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Scanty AFB smears: what's in a name?

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SUMMARY

SETTING: A tuberculosis control project in Bangladesh.
OBJECTIVE: To document the frequency and diagnostic value of smears with scanty acid-fast bacilli (AFB) (IUATLD/WHO scale, <10/100 high power fields), and to assess the appropriateness of the current positivity threshold.
DESIGN: Analysis of databases of laboratory registers, patient records and the diagnostic yield of sputum collection strategies.
RESULTS: Scanty smears constituted about 10% of suspect and almost 50% of follow-up smears. In suspect series, 10% of scanty 1–9/100 were not confirmed by another positive or scanty AFB sputum, compared to 7.5% of results at the current cut-off value of 10/100. Considering such results as positive by adopting a lower cut-off as low as the 1/100 used in the ATS scale added 1.5% false positives at the most. In return, the gain in confirmed positive cases was up to 10%, and that in positive results exceeded the incremental yield of the third diagnostic sputum. Significance of scanty follow-up smears at the end of the intensive phase was suggested by their association with treatment failure and unfavourable outcome overall.
CONCLUSIONS: Scanty results (IUATLD/WHO scale) are not rare and should not be ignored. Adoption of a considerably lower positivity threshold would be appropriate in control programmes where basic conditions for reliable AFB microscopy, including regular quality assessment, are present.
KEY WORDS: acid-fast bacilli; microscopy; quantitative

THE CURRENT RECOMMENDATION to National Tuberculosis Control Programmes (NTPs) by the International Union Against Tuberculosis and Lung Disease (IUATLD) and the World Health Organization (WHO) is to consider a smear as definitively positive only when microscopic examination reveals at least 10 acid-fast bacilli (AFB) per 100 high-power fields (HPF). If fewer AFB are found, the actual number must be reported, a finding that is often designated as a 'scanty' or 'doubtful' result. In the case of such a result, confirmatory examination of additional specimens is required.[1,2] In this paper, the finding of fewer AFB than the number required to qualify for a 'positive' result is designated as 'scanty'. Because of the ambiguity, such results tend to cause confusion or irritation. Technicians may be reluctant to report a borderline result and may thus prefer to change it to negative or positive; physicians do not always know how to interpret such a result, leading to erroneous diagnosis of tuberculosis, no treatment for actual cases, or erroneous declaration of bacteriological cure; and patients may tire of bringing sputum for repeat examination and may turn from the public to the private sector for treatment. As a result, this cut-off is often not strictly applied, or, alternatively, NTPs have set their own cut-off to designate a definitive positive result.[3] The problem is further compounded by the existence of another widely applied quantification scale, that of the American Thoracic Society (ATS),[4] with a cut-off for positivity of only 1 AFB/100 HPF and hence another definition of scanty results. Furthermore, in the past, the WHO advocated a slightly different scale, with a threshold of 4 AFB/100 HPF and interpretation of scanty results 1–3 as 'scanty negative' and 4–9 as 'scanty positive'.[5]

To the best of our knowledge, neither a detailed analysis of the frequency distribution nor the significance of scanty results before and during treatment have been published. We have tried to do so using data from Damien Foundation Bangladesh projects, consisting of a well functioning network with around 80 AFB microscopy centres over the period covered. It includes external quality assessment (EQA) through supervision and blinded rereading of routine smears, in accordance with current global guidelines[6] and as described previously.[7,8] In use since 1996, this continuous quality assurance has gradually resulted in less than 1% serious false-negative and false-positive errors.

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The catchment population is rural, with relatively easy access to the diagnostic centres (short distances and free service), but the people are very poor and hidden costs may constitute a barrier to timely diagnosis.

The objectives of these analyses were: 1) to determine the frequency distribution of quantified AFB smear results before and during treatment, with particular attention to scanty results, and 2) to determine the diagnostic and prognostic value of scanty results and to evaluate the appropriateness of the cut-off point for positivity in the IUATLD/WHO scale in this setting.

METHODS

A negative result was defined as a smear with no AFB/100 HPF. Non-negative results included scanty results, defined as reported number of AFB below the threshold for positivity (i.e., 10 AFB/100 HPF in the IUATLD/WHO scale), and positive results were defined as presence of numbers of AFB at or above this threshold. Diagnostic smears were those made at presentation of a patient suspected of having tuberculosis, and follow-up smears were those made during the course of treatment.

