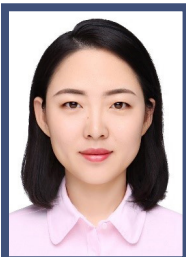


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E-BABE- Data mining: seasonal and temperature fluctuations in thyroid-stimulating hormone

Background: Thyroid-stimulating hormone (TSH) plays a key role in maintaining normal thyroid function. Here, we used “big data” to analyze the effects of seasonality and temperature on TSH concentrations to understand factors affecting the reference interval.

Methods: Information from 339,985 patients at Peking Union Medical College Hospital was collected from September 1st, 2013, to August 31st, 2016, and retrospectively analyzed. A statistical method was used to exclude outliers, with data from 206,486 patients included in the final analysis. The research period was divided into four seasons according to the National Weather Service. Correlations between TSH concentrations and season and temperature were determined.

Results: Median TSH levels during spring, summer, autumn, and winter were 1.88, 1.86, 1.87, and 1.96 μ IU/L, respectively. TSH fluctuation was larger in winter (σ 0.128) than in summer (σ 0.125). After normalizing the data from each year to the lowest TSH median value (summer), TSH appeared to peak in winter and trough in summer, showing a negative correlation with temperature. Pearson correlation analysis indicated that the monthly median TSH values were negatively correlated with temperature ($r = -0.663$, $p < 0.001$).

Conclusions: This study showed significant seasonal- and temperature-dependent variation in TSH concentrations. Thus, these might be important factors to consider when diagnosing thyroid function disorders.

Biography

Ling Qiu has completed his master degree in Peking Union Medical College Hospital. She is the director of Danchen Wang. Dr Qiu has published more than 40 papers in reputed journals.