Letters to the Editor

BACTERIAL INDEX OF GRANULOMA AND ITS RELEVANCE COMPARED TO BI OF SKIN SMEARS

Editor,

The importance of accurate histopathological assessment of type of leprosy with the help of skin biopsy is emphasized by the widespread poor performance of slit skin smears (SSS). Many workers have reported finding AFB more frequently in skin biopsies compared with slit skin smears in all types of leprosy. However, the presence of AFB in skin biopsy has been assigned no role in grading of leprosy or as a guide in treatment, probably because it is difficult to perform skin biopsies in large numbers of patients. As the number of leprosy patients is decreasing world-wide, it may be possible to assign a future role for these findings. Here, we compared the bacterial indices (BI) of slit skin smears with the Bacterial Indices of Granuloma (BIG) of skin biopsies of leprosy patients.

One hundred and eight leprosy patients (80 male and 28 female) from department of Dermatology, Osmania General Hospital, Hyderabad, India were studied between January and December, 1998. The clinical types of leprosy were TT, 1; BT, 61; BB, 2; BL, 24; LL, 12; and Indeterminate, 4. Slit skin smears and skin biopsies were performed on the same lesion in all the patients. Skin biopsies were stained by H&E stain and modified Fite stain. BIG in these slides were assessed as per Ridley’s scale for granulomas.

Results

Slit skin smears were positive for AFB in 23 out of 108 (21%) patients. Out of these, 22 positive skin smears were from BL and LL patients. One patient was BT in type I reaction. The highest value BI was 4+, in six LL patients. When BIG were studied, AFB were observed in 42 out of 108 (38.8%) biopsy specimens. Ten out of 61 BT patients demonstrated AFB with BIG ranging from 1+ to 4+. In 11 out of 12 LL patients, AFB were found in skin biopsies with BIG ranging from 2+ to 5+. In the BL group, 19 out of 26 skin biopsies demonstrated AFB. It was observed that 22 out of 23 skin smear positive cases were also positive for BIG. In contrast, in 20 out of 42 patients who were BIG positive, skin smears were negative. The difference between values of BIG and BI of SSS is highly significant (P < 0.005).

When values of BIG and BI were studied in all BIG positive patients, the difference between the values varied from one to five, with only one patient showing no difference. When difference between BIG and BI was calculated in all SSS positive cases, the difference between values of BIG and BI ranged from 1 to 3. The difference between values of BIG and BI was the least in the LL group, with 10 out of 11 patients showing differences of 2 or less. In contrast, the difference was 3+ or more in 14 out of 19 patients in borderline spectrum.

Discussion

Although it is widely known that AFB are more frequently and abundantly found in skin biopsies compared to skin smears, few studies have been done to compare these readings. We could find only one
study which compared BIG of skin biopsies with BI of SSS, way back in 1955 by Ridley. Ridley has observed higher values of BI in skin biopsies compared to SSS in a study of 11 patients of leprosy. He opined that the higher BIG in the skin biopsies indicates that the BI of SSS only reflect density of the bacilli in a foci, while BIG takes into account both size of foci and bacterial density. In other words, BIG is more accurate in assessing the bacterial status of the tissue specimen.

In the present study, BIG of skin biopsies have shown uniformly higher values compared to skin smears in all clinical types of leprosy except in one patient (BT in type I reaction). In 20 out of 42 BIG positive patients, SSS were negative for AFB. This BIG positivity in SSS negative patients could be explained by the presence of AFB in deep reticular dermis, where they were probably inaccessible to the routine skin smear examination. A similar observation of finding AFB in deeper dermis was made in a study of skin of patients with pure neuritic leprosy.

In the present study, it was also observed that in patients with BIG values of 4+ or more, SSS were positive for AFB in 72% of cases compared to only 23% of SSS positivity in patients with BIG values less than 4+, the difference being statistically very significant ($P < 0.001$). These observations indicate that at lower tissue density of AFB, SSS readings do not reflect the true bacillary load.

As of now, skin biopsy findings do not have any role as a guide in the treatment of leprosy. With the decreasing case load and increased involvement of tertiary referral centres, it will be possible in future to study skin biopsies more frequently for the presence of AFB. Hence it is time to assign the presence of AFB in skin biopsies a role as an additional guide in leprosy treatment wherever possible and more certainly when there are fewer than five lesions.

References