Smears were stained using the hot Ziehl-Neelsen method according to standard guidelines,[1,2] except for a higher (1%) basic fuchsin and a lower (0.1%) methylene blue concentration. As a rule, only 100 HPF are read, but to obtain a more precise quantification, examination of smears with a scanty result (in the first 100 HPF) was increased to 300 HPF. EQA was continuous, with monthly sampling and feed-back to all centres.[6]

For the treatment of smear-positive cases, standard regimens as recommended by the IUATLD were used:[1] Category 1 regimen for never previously treated cases (i.e., ethambutol [E], isoniazid [H], rifampicin [R] and pyrazinamide [Z] for 2 months, followed by H and thioacetazone [T] for 6 months; 2EHRZ/6HT), and Category 2 (i.e., $2SEHRZ/1EHRZ/5E_3H_3R_3$; S = streptomycin) for previously treated cases. The initial phases of treatment were prolonged by 1 month in case of smear positivity at its scheduled end (at 2 or 3 months). At the end of the prolongation another sputum smear was examined and the continuation phase was started irrespective of the latter result. Continuation phases and their duration remained unchanged even after prolongation of the initial phase. Additional controls of sputum smears during the continuation phase were performed after 3 months and at its completion. As a rule, only one sputum was sampled at each follow-up examination. Treatment outcomes were based on clinical data and smear microscopy only, and classified according to standard criteria and definitions.[1] After evaluation of the treatment outcome in the cohort, the relevant data from all treatment cards were entered in an Epi Info file (US Centers for Disease Control and Prevention, Version 6, Atlanta, GA, USA, 1995). The same was done for all diagnostic sputum AFB examination series with at least one non-negative result in the context of a study of sputum collection strategies reported elsewhere.[9] Other computerised databases were available that contained all successive records from a random selection of sputum examination registers. Comparison of proportions was done using Pearson's χ^2 or Fisher's exact test, as appropriate.

Table 1 Frequency of quantified results for suspect or follow-up smears

Quantified result*	Suspect smears *n* (%)	Follow-up smears *n* (%)
1–2/300 HPF	413 (1.0)	NR†
1–3/100 HPF	1 566 (3.6)	2100 (27.5)
4–9/100 HPF	2 410 (5.6)	1477 (19.3)
1+	10 461 (24.2)	3014 (39.5)
2+	15 361 (35.6)	857 (11.2)
3+	12 929 (30.0)	192 (2.5)
Total	43 140 (100)	7640 (100)

* 1+, 2+, 3+ are defined according to the IUATLD/WHO quantification scale.
† Records in the follow-up database were expressed on 100 fields only and 1–2/300 have been recorded as 1/100.
HPF = high power field; NR = not registered; IUATLD = International Union Against Tuberculosis and Lung Disease; WHO = World Health Organization.

RESULTS

Frequency of scanty smear examination results

Frequencies of quantified AFB results are shown in Table 1, stratified by diagnostic and follow-up smears. More than 10% of non-negative diagnostic and 47% of non-negative follow-up smears were scanty (IUATLD/WHO scale). Figure 1 shows the detailed frequency distribution of these scanty diagnostic results up to 30 AFB/300 HPF. The distribution of individual values was fairly homogeneous, except for peaks preceded by troughs at 12 and 30 AFB/300 HPF.

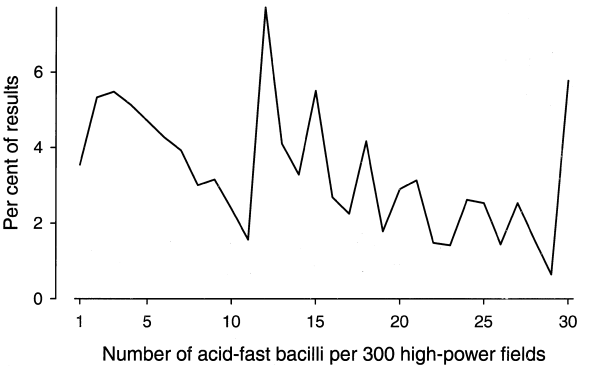

Figure 1 Frequency distribution of scanty smear microscopy results among diagnostic sputum examinations. Results (expressed per 300 high power fields) range from 1 to 30, the latter value indicating the minimum number of bacilli required for a 1+ result.

