skin appears to be incompatible with these findings, especially when it is remembered that the skin of the face probably contains many more sweat and sebaceous glands than anywhere else on the surface of the body. If the finding of these organisms in sweat and sebaceous glands or in the cells of the epidermis of lepromatous skin has given rise to the belief that "innumerable" Myco. leprae-many of them assumed to be "live"—are emerging on to the skin surface, the following question arises: Why does the C.S.C.S. method fail to pick them up?; although this method does *not* fail to pick up bacilli:

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(1) shed on to the skin from nearby discharging sores; or (2) which have found their way on to the skin of the face of patients whose nasal mucus secretion is infected with Myco. leprae; or (3) organisms which were placed on the skin (for control testing of the C.S.C.S. method) by smearing on to the skin: (a) infected nasal mucus secretion, or (b) infected tissue "juice" from skin slit scrapings?

CONCLUSIONS

From this extended search the following conclusions can be made:

- (1) Myco. leprae do not emerge from intact lepromatous skin.
- (2) Skin to skin transmission of the organism is therefore unlikely to occur. Thus, by the process of elimination, the most likely mode of transmission is by ingestion or inhalation. The former has been proved by finding *Myco. leprae* in the mother's milk, and in the lining cells and lumina of the milk ducts of lactating women with active and untreated lepromatous leprosy. (See

references in the author's previous paper, Lepr. Rev. (1970) 41, 31.)

PREVENTION

In the prevention of the transmission of leprosy special attention should be paid to the following points:

- (1) The nasal mucus secretion of a patient with active lepromatous leprosy (especially the untreated case) should always be examined for the presence of *Myco. leprae* as this is the index of the patient's infectivity. In this connection one must be specially watchful for patients with the nonapparent lepromatous type of the disease, who could otherwise pass unnoticed and yet have highly infectious nasal mucus secretion. (See Case 9 in the author's previous paper.)
- (2) Instruction should *always* be given to a patient with infected nasal mucus secretion on how to dispose of his noseblowings, and also his sputum, in a hygienic manner.