Characteristics of HIV/LTBI Co-Infected Patients with Data of T-Spot.*TB* Testing and follow up of Practice Patterns in an HIV-inner City Clinic in New Orleans, LA 2012-2015

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Introduction

The global strategy to eliminate tuberculosis (TB) disease is based on the prevention of progression of latent TB (LTBI) to active disease (1). The risk of LTBI progression and TB transmission increases in the presence of coinfection with human immunodeficiency virus (HIV) (2-4). Reproducibility of T-Spot.*TB* test results vary and impact the diagnosis and treatment of LTBI among the HIV-infected population (5-6).

Objectives

A cohort of HIV/LTBI co-infected patients were followed from January 2012 to September 2015 to identify independent risk factors other than treatment of LTBI which may play a part on preventing progression of LTBI to TB disease. The methodology of LTBI screening, diagnosis, and treatment of LTBI was investigated.

Methods

Data of HIV infected cases receiving medical care in an inner city clinic was reviewed to identify those subjects coinfected with Mycobacterium tuberculosis diagnosed by Interferon Gamma Release Assay (T-Spot.*TB* test) with borderline or positive results. Demographics and clinical characteristics of patients, medication, and medical care were abstracted from providers' notes. Repeated T-Spot.*TB* test results were abstracted to estimate rates of conversion, reversion, and concordance of test results. Univariate and multivariate statistical analysis of data was used to describe the study population and assess the association of clinical factors with the progression of LTBI to TB disease. Study was approved by the Inst. Rev Board.

Results

1937 HIV infected patients receiving medical care from 1/2012 to 9/2015 were assessed (Table1-2). Sixty eight (3.5%) showed a positive or borderline LTBI test result. The change of T-Spot.*TB* test from borderline to positive was 13% and progression from LTBI to TB disease was 20%.

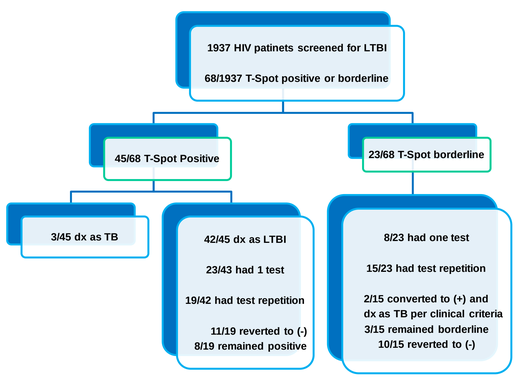
Serial testing results showed that 58% of positives reverted to negative and 67% of borderline changed to negative (Graph 1). There were no reversions after a second positive test. Two cases with borderline LTBI test results became positive, and then progressed to active TB after 14 months. Loss of weight and poor attendance to medical care appointments were independently associated with LTBI progression to TB.

T-Spot.*TB* test results did not correlate with patients' immunosuppression level assessed by T-cell (CD4) count or HIV-viral load levels. 11 out of 42 patients with LTBI defined as with one positive T-Spot.*TB* test were treated for LTBI. 23 had previous diagnosis and treatment for LTBI (Graph 2).

Table 1. Demographic characteristics (n=68)

Characteristic	Count	%
Gender		
Male	49	72
Female	19	28
Race		
AA	52	75
W	12	19
Other	4	6
Age (Y) (median, range)	51	28-72
Country of Birth		
US	66	97
Not US	2	3

GRAPH 1. Flow chart of outcomes



GRAPH 2. Treatment of LTBI: Practice Pattern

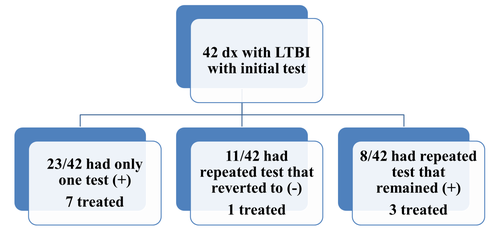


Table 2. Clinical characteristics (n=68)

Characteristic	Measure	Range, (%)
BMI (W/H2)		
At LTBI diagnosis (md)	27	16-43
At end of study (md)	26	15-41
HIV diagnosis (Y)	12	0.5 – 27
Study FU period (mo) (md)	28	3 – 46
< 9 months	7	10 (%)
9+ months	61	90 (%)
CD4 count (md, range)		
At first LTBI test	482	95 – 1297
Lowest count in period	379	14 – 1278
Highest count in period	583	95 – 1394
VL copies (md, range)		
At first LTBI test	198	nd* – 694100
Lowest value in period	nd	nd – 1093
Highest value in period	424	nd – 694100
Adherence to HIV treatment (provider's assessment notes)		
Yes	47	67 (%)
No	21	33 (%)
Adherence to HIV care (visits every 6 months)		
Yes	61	90 (%)
No	7	10 (%)

Conclusions

T-Spot.*TB* test results are independent of the level of immunosuppression status of patients with HIV. Further studies are necessary to explore the multifactorial reasons for the rates of reversion of IGRA in this particular population. Additional prognostic biomarkers other than immune status which may explain progression of LTBI to TB disease need to be identified in low endemic settings.

References

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This research project was supported through the LSU Health Sciences Center, School of Medicine.