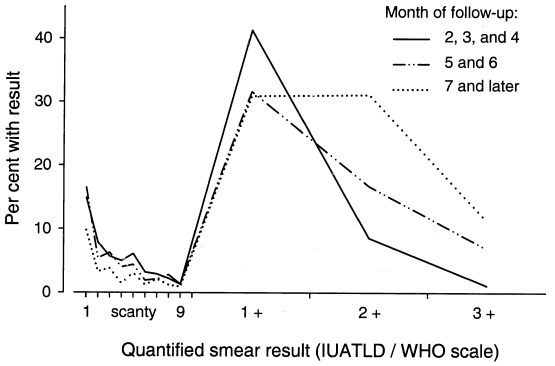

Figure 2 Frequency distribution of non-negative smear microscopy results among follow-up sputum examinations at 2, 3 and 4 months (6236 examinations), at 5 and 6 months (822 examinations) and at 7 months or later (582 examinations).

For follow-up smears, such a detailed analysis was not possible since the values in the database were expressed per 100 HPF only. Figure 2 shows the full range of their distribution at 2–4 months (end of initial phase), at 5–6 months (mid-treatment), and at 7 or more months (end of treatment). There is a slightly lower proportion of scanty AFB readings and a slightly higher percentage of high positives by the end of treatment.

Significance of scanty microscopy results

The significance of scanty diagnostic smears was then determined from the highest smear result in series consisting of at least three examinations. Figure 3 shows the frequency distribution of this other smear in the same series as one curve for each of the IUATLD/WHO scanty lead results from 1 to 9/100 HPF, as well as for the threshold value of 10 AFB/100 HPF. The curves run closely together, indicating similar significance of each of the individual scanty values. Unconfirmed scanty results (no AFB in any other sputum) were rare (10.1% for all scanty results), and only for a reading of 1 or 2 AFB/100 fields did this percentage exceed that for the 10/100 HPF threshold level (respectively 22.5% or 11.4%, vs. 7.5%). Excluding results up to 2/100 HPF as confirmatory, the proportions of unconfirmed results amounted to 31.2% for 1/100 AFB/HPF, 16.9% for 2/100 AFB/HPF, and 15.3% for all lead results from 1 to 9/100 HPF, compared to 11.5% for the threshold value (detailed data not shown).

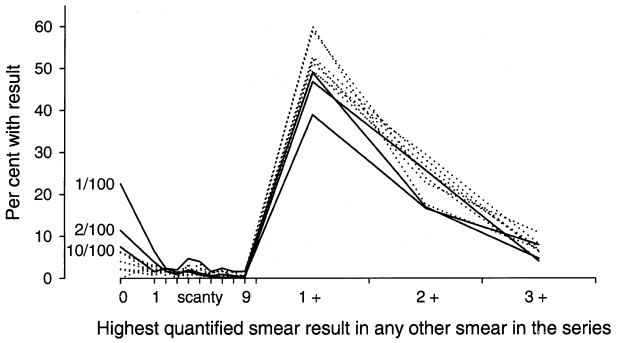

Figure 3 Confirmation of diagnostic smear microscopy results found to contain 1 to 10 AFB per 100 high-power fields by any other smear in the same series (2100 examinations). Each of the 10 lines represents an initial finding from 1 to 10 AFB, and shows with which frequency the other sputum samples of the series contained a certain number of AFB, or none at all. The quantification scale used is that of IUATLD/WHO. AFB = acid-fast bacilli; IUATLD = International Union Against Tuberculosis and Lung Disease; WHO = World Health Organization.

Comparisons of yield between IUATLD/WHO and alternative positivity thresholds

Table 2 shows the implications of a lower positivity threshold for case detection using the results of different sputum examination strategies, as reported earlier.[9] The main results with the traditional spot-morning-spot collection strategy have been tabulated, using the IUATLD/WHO, previous WHO, or ATS criteria for positivity (a minimum of respectively 10, 4 or 1 AFB/100 HPF).

