The role of glucose tolerance test in Diwaniya population in relation to(who) criteria

Fadhl Alzamili*

الخلاصة

تشير البحوث الحديثة حول مرض السكري واعاقة ايض الكلوكوز الى وجود اتجاهات جديدة في تعريف المرض من الناحية السريرية.

يهدف البحث لدراسة دور اختبار التحمل للكلوكوز(OGTT) في تشخيص الاصناف المختلفة لارتفاع السكر في الدم في مدينة الديوانية .

تمت درست 400 حالة مرضية للكشف عن وجود حالة السكري باستخدام اختبار التحمل للكلوكوز .

كانت نتائج الدراسة انه 37.5% من المصابين كانوا ايجابيين للاختبار بعد ساعتين و 50% منهم كانت نتائجهم بين اختبار اعاقة الكلوكوز للصائم(IFG) و اختبار التحمل للكلوكوز (OGTT) فيما كان 12.5% سالبين للاختبار .وقد استنتج ان هناك تداخل بين نتائج الاختبار لكل المصابين وعليه ان استخدام اختبار التحمل للسكر بعد ساعتين هو الافضل للقياس.

Abstract

Recent researches into diabetes and impaired glucose metabolism has created a new array terminology

And definitions relating to glucose metabolism in clinical practice.

To study the role Glucose Tolerance Test (OGTT) in diagnosis of different hyperglycemic classess.

in diwaniya.

Four hundred patients were studied for the existance of diabetic state using the Oral Glucose Tolerance Test.

Only (37.5%) patients had frank diabetic state after 2h OGTT.

(50%) patients ranging between Impaired Fasting Glucose (IFG), and Impaired Glucose Tolerance Test.

(12.5%), patients had no diabetes.

Overlap between results makes these readings not applicable for all population,therfore using

2H OGTT..is warranted.

Key words; OGTT,Impaired fasting glucose,Impaired glucose tolerance,WHOcriteria.

*Diwaniya Teaching Hospital

Introduction

In the late 1970s both WHO (1) and the National Diabetes Data Group (2) produced new diagnostic criteria and a new classification system for diabetes mellitus. This brought order to a chaotic situation in which nomenclature varied and diagnostic criteria showed enormous variations using different oral glucose loads. In 1985 WHO slightly modified their criteria to coincide more closely with the NDDG values (3). There are now many data available, and also much more aetiological information has appeared. It seemed timely to re–examine the issues and to update and refine both the classification and the criteria, and to include a definition of the "Metabolic Syndrome".

An American Diabetes Association (ADA) expert group was convened to discuss these issues. It published its recommendations in 1997 (4).

For population studies of glucose intolerance and diabetes, individuals have been classified by their blood glucose concentration measured after an overnight fast and/or 2 h after a 75 g oral glucose load. Since it may be difficult to be sure of the fasting state, and because of the strong correlation between fasting and 2–h values, epidemiological studies or diagnostic screening have in the past been restricted to the 2–h values only (Table 1). Whilst this remains the single best choice, if it is not possible to perform the OGTT (e.g. for logistical or economic reasons), the fasting plasma glucose alone may be used for epidemiological purposes. It has now been clearly shown, however, that some of the individuals identified by the new fasting values differ from those identified by 2–h post glucose challenge values (10,11). The latter include the elderly (10) and those with less obesity, such as many Asian populations. On the other hand, middle-aged, more obese patients are more likely to have diagnostic fasting values (10). Overall population prevalence may (10) or may not (7,10,11) be found to differ when estimates using fasting and 2–h values are compared. Individuals who meet criteria for IGT or IFG may be euglycaemic in their daily lives as shown by normal or near–normal .

Methodes

A total of (400) patients were choseen to perform (OGTT) during their attendance

to the outpatient clinic ,either for clinical suspicion of diabetes ,or for checking for ill health.

OGTT were performed according to WHO recommendations.Age range was 13-61 years (mean age 34y). Glucose was estimated with glucose oxidase on capillary blood.

WHO cut-off points were used to assign subjects to the different grou

Results

Glucose tolerance results are shown in the following table.

Glucose Tolerance Test results as shown in Table (2);

There were (150) patients (37.5%), (Groups 1&2),considered normal on basis of (OGTT).

The first group(100) patients has a fasting glucose of >90 - <120 mg/dl.

The second group (50) patients has a fasting glucose of <90 mg/dl.

The third group (70) patients are those who are in the red zone,where they are classified as frank diabetics,because their glucose readings were

high throughout the test(fasting>120 mg/dl),and after (2h) (>200 mg/dl).

(180) patients (45%), have abnormal results ,they are neither diabetics nor normal,rather they are classified as impaired tolerance test (32.5%).

and impaired fasting glucose (12.5%).

Only (5%) have what we called postprandial hyperglycemia.

The WHO cut-off points are in terms of (mmol/l) rather than (mg/dl).

therefore range of (6.1-7.0 mmol/l) equal to (110 -126 mg/dl) in traditional units .

