THE STUDY OF SMEARS OF THE NOSEBLOW IN ALL TYPES OF LEPROSY

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At the Inter-Country Leprosy Seminar held in Kathmandu 4 years ago in 1969, I stressed the importance of examining smears of the noseblow in leprosy, and that I expressed the view that the TRUE index of infectivity in leprosy is to be found in the noseblow smears. Whereas, the smears from skin slit scrapes are an index of the activity of the disease, rather than its infectivity. Up to the time when that seminar was convened, I had been examining the noseblow smears for about a year, and I have continued to do so routinely until the present time, that is a period of five years, during which I have examined the noseblows of approximately 700 people.

My findings can be stated very briefly as follows ;

- (1) In the great majority— approximately 80% -- of untreated active lepromatous cases, the noseblow smears are positive for *M. leprae*. In cases where the disease is advanced there can be enormous numbers of bacilli.
- (2) The morphological index of the bacilli in the noseblow smears is usually much higher than the morphological index of bacilli in the smears from skin slit scrapes. This is especially noticable when the concentration of the bacilli is great.
- (3) Generally speaking, after six months of standard therapy with DDS, the bacilli can no longer be found in the nasal secretion.
- (4) In borderline leprosy, that is the areas in the leprosy spectrum denoted by the abbreviations: BL, BB, BT, the noseblow smears are almost never positive for the presence of bacilli even when the skin lesions on the face, that is in close proximity to the nose, are in a stage of acute tissue exacerbation.

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These observations led on to making a careful study of the nasal mucous membrane during the past 2 years. This has been done by sending 38 biopsies of the nasal mucous from Tansen to the Research Centre in London for sectioning and suitable staining. 28 of these were taken from lepromatous cases whose noseblows smears were highly positive for *M. leprae*, and in whose nasal mucous membrane there was no observable interruption in the integrity of the surface, such as an erosion or a chronic ulceration. From which it was concluded that the bacilli could be secreted in the mucus discharged from the mucous ducts, in the absence of any break in the continuity of the mucous membrane. This assumption was confirmed by the histopathologist - Dr. Douglas Herman - who reported on the sections that bacilli could be seen in the cells of the serous and mucous glands and in the cells lining the ducts which led to the surface of the epithelium. Dr. Herman reported that bacilli could be seen "surfacing" in two ways :

- (1) from the mucous ducts, and
- (2) by direct penetration through the epithelium

From this study of the nasal mucosa certain points are seen very clearly :

- (1) It is a highly porous membrane.
- (2) It is a highly vascular membrane.
- (3) It is a membrane rich in secretory glands and capable of secreting a large quantity of mucus. The physiologist says that in one day the nasal mucous membrane secrets 1 pint of mucus - most of which is swept back, by the continual motion of the cilia, into the pharynx and swallowed, but part is expelled from the nose in the noseblows and from the mouth in the sputum.

The study of these 38 nasal mucosa biopsies (a few were also taken from treated cases of lepromatous leprosy and from borderline leprosy) explains why bacilli are not found in :

- (1) Very early cases of lepromatous leprosy.
- (2) Tread cases of lepromatous leprosy, and
- (3) Border-live leprosy.

Dr. Herman sums up the explanation very clearly in this way :

"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"

The Practical Application Of These Observations

There are two observations I would like to make. First during the past 12 years in the United Mission Hospital at Tansen, 2152 cases of leprosy have been seen, of which 44% were

lepromatous. Dr. Harris, and Dr. Graham Scott Brown reviewing their figures over a period of years have come up with the same percentage. I think that this figure of 44% lepromatous could well reflect the percentage of lepromatous leprosy throughout Nepal. Secondly, of a total of 72,000 patients attending for the first time in the past 12 years, 3% of them had leprosy i.e. 2152 - the figure I have just given. This, of course, is a hospital statistic and not a community one. To infer from it that the percentage of the population of Nepal with leprosy to be 3% would be a highly debatable point. But having worked up in the hill districts for many years, and seen patients with leprosy who have come mainly from the 4 zones of Lumbini, Rapti, Dhaulagiri, and Gandaki, I have come to the conclusion that the incidence leprosy in Nepal could average out at 2% of the population.

On the basis of these two observations, and remembering that the population of Nepal is estimated to be around 11 million it could be assumed that there are 220,000 people with leprosy of which 98,000, i.e. 44%, have the lepromatous variety of the disease. This is the reservoir of infection, and it would appear to me that we are hardly dealing with more than a fringe of the problem. Indeed, it would seem to me that this reservoir of infection may well be on the increase bearing in mind, that with the opening up of communications, there is likely to be an increasing movement of the population. In Tansen, for example, I have been seeing an ever increasing number of patients with leprosy from the 4 zones on the Terai of Kapilvastu, Rupendi, Nawal Parasi, and Narayani. And I am trying to discourage this movement of part of the population by merely examining them and sending them back with letters of referral - without any medicine - to be seen and treated at HMG Hospitals in these zones. May I be permitted to express the hope that small teams of dedicated leprosy workers, under the direction of one or two or more experienced leprologists, be based in these zones up in the hills, nearer to where the patients come from, like the Rapti Zone, where the disease seems to be highly endemic and from whence many patients come ten or fifteen days journey to be seen in Tansen. It appears to me that only in this way can we check the increase of the disease.

To narrow down the practical application still more to leprosy work being done in a dispensary or hospital, I would like, in the light of the foregoing observations to make the following simple suggestions:

- (1) ALWAYS examine a smear of the noseblow as this gives the true index of infectivity.
- (2) No patient who has not been under treatment for lepromatous leprosy should be allowed to leave the health centre without having explained to him (i) how he may be spreading the disease, and (ii) what he can do to prevent spreading it.

These explanations take a full half hour or more of a doctor's time, but it is time well spent. It will mean explaining the following:

- (a) How long it takes, on DDS treatment, to eliminate the bacilli from the nose-blows and spit, and, of course, how long after that he should continue taking the medicine.

- (b) The way to dispose of his nose-blowings and spit. They must stop their unhygienic nose-blowing and spitting habits and adopt the handkerchief habit. It keeps in my consulting room a supply of torn-up squares of cloth of large handkerchief size to give to patients with lepromatous leprosy.
- (c) Simple barrier precautions in the home which the patient must be strict to observe.
- (d) Preventive DDS treatment for all the patient's immediate family contacts.

I would strongly urge the advisability of making a small charge for medicine as this has the effect of making the patient value the treatment, and continuing to take it.

Finally, in the light of the fore going observations on the nose being the chief source from which bacilli are shed into the environment from untreated lepromatous cases, I see no reason for alarm. There is no need to change the modern trend of treating leprosy in a domiciliary setting rather than in an institutional one. We have a saying which says:

"It is no good locking the stable doors when the horse is bolted". If a patient comes to you with active, untreated lepromatous leprosy, don't look him up ! Rather, encourage him to return to his home taking curative and preventive medicine for himself and family, and to carry out such simple instructions as have been outlined above. If he will do this there is no cause for alarm.