

Dedication:

To my mother Hussynia and my family

To all Sudanese people with wishes of happy future

Acknowledgments

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Abstract

A prospective study conducted during the period, November 2003 to May 2004, to evaluate the performance of clinical laboratories in Sudan in measuring of some endocrine hormone levels using ELISA and RIA. A total of 42 serum samples, which were randomly taken from different individuals of both sexes, were analyzed for thyroid stimulating hormone (TSH) (pituitary-derived hormone) and thyroxine (T_4) (thyroid-derived hormone). The results obtained for both hormones, using the two different *in vitro* techniques, were statistically analyzed using 't' test, correlation coefficient and linear regression.

The results obtained showed that there were no significant differences between RIA and ELISA in TSH measurement (mean. Diff. – 0.1002 mU/L, SD 1.417 and $P > 0.05$), while in T_4 measurement there were significant differences between RIA and ELISA (mean. Diff. – 41.742 nmol/L, SD 36.462 and $P < 0.05$).

Both TSH and T_4 measurements showed that there was a correlation between RIA and ELISA (62% and 83.2%, respectively). According to the analysis of the results obtained by the model of simple regression, it could be suggested that RIA was superior to ELISA in measurement of both hormones.

ملخص الدراسة

أجريت هذه الدراسة التوقعية خلال الفترة من نوفمبر 2003م وحتى مايو 2004م بغرض تقييم أداء المختبرات الطبية في قياس بعض هورمونات الغدد الصماء باستخدام المقايسة المناعية الإشعاعية (RIA) والمقايسة المناعية الأنزيمية (ELISA)، تم أخذ (42) عينة دم تم اختيارها عشوائياً من أشخاص مختلفين من الجنسين، وقد تم تحليل المستوى المصلي لهورموني الغدة النخامية TSH و الغدة الدرقية T_4 و قد تم تحليل جميع هذه النتائج إحصائياً باستعمال الطرق الإحصائية الآتية:

اختبار (ت)، معامل الارتباط والانحدار الخطي البسيط. أوضحت النتائج أنه لا يوجد اختلاف ذو معنى بين المقايسة المناعية الإشعاعية والأخرى الإنزيمية في تحليل مستوى هورمون TSH وكان الاختلاف الدلالي في المستوى الوسطي لهذا الهورمون (0.1002 mU/L - بانحراف معياري 1.417 وباحتمال إحصائي أكثر من 0.05). بينما يوجد هنالك اختلافاً ذو معنى بين هذين القياسين في تحليل مستوى هورمون T_4 وقد كان الاختلاف في المستوى الوسطي لهذا الهورمون (41.742 nmol/L - بانحراف معياري 36.462 وباحتمال إحصائي أقل من 0.05). كذلك أوضحت نتائج هذه الدراسة هنالك توافق بين هذين القياسين في تحليل مستوى هورموني الغدة النخامية TSH والغدة الدرقية T_4 بنسبة 62% و 83.2% على التوالي. ومن خلال الإنحدار الخطي البسيط نجد أن المقايسة المناعية الإشعاعية تتفوق على المقايسة المناعية الأنزيمية في تحليل مستوى هذين الهورمونين.

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