ON THE CO-ORDINATION OF STATISTICS OF PULMONARY TUBERCULOSIS.

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MY original paper on Classification[1] was written before I had seen the communications of Dr. Niven Robertson and Dr. Knobel[2], and will be published in the forthcoming number of the *Indian Medical Gazette*. A review of the subject in the light of these recent papers will perhaps be more useful than a re-statement of my own suggestions.

Amongst the things necessary for reliable statistics are adequate case-papers, adequate summaries in a condensed or symbolic form, and a logical inclusive wide classification of all recorded cases, whether at an institution or otherwise. All these must correspond.

SYMBOLIC SUMMARIES.

Dr. Robertson deals very fully with symbolic summaries, the importance of which is not sufficiently recognised. They should be made at the beginning and end of courses of treatment, and periodically afterwards, and should epitomise all the main facts as to condition of health, though not all would be used in classification. They would enable us to record the results of treatment apart from those of subsequent conditions of life. The after-history is far more a measure of the after-conditions than of the (usually short) course of treatment originally received.

The usual records of results of treatment are insufficient for this purpose. If at the end of a course of sanatorium or dispensary treatment the result is merely recorded as "much improved," no comparison is possible with later states of health; whereas with adequate symbolic summaries it would be fairly easy. There should be a positive record, not merely a comparative one.

In forming these summaries five sets of facts should be noted: (1) the amount and nature of the local damage; (2) the constitutional disturbance; (3) respiratory symptoms; (4) complications; (5) industrial capacity. To serve the twofold purpose of a guide to classification and to the progress made, the local destructive changes symbolised by L_1, L_2, or L_3, should be followed in brackets by symbols representing any additional factor needed, such as presence of râles. The systemic disturbance, symbolised by S_1, S_2, or S_3, should similarly be followed in brackets by factors referring to fever, nutrition, or other outstanding symptom, the degree of disturbance being denoted by numerals in every case. Under respiratory symptoms might be classed the presence or absence of tubercle bacilli in sputum. Dr. Robertson's choice of symbols is open to criticism. Those referring to anatomical classification will be referred to under this heading.

CLASSIFICATION.

In an ideal system, our groups should be capable of accurate definition, not overlapping but covering the whole ground; they should be such as a

[1] Soc. Med. Supts. of Tuberculosis Institns., October 18, 1920.
[2] TUBERCLE, December, 1920.

general practitioner can determine without expensive apparatus or difficult technique, or post-mortem examinations; they should be based on characters that have a definite prognostic value, not upon variable factors; and as far as possible they should be capable of comparison with the groups of widely adopted systems.

Classification according to clinical varieties is not advisable, because they apply to a minority of cases; are difficult to define; some are not distinguishable in early stages; some involve the introduction of predisposing causes, of which there are too many for a simple classification.

Variable factors, such as the presence or absence of râles, or the relative numbers of tubercle bacilli, are suitable for a summary but not for a classification. The presence or absence of a history of tubercle bacilli in the sputum is not open to the same objection.

Classification by anatomical features alone tends to the mingling of cases with very unequal prognosis. The same is true of classification by functional characters alone. Both of these are necessary, but the latter should be subordinate to the former.

Both Dr. Robertson and Dr. Knobel suggest a classification into early medium and advanced cases, but do not define these groups. Characters dependent upon time are not advisable: early cases may have extensive damage, and late ones very little.

Anatomical Classification.

Dr. Robertson is most unfortunate in his remarks concerning other systems of classification; most of his criticisms are open to dispute.

He makes a useful suggestion about the Turban and similar systems, to regard the right middle lobe for this purpose as part of right upper lobe; this has probably often been unofficially done.

His choice of the Turban system as an alternative classification, and of grades to correspond in his summaries, is however not good, as apical lesions and others of similar amount cannot be recognised separately, as they are in the T. G. and those of the American Sanatorium Association.[1]

Apparently he does not grasp the method underlying the T. and T. G. systems, since he says the latter is based mainly upon extent of disease, whereas it is based jointly upon extent and degree of local damage (or type of disease as he calls it). The method is an attempt to assess the local tissue damage, without regard to the activity of the disease, since this can only be inferred from repeated examinations or from other kinds of evidence. Two degrees of damage are recognised, slight (or discrete foci) and severe (or confluent foci), the former being reckoned half as serious as the latter. Excavation counts as severe disease, fibrosis as slight or severe according to density. In the T. G. system, an apical lesion of slight severity (or its equivalent elsewhere) falls into the "first stage." A larger amount, but not more than one lobe of slight or half a lobe of severe disease, falls into the second "stage." More than this, and cases with large cavities, fall into the third "stage." If then the extent of slight damage with twice the extent of severe damage amounts to more than one lobe, it is a third stage case.

[1] *Journ. Amer. Med. Assoc.*, January 30, 1909.

Dr. Robertson counts lesions in other parts of the body as a fourth degree of "extent." Therefore when such multiple lesions are present, his symbolic summaries would not indicate the amount of lung damages. Complications are best taken into association with the functional changes. His definitions too need revising. His suggestion to classify according to the "most advanced" kind of local change would give very misleading results, since a case with mainly infiltration, but with a small spot of consolidation, would be classed as the latter.

We may either summarise according to the prevailing form of damage, or try to estimate the amount of each kind (as in T. G.) or ignore the differences altogether.

In the original T. G. method, the case is classified by the amount of disease on the worst side, ignoring the amount on the other side, whether little or much. In the modification adopted by the Local Government Board, the case was classed according to the total amount of the disease; and with this correction I have adopted it as a basis of my own anatomical classification.

Functional Groups.

There is no difficulty in dividing cases into three functional groups, according as there are no severe functional changes, or some severe functional changes, or an intermediate condition. Nor is there any difficulty in devising good definitions to guide us in the matter. It has been done in the American Sanatorium Association system, and more completely in Dr. Guy's[1] and my own. Dr. Robertson apparently adopts the method in forming summaries, but fears to use it for a classification, which is a pity.

But if our groups are a mixture of anatomical and functional factors, instead of being anatomical groups subdivided according to functional characters, we risk including unlike elements in the same group, or leaving no place for some of them.

For instance, whereas a slight lesion with slight functional disturbance would be included in the American "incipient" group, another equally small lesion with marked fever would either remain unprovided for, or fall into the third or "far advanced group," where it does not belong naturally. This third group (widespread disease or marked constitutional disturbance or serious complications) would probably include: (*a*) cases of slight extent with fever; (*b*) cases of slight extent, but slight constitutional disturbance with serious complications; (*c*) cases of extensive disease and marked disturbance, a heterogeneous mixture. All this confusion would be avoided by making the functional classes subdivisions of each anatomical group. Such an arrangement would facilitate the analysis of groups of different systems of classification, for inter-comparison.

In spite of differences in method, there is a strong resemblance between the T.G. system and its modification, and the anatomical features of the systems of the American Sanatorium Association. The first group in these is anatomically almost identical, and by suitable analysis the others might also be compared.

[1] Tubercle, October, 1919.