

นิพนธ์ต้นฉบับ

Original Article

Reproductive Hormone Tests References Parameters ค่าอ้างอิงสำหรับการตรวจฮอร์โมนทางระบบสืบพันธุ์ ทางเคมีคลินิก

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ABSTRACT

Objective : To set up new reproductive hormone tests references parameters among the Thais in Bangkok

Study Design : A descriptive study

Subjects : 100 normal subjects (50 for each sex) attending the routine check up program of King Chulalongkorn Memorial Hospital

Method : Blood specimen from each subject was collected using the evacuated blood collection system. Then 6 important clinical chemistry parameters including estradiol (E2), progesterone, FSH, LH, prolactin and testosterone were analyzed using automated clinical chemistry analyzer. Then reference ranges were calculated.

Results : The reference values of each parameter was set and described in the article.

Conclusion : Reference value setting is necessary and should be found in each laboratory setting.

Key words : reproductive hormone test, reference

บทคัดย่อ

วัตถุประสงค์ : ทำการศึกษาค่าอ้างอิงสำหรับการตรวจฮอร์โมนทางระบบสืบพันธุ์ทางเคมีคลินิกในกลุ่มคนไทยในกรุงเทพมหานคร

รูปแบบการศึกษา : การศึกษาเชิงพรรณนา

ตัวอย่างที่ทำการศึกษา : ตัวอย่างชาวกรุงเทพฯ จำนวน 100 คน (50 ชาย 50 หญิง) ที่ได้รับการตรวจสุขภาพจากโรงพยาบาลจุฬาลงกรณ์

- วิธีการศึกษา :** ทำการเก็บตัวอย่างเลือดจากตัวอย่างแต่ละคน แล้วนำมาวิเคราะห์ทางเคมีคลินิกด้วยเครื่องวิเคราะห์อัตโนมัติเพื่อหาระดับสารเคมีที่สำคัญ 6 ชนิดคือ estradiol (E2), progesterone, FSH, LH, prolactin และ testosterone นำผลที่ได้มาคำนวณหาค่าอ้างอิงต่อไป
- ผลการศึกษา :** ได้ค่าอ้างอิงสำหรับสารเคมีแต่ละชนิดและแสดงไว้ในรายงาน
- บทสรุป :** การหาค่าอ้างอิงเป็นสิ่งที่มีความจำเป็นและควรจัดทำในห้องปฏิบัติการทางการแพทย์ทุกแห่ง
- คำสำคัญ :** การตรวจฮอร์โมนทางระบบสืบพันธุ์ทางเคมีคลินิก, ค่าอ้างอิง

Reproductive hormone tests are common laboratory requests in the present day.¹⁻² Considering the pathogenesis of many diseases, before the clinical symptoms can be detected, the abnormalities in laboratory result can be detected.³

In interpretation of reproductive hormone tests, reference ranges of the tests are necessary.³⁻⁴ Due to the fact that the reference values of each laboratory test vary on geographical distribution, it is necessary to set the laboratory reference ranges according to each area. From literature review, there are only a few reports of the reference ranges among the Thai and there is no recent report detected. In this study, the reproductive hormone test reference ranges among the Thai in Bangkok are set.

Material and method

This study was set as a descriptive study. A total number of 100 normal subjects (50 male and 50 female) attending the routine check up program of King Chulalongkorn Memorial Hospital were included in this study. The age range of all subjects was 15 to 45 years. Exclusion was set in the case of any abnormalities detected by the physician during physical examination. In cases that the subjects have the history of sex hormone use or sterili-

zation, they were also excluded.

Blood specimen from each subject was collected using the evacuated blood collection system. The studied clinical chemistry tests parameters consisted of estradiol (E2), progesterone, FSH, LH, prolactin and testosterone. Each blood test was radioimmunoassay tested by automated chemistry analyzer.

The result from each subject was recorded in tabular form. Then all results were collected and analyzed. Each parameter was calculated for the average and standard deviation (SD). The reference range for each parameter was set at average \pm 2 SD.⁵

Result

The average, standard deviation and reference ranges for each parameter were shown in table 1.

Discussion

Reference values determination for each setting is important due to the variability of normal values in each area. In this study, reference values for reproductive hormone tests parameters for the Thai in Bangkok were set.

Table 1. Average, standard deviation and reference range for each parameter.

Parameters	Reference range	
	male	female
Estradiol (pmol/l)	25-105	11-158
Progesterone (nmol/l)	0-3	2-67
FSH (U/l)	1-11	3-35
LH (U/l)	0.6-6	2-65
Prolactin (U/l)	51-257	84-610
Testosterone (nmol/l)	5-22	0-2

These present reference values are automated-derived which is the most frequent used technique. While the old reference values in use of many laboratories are manual-derived and obtained from the manufacturer's recommendation.

Comparing our reference values to the general reference values, the similarity can be observed. The studied parameters in this report are the common clinical tests, which are usually included in the check up. Therefore, it can be a useful tool for the physician in interpretation of the patient's laboratory results.

However, the reference parameters, especially for female subjects should also be further classified according to the menstrual cycle phase. The author recommends every laboratory calculation of their own reference values. It is one of the concepts for standardization of the laboratory setting.⁶⁻⁷ In Thailand, this type of study is limited, therefore, it should be promoted. Furthermore, finding the reference values among specific patient groups such as pregnant, infant, children and elderly is suggested.

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