

Perbandingan Kadar TSH Menggunakan Beberapa Jenis Tabung Penampung Spesimen dan Gambaran Kadar TSH Berdasarkan Jenis Kelamin, Usia, dan Kadar Glukosa Darah Sewaktu = Comparison of TSH Levels from Several Types of Blood Collection Device and Description of TSH levels Based on Gender, Age, and Random Blood Glucose Level

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Abstrak

ABSTRAK

Pemeriksaan thyroid-stimulating hormon (TSH) merupakan salah satu pemeriksaan utama dalam mendiagnosis kelainan pada kelenjar tiroid. World Health Organization (WHO) merekomendasikan pemeriksaan kadar TSH menggunakan bahan serum. Penggunaan plasma dapat membantu pencapaian turn around time (TAT) laboratorium namun perbedaan hasil pengukuran antara serum dan plasma belum diketahui. Pada penelitian dibandingkan hasil pengukuran kadar TSH menggunakan tabung penampung serum dengan clot activator tanpa gel pemisah (Tabung I), tabung penampung plasma dengan antikoagulan heparin tanpa gel pemisah (Tabung II), dan tabung penampung plasma dengan antikoagulan heparin dan gel pemisah (Tabung III). Selain itu juga dilihat gambaran kadar TSH berdasarkan jenis kelamin, usia, dan kadar glukosa darah sewaktu. Desain penelitian adalah potong lintang dengan menggunakan 89 subjek penelitian yang dipilih secara censcutive sampling. Didapatkan median kadar TSH pada tabung I, II, dan III secara berturut-turut sebesar 1,380 (0,032-7,420) μ IU/mL, 1,380 (0,030-7,480) μ IU/mL, dan 1,360 (0,030-7,460) μ IU/mL. Tidak didapatkan perbedaan bermakna kadar TSH ketiga tabung secara statistik. Median selisih kadar TSH antara tabung II dan III dengan tabung I secara proporsional didapatkan sebesar -0,9% (-7,2 - 2,2)% dan -1,7% (-8,0 - 1,6)%. Penyimpangan kadar TSH tabung II dan III yang didapatkan telah sesuai dengan nilai ketidaktepatan yang dapat diterima menurut Ricos. Didapatkan gambaran median kadar TSH pada kelompok laki-laki dan perempuan secara berturut-turut sebesar 1,500 (0,032-4,250) μ IU/mL dan 1,345 (0,058-7,420) μ IU/mL. Median kadar TSH pada kelompok usia 31-40 tahun dan >61 tahun secara berturut-turut sebesar 1,190 (0,609-3,240) μ IU/mL dan 1,730 (0,088-5,760) μ IU/mL. Pada kelompok glukosa darah sewaktu <200 mg/dL didapatkan nilai median glukosa darah sewaktu pada kelompok kadar TSH di atas nilai rujukan, dalam rentang nilai rujukan dan dibawah nilai rujukan secara berturut-turut sebesar 175 (151-199) mg/dL, 89 (60-190) mg/dL, dan 107 (73-117) mg/dL. Dari hasil yang diperoleh dapat disimpulkan bahwa spesimen dari ketiga tabung penampung dapat digunakan untuk pemeriksaan kadar TSH tanpa memberikan perbedaan hasil yang bermakna baik secara statistik maupun secara klinis. Gambaran kadar TSH yang didapatkan menunjukkan nilai median kadar TSH lebih tinggi pada laki-laki dibandingkan perempuan, terdapat pola peningkatan kadar TSH pada kelompok usia yang lebih tua, dan nilai median glukosa lebih tinggi pada kelompok kadar TSH di atas rentang nilai rujukan.

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ABSTRACT

Thyroid-stimulating hormone (TSH) is one of the important laboratory parameters in diagnosing the thyroid

gland abnormalities. The World Health Organization (WHO) recommends using serum samples to measure TSH levels. The use of plasma samples can help to improve laboratory turn around time (TAT) but the difference of measurements results between serum and plasma samples is unknown. The aims of this study were to compare TSH levels using serum tubes with clot activator (Tube I), plasma tubes with heparin anticoagulants (Tube II), and plasma tubes with heparin anticoagulant and gel separator (Tube III), and to show an overview of TSH levels according to gender, age, and random blood glucose levels. A cross sectional study was conducted using 89 blood samples from subjects that were selected by consecutive sampling. The median TSH levels in tubes I, II, and III were 1.380 (0.032-7.420) $\mu\text{IU/mL}$, 1.380 (0.030-7.480) $\mu\text{IU/mL}$, and 1.360 (0.030-7.460) $\mu\text{IU/mL}$ respectively. There were no statistically significant differences in TSH levels of the three tubes. The median TSH levels differences of tubes II and III compared to tube I were -0.9% (-7.2 - 2.2) and -1.7% (-8.0 - 1.6) respectively. Biases of the measurement results obtained were in accordance with the specified desirable bias according to Ricos. The median TSH levels of the male and female groups was 1.500 (0.032-4.250) $\mu\text{IU/mL}$ and 1.345 (0.058-7.420) $\mu\text{IU/mL}$ respectively. Median TSH levels of 31-40 years old age group and >61 years old age group were 1.190 (0.609-3.240) $\mu\text{IU/mL}$ and 1.730 (0.088-5.760) $\mu\text{IU/mL}$ respectively. In the group of blood glucose level <200 mg/dL, the median of blood glucose level according to above, within, and below reference range of TSH were 175 (151-199) mg/dL, 89 (60-190) mg/dL, and 107 (73-117) mg/dL. In conclusion, specimens from the three tubes could be used to examine TSH levels without giving neither statistically nor clinically significant difference. The measurement of TSH levels obtained in the study showed a higher median TSH level in the male group compared to the female group, higher TSH levels in the older age group, and a higher median glucose level in the TSH group above the reference range of TSH.