Table (1): Values of diagnostic OGTT Glucose concentration , mmol l-1 (mg dl -1)

Whole blood Plasma	Venous	Capillary	Venous
Diabetes Mellitus:Fasting or 2-h post glucose load	_> 6.1(_>110) _>10.0(_>180)	_>6.1(_>110) _>11.1(_>200)	_>7.0(_>126) _>11.1(_>200)
Impaired Glucose Tolerance(IGT):Fasting (if measured) and 2-h post glucose load	< 6.1 (<110)and _>6.7 (_>120)	<6.1(<110)and _>7.8(_>140)	<7.0(<126)and _>7.8(_>140)
Impaired Fasting Glycaemia(IFG):Fasting	_>5.6(_>100)and <6.1(<110)	_>5.6(_>100)and <6.1(<110)	_>6.1(_>110)and <7.0(<126)
and (if measured)2-h post glucose load	<6.7 (<120)	<7.8(<140)	<7.8 (<140)

Table (2) : Glucose tolerance results are shown in the following table

GROUP	PATIENT (NO.)	(%)	BLOOD SUGAR (mg / dl)	TIME (h)
1	100	25	>90 - <120 <140	0 2
2	50	12.5	<90 <140	0 2
3	70	17.5	>120 >200	0 2
4	30	7.5	>90 - <120 >200	0 2
5	20	5	<90 >200	0 2
6	85	21.25	>90 - <120 >140 - <200	0 2
7	45	11.25	<90 >140 - <200	0 2

Discussion

THE (WHO) Report, clearly states that diabetic state can be excluded if the fasting glucose level is (<110-126 mg/dl) for both the capillary and the venous sampling.(1-4) The (WHO) cut-off points again refered to (110-126 mg/dl).

In this study ,those who are frank diabetics are (group3) which equal to (17.5%)of total percentage of patients.

With a general look for other readings ,it shows that the (WHO) cut-off point, not entirely relevant to our patients(5).

(12.5%) including those patients in groups(4,5),their tolerance fell in different Classification group (using the traditional units readings),as the difference between the (SI units) and the conventional units can not give the precise readings(6).their high blood sugar readings especially after (2h),raise the significance of

this test ,because the risk of complications are high ,mainly the cardiovas-cular comlications(7),this outlook agree the concepts of both the European

and the american diabetes associations(8,9).

(12.5%) including those patients in (group2), shows completely normal results according on the criteria on the study was based.

There was a large ovelap in fasting blood sugar in our patients during study reflecting the fact that fasting blood sugar alone as a screening test can lead to missing data.

Compaired to other studies in other area, nearly showed the results that

Goes with the criteria stated by (who) with little variation taking in consideration the dietry habbits,body built (1**2**) .

Conclusion

Oral Glucose Tolerance Test is a standered test for definite diagnosis of diabetes mellitus,but should be adjusted according to population specifity to avoid overlap readings or missed cases.

Referencess

1. WHO Expert Committee on Diabetes Mellitus (1980). *Second Report*. Geneva: WHO, Technical Report Series (646)..

2. National Diabetes Data Group. Classification and diagnosis of diabetes mellitus and other categories of glucose intolerance.(1979) *Diabetes*; 28: 1039–57.

3. World Health Organization. *Diabetes Mellitus(19850: Report of a WHO Study Group*. Geneva: WHO,. Technical Report Series(727).

4. The Expert Committee on the Diagnosis and Classification of Diabetes Mellitus(1997). Report of the Expert Committee on the Diagnosis and Classification of Diabetes Mellitus. *Diabetes Care*; 20: 1183–97.

5. Alberti KGMM, Zimmet PZ for the WHO Consultation. Definition, diagnosis and classification of diabetes mellitus and its complications(1998). Part 1: diagnosis and classification of diabetes mellitus. Provisional report of a WHO Consultation. *Diabetic Medicine*; 15: 539–553.

6. Finch CF, Zimmet PZ, Alberti KGMM(1990). Determining diabetes prevalence: a rational basis for the use of fasting plasma glucose concentrations? *Diabetic Medicine*; 7: 603–10.

7. Fuller JH, Shipley MJ, Rose G, Jarrett RJ, Keen H(1980). Coronary heart disease risk and impaired glucose tolerance: the Whitehall Study. *Lancet*; i: 1373–76.

8. De Vegt F, Dekker JM, Stehouwer CDA, Nijpels G, Bouter LM, Heine RJ.(1998) The 1997 American Diabetes Association criteria versus the 1985 World Health Organization criteria for the diagnosis of abnormal glucose tolerance: poor agreement in the Hoorn Study. *Diabetes Care*; 21: 1686–1690.

9.. Harris MI, Eastman RC, Cowie CC, Flegal KM, Eberhardt MS(1997). Comparison of diabetes diagnostic categories in the US population according to 1997 American Diabetes Association and 1980–1985 World Health Organization diagnostic criteria. *Diabetes Care*; 20: 1859–62.

10. Wahl PW, Savage PJ, Psaty BM, Orchard TJ, Robbins JA, Tracy RP.(1998) Diabetes in older adults: comparison of 1997 American

Diabetes Association classification of diabetes mellitus with 1985 WHO classification. *Lancet*; 352: 1012–1015.

11. Ramachandran A, Snehalatha C, Latha E, Vijay V.(1998) Evaluation of the use of fasting plasma glucose as a new diagnostic criterion for diabetes in Asian Indian population (Letter). *Diabetes Care*; 21: 666–67.

12. Saudi medical journal;(1984);Glucose tolerance in Saudi arabs..5;1;61-3