Letter to the Editor

To the Editor:

We read with interest the article by Tam et al. claiming that Gram stain has a better sensitivity than Amsel’s criteria for the detection of bacterial vaginosis during pregnancy (“Gram stain method shows better sensitivity than clinical criteria for detection of bacterial vaginosis in surveillance of pregnant, low-income women in a clinical setting,” 1998;6:204–208). They argue that the method is reliable and cheap and therefore the test of choice for low-income women.

What the authors are describing is that Gardnerella vaginalis can be correctly identified by Gram stain, a statement that is not very evocative for a method designed to recognize and classify bacteria. The entity to be diagnosed is not the presence of G. vaginalis, but the presence of bacterial vaginosis. Fifty percent of women harbor G. vaginalis in the vagina in various amounts, most often without accompanying bacterial vaginosis. During pregnancy, it is the disturbance of the vaginal flora, not merely the presence of G. vaginalis, that is associated with preterm labor.1–3 In a recent study, abnormal flora was associated with preterm birth, but anaerobic bacterial vaginosis was not.4 In other studies, treatment with medication against anaerobes was not effective in preventing preterm birth.5 Therefore, if one is looking for a useful screening tool during pregnancy, it ought to be broader than a simple screen for the presence of G. vaginalis.

Secondly, the article presents no data on pregnancy outcome, nor is there any cross-reference to an article containing such data, although the study setting would have been ideal or may even have been intended for this purpose. While only 51 women are discussed because they were symptomatic, whether this means bacterial vaginosis or not, we wonder if the authors could comment on the outcome of the whole group, in comparison with the G. vaginalis positives. Even if the authors elected not to publish these data because they found no association, we would urge them to do so. Instead, new evidence is emerging that it is not only bacterial vaginosis that may be important, but rather a more general disturbance of the flora.

Even if G. vaginalis culture is taken as the benchmark, it is not clear why clinical criteria perform so poorly. One of the reasons may be that the authors used light microscopes with only 100–200 x magnification and no phase contrast. Also, the experience of the clinician using the microscope is likely to be of fundamental importance. Using 400 x magnification, with phase contrast, eight independent international researchers diagnosed clue cells and abnormal flora on air-dried specimens with correlation kappa indices above 0.85.6 Abnormal flora may be more accurately detected by wet-mount examination than in Gram stains, as the preparation of the Gram or its reading may lead to underdiagnosis of the normal lactobacilli, reflected by the association of vaginal lactate concentrations with flora subtypes.7,8

Finally, in practical terms, Gram stain remains a laboratory-based test. Especially for low-income women, calling in the women for treatment may be inefficient, and the practical burden of inviting women for treatment for a seemingly harmless and asymptomatic condition may be straining and disappointing. Also, infestation with Trichomonas or Mobiluncus is easily recognized on wet mount, but not on Gram stain.

Phase-contrast microscopy of a fresh vaginal wet-mount specimen, if performed by experienced clinicians, may therefore remain a superior bedside test and cornerstone for assessing the infection-related prematurity risk in pregnancy.

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Author’s Response

This letter is in response to Dr. Donders’ comments on the article, “Gram stain method shows better sensitivity than clinical criteria for detection of bacterial vaginosis in surveillance of pregnant, low-income women in a clinical setting.” Dr. Donders’ statement that we had claimed that Gardnerella vaginalis can be identified by Gram stain is an inaccurate interpretation of our paper. Gram stain can be used for both a qualitative and semi-quantitative assessment of the reduction in the normal Lactobacillus microbial content of the vagina and its replacement by a heterogeneous mixture of anaerobic bacteria, Mycoplasma species, and G. vaginalis. The method employed to evaluate the Gram stains was based on a general overview of the vaginal microflora seen on the smears and not merely the presence of G. vaginalis.

While it may be true that the article presents no data on pregnancy outcome, the sole purpose of the study was to compare the Gram stain method with the clinical criteria in the diagnosis of bacterial vaginosis. Our examination of the impact of bacterial vaginosis on pregnancy outcome is ongoing; we are currently analyzing outcome data on the original subjects and intend to continue enrolling symptomatic pregnant women to expand our evaluation of this important issue. Recent studies have shown that early identification of bacterial vaginosis and appropriate antibiotic intervention can reduce the likelihood of adverse pregnancy outcome.2,3

We would like to underscore Dr. Donders’ concerns regarding the interpretive expertise needed for assessment of vaginal discharge. Of the four clinical observations used for evaluation of vaginal secretions, the pH measurement is the only component with an objective and highly reproducible endpoint. Wet-mount microscopy in practice is hindered by considerable subjectivity and interobserver variability. A true phase-contrast microscope has an optical system that may be superior to conventional brightfield microscopy conditions for reviewing wet-mount specimens. However, the majority of outpatient facilities do not have phase-contrast equipment (as used by the research laboratories cited in his letter), and wet-mount examinations are performed by using standard microscopes that are suboptimal for identifying the microbial diversity which characterizes bacterial vaginosis.

Culture of vaginal secretions in our patients did not include specialized media and incubation conditions for isolating Mycoplasma and the anaerobic species. Cultures were reported as positive only if G. vaginalis was isolated in moderate to heavy growth. While cost considerations and test availability did curtail our laboratory investigation, these same logistic and fiscal issues are typical constraints in all outpatient obstetric practice.

The concern that since the study population was mainly low-income clinic patients and that the “burden of inviting these women back for treatment would be straining and disappointing” is unfounded. Our patients were informed of the risks associated with bacterial vaginosis and were cooperative and compliant in follow-up evaluation and treatment. The simplicity, reproducibility, and low cost of Gram stain are all practical advantages for its use in the diagnosis of bacterial vaginosis in pregnancy.

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