At a threshold of 4 or 1 AFB/100 HPF, the proportion of suspects who could be confirmed as cases positive on at least two sputum samples was 6.8% or 9.7% higher than the 86.6% confirmed using the IUATLD/WHO 10 AFB/100 HPF threshold. Furthermore, 152 (3.1% incremental gain) or 244 (5.0% incremental gain) more positive results were identified using these lower thresholds, and the yield of the first sputum increased by respectively 4.4% and 7.8%. At the threshold of 1/100 HPF, six case sets of three diagnostic smears had repeatedly scanty results (and in some of the case sets containing one negative result), against 92 using the 4/100, and not less than 422 using the IUATLD/WHO threshold (data not shown). We reported earlier that only 5% of the latter could not be confirmed by rereading these smears or by examination of additional specimens.[9] Finally, it may

Table 2 Implications of the application of different positivity cut-offs for the yield of positive smears and confirmed cases

	Cut-off, AFB/100 HPF		
	1	4	10
Total positive suspects identified*	5109	5017	4865
Per cent positives identified on first smear†	90.3	86.9	82.5
Per cent cases confirmed by at least two positive results‡	96.3	93.4	86.6

* Total positive suspects: all consecutive suspects with at least one positive out of three smear results registered have been included, using various cut-offs.
† Per cent positives identified refers to the first smear found to be positive, irrespective of other smear results, of the total found to be positive in at least one of the three smears.
‡ Per cent cases identified refers to suspects with at least two sputum samples in their series of which the smear was found to contain AFB at or above the positivity threshold. The denominator is all suspects with at least one positive or scanty result in a series of three smears.
AFB = acid-fast bacilli; HPF = high-power fields.

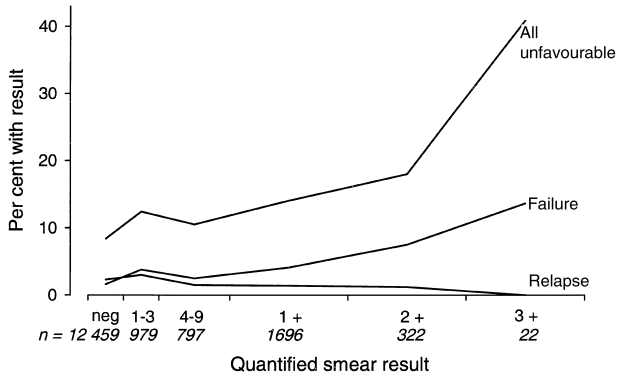

Figure 4 Treatment outcome in function of quantified smear microscopy results after 2 months of treatment with the Category 1 regimen. The quantification scale used is that of IUATLD/WHO, with scanty results regrouped into 1–3 and 4–9 AFB/100 high-power fields. 'All unfavourable' combines failures, relapses, defaults and deaths during treatment. IUATLD = International Union Against Tuberculosis and Lung Disease; WHO = World Health Organization; AFB = acid-fast bacilli.

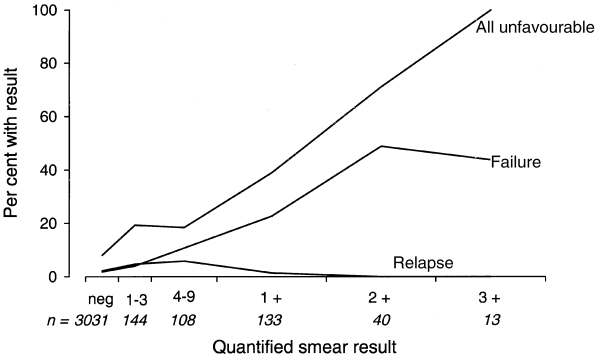

Figure 6 Treatment outcome in function of quantified smear microscopy results after 3 months of treatment with the Category 2 regimen. The quantification scale used is that of IUATLD/WHO, with scanty results regrouped into 1–3 and 4–9 AFB/100 high-power fields. 'All unfavourable' combines failures, relapses, defaults and deaths during treatment. IUATLD = International Union Against Tuberculosis and Lung Disease; WHO = World Health Organization; AFB = acid-fast bacilli.

be useful to point out that by application of a lower cut-off these gains fell to about 50% using a three morning sputum collection strategy (details not shown).

