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Comparison between International Adopted References Value and Local References Value

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Summery

Serum levels of (aspartate alanine transferase) AST, (Creatine kinase) Ck and (lactate dehydrogenase) LDH in 500 patients established myocardial infraction (300 males and 200 females) were screened in order to estimate the rates of low or high activates of these essential enzymes in our local population compared with internationally accepted reference range. The results indicate that clearly subnormal value (i.e. below –3 SD from mean international reference values) for AST, CK and LDH were encounter in 0.0, 1.4 and 12.4% of samples while the levels greater than -3 SD units above mean international reference values were found in 0.3,1.0 and 1.6 % respectively. Thus, the highly significant tendencies toward low serum AST, CK and LHD are rather disturbing and attempts should be made to confirm these finding and elucidate their exact causes.

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الخلاصة

فحصت مستويات المصل لكل من (ناقلة أمين الغلوتامين للأوكسالوستيل AST وأنزيم كيتاز الكرياتين CK، ونازعة الهيدروجين الانحتانية LDH) في ٥٠٠ مريض مشخص بأحتاء عضلة القلب (٣٠٠ ذكور و ٢٠٠ إناث) واختبرت مدى فعالية الأنزيمات في المجتمع المحلي مقارنة مع المدى المرجعي الدولي.

أشارت النتائج إلى أن القيم المستحصلة هي دون المستوى وهي اقل من (SD 5) الذي يمثل معدل الانحراف المعياري الدولي للانزيمات التي ذكرت اعلاه وبالنسب ٠,٠ ـ ١,٤ ـ١,٢ على التوالي لكل من الانزيمات بينما معدل المرجع الدولي لهذه الانزيمات هو ٠,٣ ـ١,٠ ـ ١,٦ على التوالي .

لذا فأن النتائج التي بينتها الدراسة أكدت وجود فرق واضح معتمد بين المرجع المحلي والمرجع الدولي لتلك الأنزيمات.

Introduction

Seven a convincing clinical history the diagnosis of myocardial infraction is generally considered to be established if

(a)   There are typical electrocardiographic (ECG) changes

(b)   Typical serum enzyme level rises occur.

In the absence of such a clinical history the ECG and serum enzyme changes usually are required for a firm diagnosis [1].

The ECG is usually a sensitive and specific way of confirming the diagnosis [2].

Myocardial infraction leads to a detectable rise in the serum concentration of enzyme confirm within cardiac cells. The most widely used enzyme in the detection of myocardial infraction is [3]: -

1.Creatine kinase (CK) starts to rise at 4-6 hours, peak about 12 hours and falls to normal in 48-72 hours.

2. Aspartate alanine transferase (AST) state to rise about 12 hours after infraction and reach a peak on the first or second day.

3.Lactate dehyrogenase (LDH) estimation may to useful when the diagnosis is uncertain several days after a possible infract.

The main purpose of paper is to establish national standard enzyme values in Iraq for in-patients with myocardial infraction.

Materials and Methods

Collection of samples: -

Venous blood samples were collected in plain tubes (LiB) sasco, UK) for 30 patients with well diagnosis Angina pectoris (mean age 53.0, SD=5.7) and 500 patients with well-diagnosed myocardial infraction (mean age 54.9 SD=4.9) of the population living in Ibn-Nafis hospital area of Baghdad. The serum samples were separated and stored at −70 until analyzed in one batch for AST, CK and LDH. The technical method for the determination of serum ATS, CK and LDH was used which based on automated procedures technician.

Results

The means and standard deviation of serum AST, CK and LHD activities in serum are shown in table 1. The results indicate that the observed means are lower than the international reported reference values for AST, CK and LDH in patients with MI.

Furthermore, low serum AST activity (less then the international mean −2 SD) was encountered 14.0% of the cases studied but none was found to be less than −3 SD from the reference mean, while higher serum CK and LDH level (more than +3 SD above the reference value mean were only encountered in 1.6 % of cases respectively).

The 30 patients with Angina pectoris shoed normal reference values for AST, CK and LDH (no. Of females 15 and No. of males = 15 , AST = 6.3, CK=50 and LDH = 99)

Table 1

The serum mean and standard deviation for enzymes levels in 500 patients with well diagnosed M.I. compared with internationally established reference values,

Analysis	Material	Males (n=300		Females(n=200)	
		Mean	SD	Mean	SD
AST Unit/1	Study	12.6	4.5	12.3	5.2
	Ref.(Upper)	15	6.1	15	6.1
CK unit/1	Study	70	9.1	40	4.0
	Study Ref.(Upper)	80	5.5	55	5.9
LDH Unit/1	Study	326	13.5	220	14.7
	Ref.(Upper)	250	8.5	250	9.0

Discussion

Clinical Chemistry laboratories in general, and those in developing countries in particular, are frequently confronted with the need to establish reference range for body constituents of clinical interest Such a situation may arise when a new methods is to be introduced or if a laboratory nearly wishes to compare its range of reference values with that found in the local or international literatures.

However, it has been well established in such endeavors that failure to take proper account of certain factors can lead to mistakes in the interpretation of the general information some of these factors to be considered cause variations in individuals (such as diet, menstrual cycle, posture and time of day). While others are due to differences between individuals (e.g. methodology, standards of performance and reliability) which can have an important hearing on the results reported for the same information when carried out in different laboratories.

In the present study, we have made several attempts to reduce the influence of these factors by fulfilling certain acceptable criteria for

the selection of apparently M.I in patients from the same cardiovascular hospital, and choosing acceptable analytical instruments methods for the measurements.

After evaluation the results of the angina pectoris patients, they showed only one difference, that is the equal distribution of sex between males and females. In contrast to the patients suffer from angina pectoris in USA, which are four-fifths males [4].

The enzyme tests result in our angina pectoris patients were in the lower limits of the normal values of these enzymes, due to the fact that estimation of enzyme has no role in the diagnosis of angina pectoris [5,6]. The obtains results of the M.I patients were at the upper limits of the normal values of these enzyme (table 1), since we miss a national standard enzymes in Iraq. The distribution of sex in M.I patients showed higher incidence rate of attack in males (82%). It is worth to mention here that the smoke habit in Iraq is much higher in males than in females ([7,8])

In confusion, the present finding should be re-examined carefully to confirm and investigate the exact reasons for such levels of these enzymes in the serum of well-diagnosed M.I Iraqi patients.

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