Abstract #35

Serum and OMT EIA Repeat Reactivity and Signal-to-Cutoff Ratios as Predictors of Western Blot Positivity

Abstract Category:	Laboratory-based Confirmatory Algorithms Using Supplemental Western Blot, Indirect Immunofluorescence, or Nucleic Acid Amplification Tests
Primary Author:	Linda Han
Affiliation:	Massachusetts Department of Public Health State Laboratory Institute
Co-Authors:	NL Bulled, A Kazianis, BG Werner

OBJECTIVE

To evaluate the potential use of serum and OMT EIA repeat reactivity and signal-to-cutoff (SCO) ratios as predictors of positive Western blot (WB) results.

METHODS

Serum and OMT specimens received from publicly-funded counseling and testing sites between April 1, 2006 and October 11, 2007 were tested by BioRad HIV-1/HIV-2 Plus O EIA. Initial EIA-reactive specimens were retested in duplicate. Specimens reactive on at least one repeat EIA were tested for HIV-1 by WB (bioMerieux OMT WB, BioRad serum WB).

RESULTS

A total of 21,113 serum and 21,549 OMT specimens were tested. Of 341 initially EIA-reactive serum and 296 OMT specimens, 305 (89%) and 210 (71%), respectively, were repeatedly reactive. Of 305 serum and 210 OMT specimens that were repeatedly reactive, 252 (83%) and 168 (80%), respectively, were positive by WB. For sera, initial EIA SCO ratios for WB-positive specimens were tightly clustered around a median SCO ratio of 10.13 (n=252, range 7.75-10.99). For OMT, initial EIA SCO ratios for WB-positive specimens (n=168) have a similar median (9.77), but wider range (1.01-11.03). Among 260 serum and 145 OMT specimens with an initial reactive EIA with SCO ratio ≥7, 252 (97%) and 143 (99%), respectively, were positive by WB.

CONCLUSIONS

Although HIV EIA SCO ratio ≥7 appears to predict WB-positivity at least as well as an HCV EIA SCO ratio ≥3.8 predicts RIBA-positivity, 1-3% of HIV-positives identified by high SCO ratio alone would be false positives. Using CDC guidelines for HCV testing as a model, it may be possible to consider specimens with a high HIV EIA SCO ratio to be positive, without WB confirmation. However, such a testing algorithm would require development of a counseling message that could effectively convey a high but not absolute likelihood of HIV. Fourteen percent of initially EIA-reactive specimens are not repeatedly reactive, and 18% of repeatedly reactive EIA results are not positive by WB. Further examination of similar data would be needed to determine whether our results can be generalized to different test settings.