Scanty follow-up smear results and their relation to treatment outcome

Figures 4 to 7 show the significance of scanty (and higher positive) results in early follow-up smears by examining the relation between the grade of smear results and unfavourable treatment outcome for all smear-positive pulmonary tuberculosis cases successively registered from 1995 to 1998. Unfavourable outcome was defined here as the combination of failures, passively registered relapses (both based on AFB smears), defaults and deaths during treatment. Failures and relapses are also shown separately. The association between outcome and smears at 2 months for Category 1 treatment is shown in Figure 4, and at 3 months in Figure 5. At 2 months, the difference in outcome between negative and scanty or low positive (up to 1+) smears seems to be very small, especially considering the sum of failures and relapses, but it is statistically highly significant because of the large numbers ($P < 0.00001$). Negative smears and scanty smears containing 4–9 AFB/100 HPF predicted almost the same proportions of failure and relapse (3.9% vs. 4.0%, $P = 0.9$), but the proportion was higher for scanty results with 1 to 3 AFB per 100 HPF (6.8%, $P < 0.00001$). Compared to scanty results with 4–9 AFB/100 HPF, the outcome for scanty results

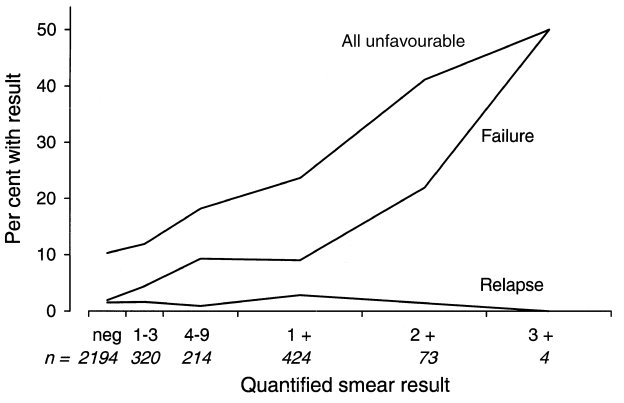

Figure 5 Treatment outcome in function of quantified smear microscopy results after 3 months of treatment with the Category 1 regimen. The quantification scale used is that of IUATLD/WHO, with scanty results regrouped into 1–3 and 4–9 AFB/100 high-power fields. 'All unfavourable' combines failures, relapses, defaults and deaths during treatment. IUATLD = International Union Against Tuberculosis and Lung Disease; WHO = World Health Organization; AFB = acid-fast bacilli.

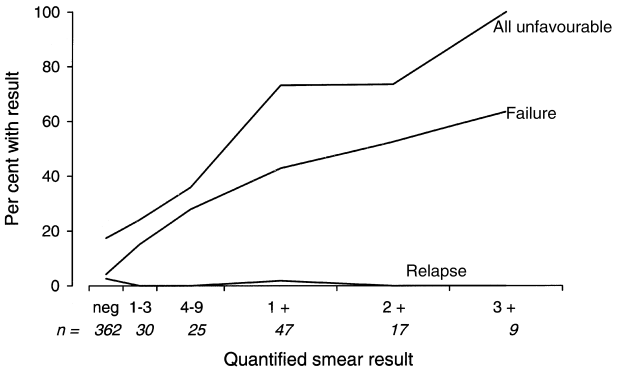

Figure 7 Treatment outcome in function of quantified smear microscopy results after 4 months of treatment with the Category 2 regimen for retreatment smear-positive cases. The quantification scale used is that of IUATLD/WHO, with scanty results regrouped into 1–3 and 4–9 AFB/100 high-power fields. 'All unfavourable' combines failures, relapses, default and death during treatment. IUATLD = International Union Against Tuberculosis and Lung Disease; WHO = World Health Organization; AFB = acid-fast bacilli.

with 1–3 AFB/100 HPF is still significantly different ($P < 0.01$). At 3 months of treatment (after prolonging the intensive phase), the risk of an unfavourable outcome, especially failure, increases proportionally with positivity grading of the smear throughout the whole range, and differences between negative and both groups of scanty results attain statistical significance.

Figure 6 shows the correlation for Category 2 treatment and smears at 3 months, and Figure 7 that for Category 2 and smears at 4 months. Especially at 4 months, and most clearly for the outcome failure, the relationship is now almost linear. Considering the sum of failures and relapses, scanty results fit in smoothly, and the difference compared to cases with a negative result is statistically significant, except for the small group with 1–3 AFB/100 HPF at 4 months.

