

Establishing thresholds and effects of gender, age, and season for thyroglobulin and thyroid peroxidase antibodies by mining real-world big data

Ma Chao

Peking Union Medical College Hospital, Peking Union Medical College & Chinese Academy of Medical Science, China

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Abstract

Background: Thyroglobulin antibody (TG-Ab) and thyroid peroxidase antibody (TPO-Ab) are cornerstone biomarkers for autoimmune thyroid diseases, and establishment of appropriate thresholds is crucial for physicians to appropriately interpret test results. Therefore, we established the thresholds of TG-Ab and TPO-Ab in the Chinese population through analysis of real-world big data, and explored the influence of age, gender, and seasonal factors on their levels.

Methods: The data of 35,869 subjects downloaded from electronic health records were analyzed after filtering based on exclusion criteria and outliers. The influence of each factor on antibody levels was analyzed by stratification. Thresholds of TG-Ab and TPO-Ab were established through Clinical Laboratory Standards Institute document C28-A3 and National Academy of Clinical Biochemistry (NACB) guidelines, respectively.

Results: There were significant differences according to gender after age stratification; the level of TG-Ab gradually increased with age in females. There were significant differences in TG-Ab and TPO-Ab distributions with respect to age after gender stratification. Moreover, differences were observed between seasons for TG-Ab and TPO-Ab. The thresholds of TG-Ab and TPO-Ab were 107 [90% confidence interval (CI):101-115] IU/mL and 29 (90% CI: 28-30) IU/mL, respectively, using C28-A3 guidelines, but were 84 (90% I CI: 50-126) IU/mL and 29 (90% CI: 27-34) IU/mL, respectively, using NACB guidelines.

Conclusion: The levels of TG-Ab and TPO-Ab were significantly affected by gender, age, and season. The thresholds for TG-Ab and TPO-Ab for the Chinese population were established by big data analysis.

Biography

Ma Chao is affiliated to Department of Clinical Laboratory, Peking Union Medical College Hospital, Peking Union Medical College & Chinese Academy of Medical Science, Beijing 100730, and P.R. China.