DEFINITION OF THE UPPER REFERENCE LIMIT FOR THYROID Peroxidase Autoantibodies according to the NACB Guidelines: Comparison of Five Different Automated Methods. Part A


Background-Aim
Autoantibodies against thyroid peroxidase (TPOAbs) are diagnostic hallmarks of autoimmune thyroid diseases. The estimation of TPOAb upper reference limit (URL) is a controversial issue because of method variability and different criteria to define the reference population. According to the NACB guidelines, TPOAb URL should be established from 120 subjects with the following features: male, younger than 30 years, biochemically euthyroid, without history of thyroid disease and non-thyroid autoimmune diseases (1). The aim of the study was to investigate the validity of the NACB guidelines by comparing TPOAb URLs obtained from 120 healthy males (M) and 120 healthy females (F).

Methods
In an Italian population survey, 7970 subjects were screened for thyroid disease (family/personal history, function tests and neck US). Among them, 120 M and 120 F were selected. Their sera were tested for TPOAb concentration by using 12 automated immunometric methods. In this communication, we reported the results of 3 chemiluminescent methods: Advia Centaur XP (CEN, Siemens HD), IMMULITE 2000 XPI (IMM, Siemens HD), Cobas e411 (COB, Roche Diagnostics) and 2 fluorimetric methods: Kryptor Compact Plus (KRY, Thermo Fisher BRAHMS) and Phadia 250 (PHA, Phadia AB) (Table 1). URL was established at 99th percentile. The non-parametric Mann-Whitney U test was used to compare TPOAb levels in M and in F within the same method. A two-sided value of p<0.05 was considered statistically significant.

Results
Value distributions were not Gaussian with a positive skew both in M and in F (Figure 1). A statistically significant difference between medians in M and in F was observed for PHA (medians: 2.6 IU/mL and 3.1 IU/mL, respectively) and COB (medians: 5.0 IU/mL and 6.2 IU/mL, respectively) but not for CEN, IMM and KRY (Table 2) (Figures 2-6). URLs were different according to the method and the gender. Such URLs were generally lower than those stated by the manufacturers (Table 2).

Conclusions
TPOAb URLs were method- and gender-dependent and they were similar or lower than those proposed by manufacturers, which do not distinguish between sexes. Therefore, unlike what is indicated by the NACB guidelines, laboratories have the opportunity to use gender-specific reference intervals.

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Reference