DISCUSSION

Several scales have been proposed for the quantification of AFB smears, but currently only those recommended by the IUATLD/WHO and the ATS are widely used, the former mainly in low-income, high-prevalence countries, and the latter largely in industrialised countries. The main difference between these two scales is the definition of the threshold for positivity, set at 10 AFB/100 HPF in the former and ten times lower, at 1 AFB/100 HPF, in the latter. Consequently, what is called 1+ in the IUATLD/WHO scale is already 2+ for the ATS scale, and the range of the ATS scale extends to a maximum score of 4+ rather than 3+. With both scales, results below the positivity cut-off are considered to be unreliable (thus traditionally called scanty or doubtful), and confirmation by examination of additional samples is therefore recommended.[1,2,4] There are no guidelines and much uncertainty about the recommended course of action if such additional sputum examinations remain negative or yield scanty results as well. Results below the ATS cut-off value are truly rare, and perhaps for this reason it is often thought that this is also the case for scanty results on the IUATLD/WHO scale. However, this has never been shown unequivocally.

The rationale for a cut-off value to unambiguously define positivity is to safeguard against false-positive results, but the 10 AFB/100 HPF cut-off value for the IUATLD/WHO scale seems to have been chosen arbitrarily (S R Pattijn, personal communication).

Kubica has shown that the correlation between smear and culture was poor when fewer than three AFB were present in the entire smear (though no precise definition of 'entire smear' was provided).[10] This was one of the main conclusions from a multi-centre study conducted in low-prevalence settings. Remarkably, almost exactly the same cut-off had been found by Raj Narain et al. for microscopists in India.[11] The correlation with culture, as well as follow-up of the cases, led them to conclude that a smear result of ⩽3 AFB was unreliable. In a study from Algeria, also using culture as the gold standard, 50% of smears with ⩽10 AFB/smear yielded negative cultures.[12] The authors recommended culture or another smear examination for confirmation. Possibly based on these reports, previously widely used WHO training modules introduced an interpretative element for the IUATLD/WHO scanty results by considering a 4–9 AFB/100 HPF result as 'scanty positive'.[5]

Estimating a 'smear' at 300 fields,[12] these reports suggest that the IUATLD/WHO threshold of 1 AFB/10 HPF may be three to ten times too high, even without taking into account that a true positive smear with negative culture is a well-known phenomenon.[13,14]

In the present study, we have found that such results are not rare, namely one in ten among non-negative diagnostic smears, and almost half among non-negative follow-up smears. On the ATS scale, scanty results constituted only 1% of such diagnostic smears, while the database did not allow us to determine this proportion for follow-up smears.

What might then be an optimised threshold for positivity in diagnostic smears? Our detailed analysis of frequencies up to the IUATLD/WHO cut-off point shows that the individual values are roughly homogeneously distributed. The peaks at 12 and 30 AFB/300 HPF, preceded by troughs, are presumably caused by reader preference for these cut-off points (respectively for positivity interpretation and 1+ score). Culture was not available locally in this study, and delays in specimen transport and the bactericidal effects of decontamination procedures were feared to cause false-negative cultures, particularly in specimens containing very few bacilli. While this is exactly the recommended strategy in the field, we thus chose to estimate false scanty results based on the absence of scanty or positive results with additional smears in the diagnostic series. This revealed very minor differences between the individual scanty quantifications, as the entire series remained negative only in about 10%, compared to 7.5% for the 10 AFB/100 HPF cut-off value. This proportion was considerably higher only for the value 1 AFB/100 HPF, and remained true when low scanty (1 or 2/100) were not accepted as confirmatory. Even with this definition, only about one third of results with 1 AFB/100 HPF might have been false, which seems to correlate well with the above-mentioned studies using culture as gold standard.

