

00509 Analysis of Discordant Thyroid Function Results

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Aims: Thyroid Function Test (TFT) consisting of thyroid-stimulating hormone (TSH) and free thyroxine (FT₄) are commonly requested assays in the routine laboratory and occasionally results are clinically discordant. Hence, we reviewed TFT results to understand the frequency of discordant results and possible causes.

Methodology: Samples for TFT requested in April 2018 in National University Hospital (NUH) Core Laboratory were collated and reviewed. TSH and FT₄ measurements were performed on Beckman Coulter Dxl800 by Chemiluminescent Immunoassay.

Results were interpreted based on whether the TSH was within normal range (0.45-4.50 mIU/L) compared to FT₄ (reference range: 8.0-16.0 pmol/L). Clinically discordant results were defined as those with normal TSH and high/low FT₄.

Statistical analysis were performed on Excel.

Result: From 3362 samples analyzed, 67% had normal TSH and FT₄, 10% had high TSH with normal FT₄, 8% had low TSH and normal FT₄, 7% had normal TSH with high FT₄ levels, and 5% had low TSH and high FT₄. 1% had high TSH with low FT₄, 1% had high TSH and high FT₄. 1% had normal TSH with low FT₄, <1% had low TSH and low FT₄ and <1% had normal TSH with low FT₄.

Out of those with normal TSH and high FT₄, 61%, 11%, 12% and 16% were Chinese, Malay, Indian, and other ethnicities. The median age was 58 and the female to male ratio was 1.11.

Patients with normal TSH with low FT₄ consisted of 72%, 9%, 5% and 14% Chinese, Malay, Indian, and other ethnicities. The median age was 55 and the female to male ratio was 1.75.

Conclusion: >10% of TFT results were clinically discordant, considering possible causes of assay interference and other pathological diseases, future studies looking at the possible causes and methods to reduce assay interference may aid in the result interpretation.