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The Nasal Mucus in Leprosy*

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An account is given of the examination of the nasal mucus discharge smears for the presence of *Myco. leprae* in 322 untreated cases of leprosy seen during a period of one year of which 111 were cases of lepromatous leprosy and the remaining 211 were borderline disease. The majority of the patients with lepromatous leprosy had leprosy bacilli in their nasal secretion, often in very great numbers, and showed a high Morphological Index. Of 41 of the most active cases among the 211 patients with borderline leprosy, only one had *Myco. leprae* in the nasal mucus. Morphologically normal bacilli are no longer found in nose-blows after 6 months' treatment with DDS. It is suggested that the nasal mucus provides a true index of infectivity, and that patients with borderline leprosy are in general not to be regarded as infectious.

During the past 4 years the nasal mucus discharged by patients suffering from leprosy has been examined after staining for acid-fast organisms. In the past 12 months, 322 new patients (111 with lepromatous and 211 with borderline diseases) who had received no previous treatment for their leprosy, were thus examined by the author personally, with the following results.

Lepromatous Leprosy

In 80 patients (out of the 111) bacilli were present in the nasal discharge, the concentration of organisms being: light to moderate in 47 patients, heavy in 13 patients and very heavy in 20 patients.

The proportion of solid-staining organisms was very high when the concentration of bacilli was great; such organisms were more numerous in the nasal mucus than in material obtained from the skin by the standard slit-smear technique. In most instances it was possible to examine only one specimen of nasal mucus, but in a few of those classified as showing "light" concentration in the above summary, no bacilli had been found on the first examination but a few bacilli—a small cluster, or a globus, or a single bacillus—were found subsequently. Thus, some of the 31 patients in whom no bacilli were found might indeed have been discharging a small number of organisms which would have been discovered had it been possible to examine several specimens of nasal mucus.

Borderline Group

Of the 211 patients diagnosed clinically as having Borderline disease, 41 were selected for bacterioscopic examination of the nasal mucus. The criterion for

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selection was clinical activity, as indicated by elevation and erythema of the well-demarcated lesions. In only 1 of these 41 patients were acid-fast organisms found in the nasal mucus, and this patient was suffering from ulceration of the septal mucosa.

The distribution of the cutaneous lesions in these 41 patients, classified according to their clinical presentation (and unconfirmed histologically) (Ridley and Jopling, 1966) is shown in Table 1.

TABLE 1

Group	Distribution of lesions	Number of cases	Clinical classification			
			BT	BB	BL	LI
1	Face	7	2	0	2	3
2	Face and body	27	2	6	10	9
3	Trunk and limbs	7	2	2	1	2
	Totals	41	6	8	13	14

It is noteworthy that 34 of these patients had lesions of the face, i.e. near the nares, of whom 27 had, in addition, numerous lesions of the trunk and limbs. Facial lesions may be viewed as being in proximity to the nasal mucosa, while lesions elsewhere on the skin indicate widespread bacillary dissemination.

Discussion

The importance of the discharge from highly bacilliferous nasal mucosa has been stressed (Pedley, 1970*a*, *b*). Skin adjacent to the nose, or areas of skin that are repeatedly touched by fingers previously contaminated by contact with skin near the nose, may have on its surface numerous acid-fast organisms far in excess of the number reputedly discharged from sweat glands, hair follicles, or microscopic breaks in the skin. The presence of organisms in the nasal discharge should therefore be regarded as a better indication of the infectivity of the individual patient than their presence in the skin itself, from which they rarely penetrate to the surface.

The following criteria for absence of contagiousness, in order of decreasing importance, are therefore submitted:

(1) Absence of *Myco. leprae* from the nasal mucus on repeated examination; (2) intact skin, despite numerous lesions; (3) diagnosis of Borderline leprosy (rather than lepromatous); (4) absence of *Myco. leprae* from the smears obtained from the most active skin lesions.

Histological Demonstration of *Myco. leprae* in the Nasal Mucosa

When *Myco. leprae* are not found in the nasal mucus in patients suffering from lepromatous leprosy, prolonged search of sections of the nasal mucosa may reveal scanty organisms. Their presence, however, does not invalidate the suggestion that as an index of infectivity, i.e. contagiousness, the nasal mucus itself provides the true indication.

In spite of the observation that the actual surface of the nasal mucous membrane (removed and examined microscopically after being suitably stained) appears to be completely intact, bacilli have been found in the mucus from

adjacent mucosal surfaces. They apparently emerge to the surface in the absence of any observable interruption in the integrity of the surface, such as an erosion or a chronic ulceration.

It is furthermore to be noted that in sections of the nasal mucous membrane, bacilli are seen at various depths of the actual section, that is, they have not been pushed by the mechanical pressure of the microtome as it cuts through the embedded tissue.

Dr D. J. Harman (of The Leprosy Study Centre, London) comments on a typical section in the following terms: "It is only in active untreated lepromatous cases, where the bacilli are multiplying and disseminating, that the organisms are so numerous that they pass through the mucous membrane and come to the surface, and thus can be obtained in the nose-blow, or in nasal washings. Where any Borderline element is present, the bacilli are less numerous and tend to be held more in the phagocytes, and are therefore only obtained by nasal scrape."

Conclusions

(1) The majority of untreated patients with lepromatous leprosy in Nepal discharge solid-staining leprosy bacilli through their nasal mucosa; these bacilli are present in the nasal mucus.

(2) Such patients must therefore be considered as contagious, until they cease (as the result of treatment) to discharge viable bacilli in the nasal secretion.

(3) In Borderline leprosy, despite the presence of reactive lesions on the face and elsewhere, the nasal mucus very rarely contains leprosy bacilli.

(4) In none of the 14 cases in which the clinical diagnosis was LI (lepromatous indefinite) were leprosy bacilli found in the nasal mucus.

References

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