Applying a proportion of about 15% unconfirmed (no other smear containing at least 3 AFB/100 HPF) to the observed 10% frequency of scanty (1–9 AFB/100 HPF) diagnostic smears, a cut-off value of 1 AFB/100 HPF might thus add 1.5% false-positives at the most. A 4 AFB/100 HPF cut-off might add almost none, as it showed no more unconfirmed results than the 10 AFB/100 HPF threshold in our analysis. Compared to false-positive results with other diagnostic

methods such as chest radiography or serology, which will often be used in the case of inconclusive microscopy results, these proportions seem to be negligible. On the other hand, re-analysing our previously published comparison of diagnostic yield, a lower cut-off could result in important gains. A threshold of 4 AFB/100 HPF made it possible to confirm almost 7% more cases by two positive results, to detect 3% more positives on any sputum, and to increase the yield of the first smear by 4.4%. This meant a clearly higher yield than that of examining a third sputum specimen. Applying the 1 AFB/100 HPF threshold would result in a still larger gain—almost 10% more confirmed cases, 5.0% more positives on any sputum, and an increase in the yield of the first sputum by 7.8%. In the same analysis, both rereading and the results of extending the diagnostic series suggested a low rate of false-positive scanty results on the IUATLD/WHO scale. About one third of isolated, but only 10% of repeatedly scanty results were found to be negative on rereading the respective smears, and respectively 22% and 3% were not confirmed by examining more specimens. Moreover, results that were repeatedly scanty on the IUATLD/WHO scale proved more reliable than an isolated positive result, of which 8% could not be confirmed by examining additional sputum specimens.

It is unlikely that the considerable proportion of identified scanty results was due to poor staining. The staining method used (hot Ziehl-Neelsen, at the original 1% fuchsin concentration) is expected to make more AFB visible than on cold staining,[15,16] and at least as many as the more commonly used 0.3% fuchsin stain. The prevalence of scanty smears is also expected to be higher in diagnostic smears of human immunodeficiency virus (HIV) co-infected patients,[17,18] but this was not the reason in our population, as HIV is very rare in Bangladesh.

As a higher prevalence of positive smears gives a higher predictive value of a positive smear and offers better conditions to maintain proficiency, recommending a higher threshold in low-income countries appears to be paradoxical and inappropriate. The published literature[13] and the results presented here suggest that setting a uniformly low threshold to indicate positivity may not cause problems provided basic conditions of training, supervision and equipment are fulfilled. Moreover, EQA through rereading smears from the periphery could easily help to identify centres with too many false-positive results. During routine supervision, such laboratories will also often arouse suspicion because of the unusually high proportion of scanty results.

AFB microscopy has serious limitations in the examination of follow-up sputum samples, as it cannot differentiate viable from dead bacilli. Consistently lower rates of culture compared to smear positives have been reported throughout treatment, ranging from about 60% that were also culture-positive at the end of the intensive phase, to only about one third towards the end of treatment.[19] For this reason, Kubica proposed to set the cut-off for a positive follow-up smear at 10 AFB/smear.[10] Some NTPs require two or even three sputum samples for each follow-up examination, leading to uncertainty in case of discrepant results. In our experience this often results in scanty or positive follow-up smears being considered and even registered as negative, when AFB are not found in more sputum. Due to the obligatorily lower reproducibility of scanty results this may not be justified.

As culture was not routinely available, it is not possible to define an optimum cut-off for positivity in follow-up sputum, but a descriptive and qualitative analysis may still be meaningful. In this project, scanty and positive follow-up smears occur at an overall frequency of about 10%, and more frequently at the end of the intensive phase. The almost 50% with scanty results are relatively more frequent earlier in treatment. Plotting quantified follow-up smear results against treatment outcome shows a satisfactory (Category 1 treatment) to even a remarkably linear (Category 2) association with unfavourable outcome, especially treatment failure and relapse. The association becomes stronger with higher quantification, length of treatment and higher treatment category. Although lack of culture confirmation of failures and relapses remains an important limitation, scanty results overall fit these trends well, indicating the true importance of scanty follow-up smears. The observed reversed trend for the group with 1–3 AFB compared to that with 4–9 AFB/100 HPF after 2 months of Category 1 treatment is not in contradiction with this statement; in fact it corresponds perfectly to the indications for prolonging the intensive phase, which was practised from a cut-off at 4 AFB/100 HPF, assuming that the prolongation had some effect on these adverse outcomes.

CONCLUSIONS

Scanty smears below the positivity threshold of the IUATLD/WHO scale are not rare in diagnostic smears, and are frequent in follow-up smears. Among tuberculosis suspects they are indicative of true positivity, provided the microscopy technique respects minimum standards of training and equipment. We recommend the adoption of a lower cut-off at 4 or even 1 AFB/100 HPF, as in the former WHO and ATS scales, a change that would considerably promote efficiency in case detection. The unavoidable concomitant increase in false-positive results appears to be a relatively minor problem that may be controlled by regular EQA rather than by the adoption of a high threshold of doubtful efficacy.

