The CyScope® Fluorescence Microscope, a reliable Tool for Tuberculosis Diagnosis in Resource-Limited Settings

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Introduction

In the context of human immunodeficiency virus/acquired immunodeficiency syndrome pandemics, tuberculosis (TB) is the most common opportunistic infection**.** Poor laboratory equipment and few human resources have made it difficult to implement microscopic diagnosis of pulmonary tuberculosis in a large scale basis. The study was conducted to investigate the reliability of this new tool for TB diagnosis.

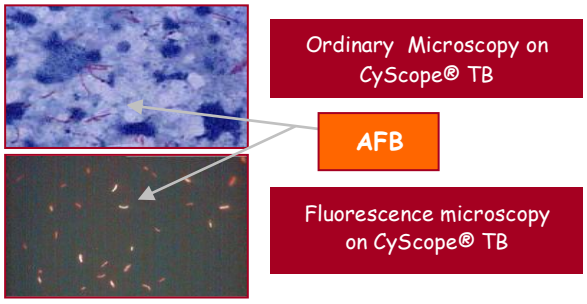
CyScope® TB

Material and Methods

During August-November 2009, 300 sputum samples were collected from patients in Cameroon with suspected pulmonary TB or patients receiving treatment. The age range of the patients was 2-74 years. The samples were studied by using the CyScope® (Görlitz, Germany), a new light-emitting diode-based, fluorescence microscope, to compare auramine-rhodamine fluorescence with the conventional Ziehl-Neelsen staining method. Solid Löwenstein-Jensen medium containing pyruvate was considered as the gold standard for samples with discrepant microscopic results. Five fluorescence protocols were tested to reduce the manipulation time.

Results

Of the 300 sputum specimens included in the study, 17 (6%) of ZN-negative samples were positive under FM and confirmed by LJ culture. Smear positivity for AFB with the FM method (33.3%, 100 of 300) was higher than with the ZN method (27.7%, 83 of 300), but the difference between the two methods showed borderline significance (p=0.06).The staining time with the modified fluorescence protocol could be reduced from 21 to 10 min.



Conclusion

This study confirmed that the auramine-rhodamine fluorescent staining method is more sensitive than the conventional Ziehl-Neelsen method. It also showed that the staining time can be reduced approximately 50% without losing quality. The low CyScope® - price (from 990,00 EUR) makes it possible to use the superior fluorescence technique in resource constrained settings. This suggests that the training of laboratory technicians on fluorescence microscopy should be scaled-up with a prompt treatment for a better control of the disease.

Literature cited

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