

Correlation Between Clinical and Histopathologic Classification in Leprosy¹

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Through the recognition of clinical characteristics, leprosy has long been classified into various types as summarized by Cochrane and Smyly (1). During the development of this classification concept there was no clear cut consensus on the subject. This deficiency seems to a large extent to have been filled by the widely used classification systematized by Ridley and Jopling (3). Endeavors to overcome the shortcomings of the latter classification have been continuing. The initial clinical and histologic basis of the classification (4) has now been enlarged to emphasize the immunologic correlations with the histopathology. The recent histopathologic delineations by Ridley (2) are intriguing and add new dimensions to the classifications of leprosy. In the light of these observations, we reviewed our material obtained from leprosy patients. The findings are reported in the present communication.

MATERIALS AND METHODS

Hematoxylin and eosin stained histopathologic sections of 95 new leprosy patients having no significant complications of paralysis, etc. attending the Urban Leprosy Center, National Leprosy Control Program, were reviewed. The sections were examined for granuloma cell type, number and disposition of lymphocytes, extent of involvement of the nerves, presence or absence of subepidermal zone, and involvement of the epidermis. They were grouped histopathologically as defined by Ridley (4). No acid-fast stains or lepromin tests were utilized in clinical diagnosis. Complete subgrouping of LL type was, however, not undertaken because of paucity of cases. Subsequently, a

correlation was made between the histopathologic and clinical classification.

RESULTS

A total of 95 patients were examined clinically and histopathologically. Clinical examination revealed that 60 of them were suffering from tuberculoid (TT), 19 had borderline tuberculoid (BT), 6 showed borderline characteristics (BB), 7 had manifestations of the borderline lepromatous type (BL), and 3 had classical characteristics of lepromatous leprosy (LL). Their correlation with the histopathologic examination is shown in Table 1.

Tuberculoid (TT). Clinically, one to three well-defined, hypopigmented, erythematous, dry, scaly lesions were noted in these patients. Some of them had induration at the periphery. Sensation of temperature, pain and touch varied from hypo- to anesthesia.

Histopathologically, epithelioid cell granulomas were noted with hyperactive tissue response, consisting of moderate to extensive erosion of epidermis and/or Langhan's type giant cells and infiltration of the nerves.

Of the 60 clinically diagnosed TT cases, only 18 presented these histopathologic characteristics.

Borderline tuberculoid (BT). There were five to ten lesions, asymmetrically distributed in these cases. They were well-defined, hypopigmented, dry, erythematous with peripheral induration. Sensation to temperature, pain and touch were usually impaired.

Histologic characteristics were epithelioid cell granulomas with peripheral lymphocytes and occasional giant cells of either the Langhan's or foreign body type. There was no clear subepidermal zone in these sections.

Of the 19 clinically diagnosed BT cases, only 5 had these histopathologic features. The remaining had changes consistent with other groups as shown in Table 1.

Borderline (BB). The lesions in these patients were of varying sizes. They ranged from well to poorly defined lesions with a

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variable degree of induration. Sensory deficit was uncommon in these lesions.

Epithelioid cell granulomas with diffusely spread lymphocytes and the presence of a subepidermal clear zone were the histologic characteristics. Of the six BB cases, four had histopathologic changes consistent with the clinical diagnosis.

Borderline lepromatous (BL). Numerous symmetrically or asymmetrically distributed lesions with shiny erythematous surface of varying sizes were noted clinically. The ear lobes however were not involved.

The granulomas in this group consisted of foam cells with small vacuoles, and epithelioid cells. Densely packed lymphocytes were interspersed in these granulomas. The subepidermal zone was clear. Only three of the seven clinically defined BL cases had histopathologic changes characteristic of this group.

Lepromatous leprosy (LL). These patients had numerous, bilaterally symmetrical small to large, erythematous, indurated lesions. Only one of them had nodules on the face. Sensory disturbances were not found.

The lesion consisted of foam cells with small to large vacuoles with sparse lymphocytes. The clear zone was conspicuous by its presence. Two of three cases had these histologic characteristics while one of them had changes consistent with BL.

Indeterminate leprosy (I). Clinically these cases belonged to one or another of the groups as shown in the table. No granulomas or lepromas were noted in these sections. Instead, perivascular and/or periadnexal lymphocytic and histiocytic infiltrate, was the consistent feature. Of the 29 cases diagnosed histopathologically, only 14 gave evidence of perineural infiltration.

