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CORRESPONDENCE

This department is for the publication of informal communications that are of interest because they are informative and stimulating, and for the discussion of controversial matters. The mandate of this JOURNAL is to disseminate information relating to leprosy in particular and also other mycobacterial diseases. Dissident comment or interpretation on published research is of course valid, but personality attacks on individuals would seem unnecessary. Political comments, valid or not, also are unwelcome. They might result in interference with the distribution of the JOURNAL and thus interfere with its prime purpose.

Do the Average Bacterial and Morphological Indices Reflect the Patients' True Condition?

In leprosy patients, skin smears are usually taken from various sites. According to the literature, the recommended number of sites and their localization differ, but the average number used most often is six, including at least one earlobe and, wherever present, active lesions. The reading of skin smears consists of the determination of the Bacterial Index (BI) and of the Morphological Index (MI). The BI is usually expressed according to the logarithmic scale proposed by Ridley, a modification of Cochrane's Index. The units in this scale are expressed as a progression of natural numbers, each additional unit indicating a tenfold increase of bacilli. The MI is the percentage of regularly stained bacilli of an average length and perfect shape and is calculated after examining 100 or 200 bacilli lying singly. It appears to be a common practice in the many countries from which we get our trainees and even a recommended procedure in manuals for leprosy to express the BI and MI in a patient as the average of BI and MI results found in the different sites. In the relevant literature the same tendency exists. From the clinical point of view this practice seems very unsatisfactory. The following examples will illustrate this.

If in a patient BI results are obtained such as: 6, 4, 3, 2, 2, and 1+, the mean score would come to 18/6 = 3+, and this would mean that on the average 1–10 bacilli are to be found per microscopic field of these six skin smears. In actual fact, however, the average number of bacilli is at least 1012 divided by 6 (minimum of 1000, plus a minimum of 10, plus a minimum of 1), which is well over an average of 100 bacilli per microscopic field. The correct expression of this average, according to the logarithmic scale, would be 5+. This number of 5+ rather than 3+ would in fact convey more realistically the true bacteriological status of the patient.

Particularly misleading is the current practice of averaging in relapsing patients in whom it often occurs that sites like the earlobes and the eyebrows are found bacteriologically negative while a high bacterial load may be detected in one or more nodules elsewhere on the body. Averaging one 6+ with five 0's would give a result of 1+. Such a figure gives a totally false impression of the bacteriological status of the patients and grossly underrates the seriousness of the condition.

As regards the expression of the MI of a patient, it is customary to calculate the average from the total of the MIs divided by the number of sites smeared and to present this figure as the MI of the patient. In new cases this usually gives a fair impression of the percentage of solids present in the skin of the patient. That is not so, however, in cases in which only one or two sites show enough bacilli for an accurate count of solids while in other sites the MI cannot be determined because too few are present to examine 100 bacilli. If, nevertheless, the MI is averaged over all sites, a MI of 20% in one site only may thus in the calculation

become reduced to 3%. This again would be a wrong and unrealistic expression of the condition of that patient.

The following is suggested if the bacteriological status is at all to be summarized:

1. The highest BI score obtained should be recorded in brackets in addition to the so-called average BI.
2. In the calculation of the average MI the pauci-bacillary sites (BI 3+ or less) should be omitted.

This procedure, however, is a compromise: the only correct way to report on the bacteriological status is a recording in full of all the BI and MI results.

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Identification Problems of Strain 0122

To the Editor:

We are referring to the Letter to the Editor by P. Piot, E. Van Dyck, and S. R. Pattyn ([5]), which relates the identification of strain 0122 (isolated by one of us from a leproma) as corynebacterium and states that "strain 0122 is claimed to be a diphtheroid form of *Mycobacterium leprae*," quoting a publication of ours ([4]). This statement is incorrect in many respects:

1) Diphtheroid or coryneform strains are gram positive microorganisms morphologically resembling *Corynebacterium diphtheriae*. Strains of this sort were isolated by several scientists, including us, from human leprosy lesions but never identified with *Mycobacterium leprae*.

2) In a submitted manuscript (Janczura, E., Abou-Zeid, Ch., Gailly, Ch., and Cocito, C. unpublished experiments) the chemical structure of the cell wall of 25 diphtheroid strains was analyzed, and it was concluded that they all are corynebacteria. Accordingly, Barksdale's suggestion ([1,2]) to rename the identified diphtheroid strains as LDC (leprosy derived corynebacteria) was adopted.

3) A work of ours ([3]) demonstrates, however, that the LDC strains so far analyzed share common antigens with *Mycobacterium leprae* and suggests that such immunological relationships may account for a presumptive facilitation by LDC strains of *Mycobacterium leprae* development.

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REFERENCES

1. Barksdale, L. *Corynebacterium diphtheriae* and its relatives. Bacteriol. Rev. **34** (1970) 378–422.
2. Barksdale, L. and Kim, K. S. *Mycobacterium*. Bacteriol. Rev. **41** (1977) 217–372.
3. Laub, R., Delville, J. and Cocito, C. Immunological relatedness of ribosomes from mycobacteria, nocardiae and corynebacteria, and microorganisms in leprosy lesions. Infect. Immun. **22** (1978) 540–547.
4. Pichel, A. M. and Delville, J. Approche immunologique du bacille de Hansen et des germes non acido-résistants isolés chez les lepreux. Acta Leprol. **59** (1975) 93–96.
5. Piot, P., Van Dyck, E. and Pattyn, S. R. Strain 0122, a contaminating skin corynebacterium. Int. J. Lepr. **48** (1980) 211.