The significance and hence also the most appropriate threshold for positivity in follow-up smears remains unclear because of the high but variable proportion of such smears due to dead bacilli. Additional studies

are required that compare smear and culture results in different categories of patients and at various points during treatment. However, our data suggest that scanty results should not simply be ignored for follow-up smears either.

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RÉSUMÉ

CONTEXTE : Un projet de lutte antituberculeuse au Bengladesh.

OBJECTIF : Documenter la fréquence et la valeur diagnostique des frottis comportant de rares bacilles acido-résistants (échelle UICTMR/OMS : <10 BAAR/100 champs à fort grossissement) et évaluer le caractère approprié du seuil actuel de positivité.

SCHÉMA : Analyse des bases de données des registres de laboratoire, des dossiers de patients et étude du rendement diagnostique des stratégies de recueil des expectorations.

RÉSULTATS : Les frottis faiblement positifs représentent environ 10% des cas suspects et près de 50% des frottis de suivi. Dans les séries de suspects, 10% de cas comportant de 1 à 9 bacilles/100 champs ne sont pas confirmés par une autre analyse positive ou faiblement positive pour les BAAR par comparaison avec 7,5% des résultats obtenus avec la valeur-seuil actuelle de 10/100 champs. Si l'on considérait comme positifs des résultats adoptant une valeur-seuil plus faible, par exemple aussi faible que 1/100 champs utilisée dans l'échelle de l'American Thoracic Society (ATS), on ajouterait au maximum 1,5% de faux positifs. En retour, le bénéfice en cas positifs confirmés monterait jusqu'à 10% et le gain de résultats positifs dépasserait le rendement complémentaire d'un troisième échantillon d'expectoration pour diagnostic. La signification de frottis faiblement positifs de suivi à la fin de la phase intensive est suggérée par leur association à des échecs du traitement et à un résultat globalement défavorable.

CONCLUSIONS : Les résultats faiblement positifs (échelle UICTMR/OMS) ne sont pas rares et ne doivent pas être négligés. L'adoption d'un seuil de positivité nettement plus bas devrait être adéquate dans les programmes de lutte antituberculeuse où les conditions basales pour une microscopie valable des BAAR sont présentes, y compris des contrôles de qualité réguliers.

RESUMEN

CONTEXTO : Un proyecto de programa de control de la tuberculosis en Bangladesh.

OBJETIVO : Documentar la frecuencia y el valor diagnóstico de los frotis con escasos bacilos alcohol-ácido resistentes (escala de la UICTER/OMS : <10 BAAR/100 campos, con objetivo de alto aumento) y evaluar

la pertinencia del umbral de positividad utilizado actualmente.

DISEÑO: Análisis de la base de datos de los registros de laboratorio y de las fichas de los pacientes y estudio del rendimiento diagnóstico de las estrategias de recolección de esputo.

RESULTADOS: Los frotis con escasos bacilos constituían alrededor del 10% de los realizados en los casos sospechosos y casi el 50% de los frotis de seguimiento. En las series de los casos sospechosos el 10% de los frotis con 1–9 bacilos/100 campos no eran confirmados por otro frotis positivo o con escasos BAAR, en comparación con el 7,5% de resultados obtenidos con el umbral actual de positividad de 10/100. Si se adoptaba un umbral más bajo para considerar los resultados como positivos, como por ejemplo, tan bajo como 1/100, utilizado en la escala de la American Thoracic Society (ATS), se agregaba máximo un 1,5% de falsos positivos. En cambio, la ganancia en casos positivos confirmados era superior al 10% y esto excedía el incremento de casos positivos producido por el tercer frotis diagnóstico. Se hace ver la importancia de los frotis de seguimiento con escasos bacilos al final de la fase intensiva, por su asociación con el fracaso del tratamiento y con el resultado desfavorable global.

CONCLUSIÓN: Los frotis con escasos bacilos (escala UICTER/OMS) no son raros y no deben ser ignorados. La adopción de un umbral de positividad considerablemente más bajo podría ser apropiada en los programas de control que cuentan con las condiciones básicas para realizar una microscopia BAAR fiable, incluyendo un control de calidad regular.