DISCUSSION

Classification is an effective means of understanding and communicating concepts regarding a difficult disease. It is necessary in leprosy because of the wide spectrum of clinical manifestations. Despite endeavors in this direction, a consensus classification has not yet been attained. A good classification is one which encompasses all major disease aspects, namely clinical, histologic, immunologic and bacteriologic characteristics. At present the majority of leprosy centers in our subcontinent and abroad are largely utilizing the clinical and bacteriologic features for classifying leprosy, overlooking the important histologic and immunologic criteria.

The results of our study, correlating the clinical and histopathologic classification were very revealing. There was disparity between the clinical and histologic classifications. Only in one third of the cases were the clinical and histopathologic classifications compatible. Many of our patients had only early histopathologic changes so that they could not be placed clearly in any one of the well-determined clinical types. Hence they were classified histologically as indeterminate. In others there was a shift of one step either towards the tuberculoid or lepromatous end of the spectrum. This disparity in the clinical and histologic observations was anticipated because the parameters used for the histopathologic classification are well-defined, precise and also take into account the immunologic manifestations, while the clinical classification gives recognition only to the gross appearances of the lesions.

Our observations are, therefore, in agreement with those of Ridley. Hence the system of classification under review successfully bridges the pitfalls thus far common in leprosy. Furthermore, it highlights the precise status of leprosy patients for assessing

TABLE 1. Clinical and histopathologic correlation.

Clinical	Histopathologic					I	Total
	TT	BT	BB	BL	LL		
TT	18	20				22	60
BT	6	5	2			6	19
BB		1	4	1			6
BL		1	2	3		1	7
LL				1	2		3
Total	24	27	8	6	2	29	95

the progress of the disease, the mode of treatment, and eventual prognosis.

SUMMARY

A detailed histopathologic study, utilizing hematoxylin and eosin stain, was done in 95 fresh uncomplicated cases of leprosy. The microscopic features were classified according to Ridley's (1974) definition, while the clinical grouping was done using the criteria of Ridley and Jopling (1962). The disparity between them on comparison was explicit. In one third of the cases the two were in consonance with each other. In many there was a shift of one step either towards the tuberculoid or lepromatous end of the spectrum. The remaining were classified as indeterminate because of early histopathologic changes. This disparity was expected because the parameters used for the histopathologic classification were precise and also took into account the immunologic aspect. The histologic definitions seem practical and may prove useful in assessment of the status of the disease with or without treatment.

RESUMEN

Se hizo un estudio histopatológico detallado, utilizando el colorante de hematoxilina-eosina, en 95 casos recientes de lepra no complicada. Las características microscópicas se clasificaron de acuerdo a los lineamientos de Ridley (1974), mientras que el agrupamiento clínico se hizo según el criterio de Ridley y Jopling (1962). Se encontró que en un tercio de los casos, los dos parámetros comparados (histopatológico y clínico) estuvieron en consonancia. En muchos casos hubo un desplazamiento "de un paso" hacia los extremos tuberculoide o lepromatoso del espectro. Los casos restantes se clasificaron como indeterminados debido a lo temprano de los cambios histopatológicos. Se esperaba que existiera esta disparidad debido a que los parámetros usados para la clasificación histopatológica fueron precisos y también tomaron en cuenta el aspecto inmunológico. Las definiciones histológicas parecen prácticas y pueden ser de utilidad para establecer el estado de la enfermedad durante o en ausencia de tratamiento.

RÉSUMÉ

Dans 95 cas récents non compliqués de lèpre, on a procédé à une étude histopathologique détaillée, au moyen de colorations à l'hématoxyline et à l'éosine. Les caractéristiques microscopiques ont été classées d'après la définition de Ridley (1974), tandis que la classification clinique a été pratiquée en utilisant les critères de Ridley et de Jopling (1962). La discordance entre ces deux classifications est fort apparente dès qu'on les compare. Dans un tiers des cas, les deux classifications étaient en accord. Dans plusieurs cas, on a constaté un glissement d'un degré, vers l'extrémité tuberculoïde ou vers l'extrémité lépromateuse du spectre. Les cas restants ont été classés comme indéterminés, sur la base de modifications histopathologiques précoces. On s'attendait à voir cette discordance, car les paramètres étudiés pour la classification histopathologique sont précis, et prennent également en considération l'aspect immunologique. Les définitions histologiques paraissent pratiques, et peuvent se révéler utiles pour l'évaluation de la gravité de la maladie avec ou sans traitement.

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