

Can fluorescein diacetate vital staining substitute culture for monitoring response to treatment among MDR-TB patients?

Introduction

Fluorescein Diacetate (FDA) staining method was used to determine the vitality of cells. The technique was shown to have high predictive value for the diagnosis of culture determined treatment failure and Rifampicin resistance among late smear converters. Response to treatment among MDR-TB patients was monitored by 11-14 follow up cultures which substantially increases the laboratory workload in resource poor settings. The objective of the study is to explore whether fluorescein diacetate staining can be used as a substitute for culture in monitoring response to treatment among MDR-TB patients.

Methods

Damien TB Research Centre, Nellore, is receiving diagnostic and follows up samples from Nellore district, Andhra Pradesh in India. Smear positive follow up samples were subjected to both FDA vital staining and Lowenstein Jensen medium culture. FDA vital staining procedure modified by Van Duen A (2012) was followed.

Results

Fluorescein diacetate vital staining was compared with Lowenstein Jensen medium culture results and was found to be discordant only in 5.4% of samples. Sensitivity, specificity, positive predictive value and negative predictive value were 93%, 100%, 100% and 81% respectively.

	Culture positive	Culture negative
FDA staining positive	253	0
FDA staining negative	19	81

Conclusion

Fluorescein diacetate vital staining was shown to be highly predictive of culture and can be used as a substitute for monitoring the treatment response among MDR-TB patients in resource poor settings.