Clinical Performance of the Mp1p Immunoassay for Rapid Diagnosis of *Talaromyces marneffei* Infection

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Nguyen Thi Mai Thu[1✪], Jasper F.W. Chan[2,3✪], Ha Thuc Ai Hien[1], Nguyen Le Nhu Tung[4], Nguyen Tat Thanh[1], Jeremy Day[1], Nguyen Van Vinh Chau[4], Guy Thwaites[1], Patrick Woo[2,3], KY Yuen[2,3☯] and Thuy Le[1,5☯]

✪ ☯ authors contribute equally

[1] *Wellcome Trust Major Overseas Programme, Oxford University Clinical Research Unit, Ho Chi Minh City, Viet Nam,* [2] *Department of Microbiology, The University of Hong Kong, Hong Kong,* [3] *State Key Laboratory of Emerging Infectious Diseases, The University of Hong Kong, Hong Kong,* [4] *Hospital for Tropical Diseases, Ho Chi Minh City, Viet Nam,* [5] *Hawaii Centre for AIDS, University of Hawaii at Manoa, Honolulu, USA*

Introduction

The gold standard to confirm *Talaromyces marneffei* infection (previously penicilliosis) is culture from a sterile site which takes up to two weeks. Diagnostic delay is associated with higher mortality. Antigen detecting immunoassays offer rapid, sensitive and specific results, and have transformed management of other mycoses such as cryptococcosis. We evaluated the performance of a novel monoclonal antibody-based Mp1p ELISA in a cohort of HIV-infected patients with culture-confirmed talaromycosis and matched controls.

Methods

Study population: We used archived plasma samples from a case-control study in Ho Chi Minh City 2010-2015.

Cases: HIV-infected patients with culture-confirmed talaromycosis (N_{case}=284)

Controls: HIV-infected patients with other opportunistic infections. Blood culture was negative for *T. marneffei* ($N_{control}$ = 332). Controls were matched to cases by age, sex, and CD4 count or WHO disease staging.

We determined:

- The sensitive and specificity of the Mp1p ELISA against culture gold standard
- The diagnostic ROC curve
- Quantitative antigen clearance in 60 patients on antifungal therapy

Results

Table1. Baseline characteristics of cases and controls

Characteristics	Cases (N=284)	Controls (N=332)
Male (%)	64.1	75.2
Age [median, IQR]	33 (29-37)	32 (29-36)
CD4 [median, IQR]	10 (4-22) (n=225)	27.5 (10.8-55.8) (n=100)
IDU (%)	28	40

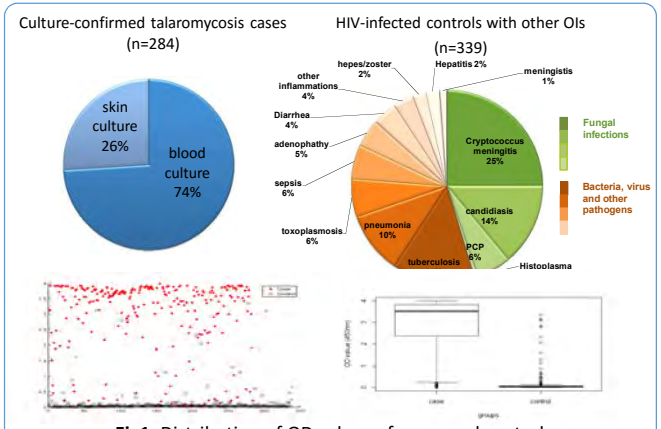


Fig1. Distribution of OD values of cases and controls

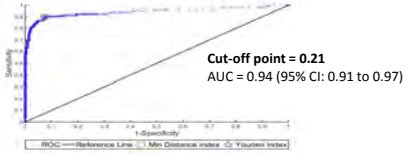


Fig2. The ROC curve and cut-off

Table2. Clinical performance of Mp1p-based ELISA

	Cases	Controls	Total
OD > 0.21	259	25	284
OD < 0.21	25	314	339
Total	284	339	623
Sensitivity (%)	91.2% (95% CI: 87.3 - 94.0)		
Specificity (%)	92.6% (95% CI: 89.3 - 95.0)		
Positive Predicted Value	91.2% (95% CI: 87.3 - 94.0)		
Negative Predicted Value	92.6% (95% CI: 89.3 - 95.0)		

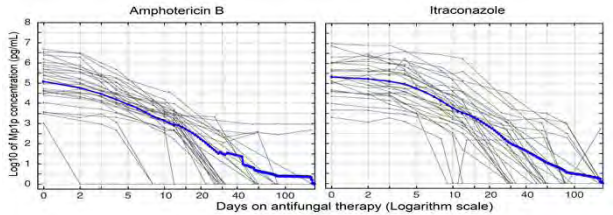


Fig3. Antigenemia clearance in 60 patients during antifungal therapy

Quantitative antigen testing for 60 patients showed that 90% of patients had cleared antigenemia by 3 months. The rates of antigenemia clearance were similar for patients treated with amphotericin B or itraconazole as induction therapy (P=0.079, Student t-test).

Conclusion

The Mp1p ELISA has high discriminatory power for differentiating talaromycosis from other HIV-associated opportunistic infections. The sensitivity outperforms blood culture, allowing for early diagnosis and antifungal therapy initiation, with the potential to reduce talaromycosis mortality.

Acknowledgements

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