The Evaluation of High Density Lipoproteins-cholesterol and Triglycerides on newely diagnosusis Gestatinal diabetes.

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الخلاصة

الكثير من الدراسات أوضحت بان الدهون (Lipids) هي من عوامل الاصابة لداء السكري اثناء الحمل (GDM) الكشف المبكر قد يمنع او يؤخر الاصابة بالنوع الثاني من داء السكري . كشف التحمل العليل للجلوكوز اثناء الحمل يتطلب اختبار غير ملائم تماما الاغراض التحري في الممارسة السريرية لهذا فان الدراسة الحالية تقيم تاثيرات البروتين الشحمي عالي الكثافة – كوليسترول (HDL-C) والدهون الثلاثية (TGs) على اثناء الحمل (GDM)

مواد الدراسة والقياسات :النساء الحوامل وعددهن اربع وعشرون شكلن اختبار تحمل الجلوكوز المختصر (75g) اثناء فترة اب /2006 الى تشرين الاول 2007 تصنيفهن ثلاث مجموعات اعتمادا" على نتائج تحمل الجلوكوز

1- مجموعة أ : تحمل الجلوكوز الطبيعي (NGT) (العدد 10).
2- مجموعة ب: التحمل العليل لداء السكري اثناء الحمل (IGDM) (العدد 7).
3- مجموعة ج: داء السكري اثناء الحمل (GDM) (العدد 7).

اظهرت الدراسة بان البروتين الشحمي عالي الكثافة –كولوستيرول (HDL-C)ذو ارتباط مباشر (R^2) مع بجلوكوز المصل المقيم من تحمل الكلوكوز المختصر (2h-OGT)كان (0.7230.498.173) للمجموعة ا،ب،ج على التوالي.مرضى داء السكري أثناء الحمل اظهروا ارتباط مباشر بين البروتين الشحمي عالي الكثافه –كولستيرول ومستوى مصل الجلوكوز وإضافه الى ذلك وجد ارتباط مباشر بين الدهون الثلاثية ومستوى مصل الجلوكوز ، لكن لايصل الى الارتباط المعنوي.تحمل العليل لداء السكري اثناء الحمل يرتبط بالبروتين الشحمي عالي الكثافة – كوليسترول. بالبروتين الشحمي عالي الكثافة كوليسترول والدهون الثلاثية ترتبط الخطورة للتحمل العليل لداء السكر اثناء الحمل (IGDM)دراسة هذه المتغيرات تساعد في منع او تاخير ظهور داء السكري اثناء الحمل(GDM).

Abstract

Many studies indicated that lipid profile risk factor for gestation diabetes mellitus (GDM), and the early detection of GDM may prevent or delay progression to type 2 diabetes mellitus. Detection of impaired gestation requires a test which is inconvenient to screen for this condition in clinical practice.This studies was aimed to assess these effects of high density lipoproteins-cholesterol (HDL-C) and triglycerides (TGs) on the manifestations of gestational diabetes mellitus (GDM).Materials and methods:-Twenty-four Pregnant women were preformed brief IGTT, (75g oral glucose tolerance test) during period the August /2006 to October / 2007. They classified into three groups depending on the results of IGTT nets.

1.Group A: Normal Glucose Tolerance (NGT), (No.10).
2.Group B: Impaired gestation diabetes mellitus (IGDM), (No.7).
3.Group C: Gestational diabetes mellitus (GDM), (No.7).

HDL-c was showed a significant direct correlation with serum glucose assessed by 2h-OGTT (R^2=0.173, 0.498, 0.723 for group A,B, and C respectively). Gestation diabetes mellitus patients (GDM) showed direct correlation between HDL-C and serum glucose level.
In addition, direct correlation between TG and serum glucose, but not reach to significant correlation.IGDM is associated with high density lipoprotein –cholesterol. The HDL-C and TG associated with risk for GDM and study this parameters help to prevent or delay GDM

Introduction

Impaired glucose tolerance test means patients with plasma levels above the normal range (< 109 mg/dl) but not enough to labeled diabetes mellitus (≥200 mg/dl) [1,2] .

Gestational diabetes mellitus (GDM) is a glucose intolerance that begins, or is first recognized, during pregnancy. GDM occurs approximately 2-5% of all pregnant women [3].Often in people with family history of diabetes at occurs more, through it a usually disappears after delivery. The mother is at increase risk of getting type 2 diabetes mellitus later in live [3,4] .

Gestational diabetes is associated with risks the fetus such as glucose intolerance and obesity in the long term [5]. The risk of developing diabetes postpartum is approximately 50%, while the risk of developing impaired glucose intolerance (IGT) may be high as 75% [6], upon diagnosis women with GDM should receive intensive diabetes educations, including strategies for dietary and life style modifications , information an achieve glycemic control and in some cases insulin therapy [7] . There is controversy around universal screening of all pregnant of all pregnant women between 24-28 weeks some believe that low risk women (e.g.< 25 years of age, no family history of diabetes, normal weight, etc) [8] .

GDM is diagnosed based on plasma glucose values measured during oral glucose tolerance test (OGTT); glucose level is normally lower during pregnancy. So the threshold values for diagnosis of diabetes in pregnancy are lower [9-11].

Materials and Methods

1-Subjects

This study was conducted in the Department of Medical Biochemistry. College of medicine. Al-Qadisiya University
Twenty-four patients (pregnant women) were involved in this study, during the period August /2006 to October / 2007.

2-Clinical characteristic

The ages of subjects were < 40 years and pregnant women should not have diabetes mellitus (newly diagnosis of Gestation diabetes mellitus). Family history of diabetes was defined as the presence of diabetes in first degree relative.

Blood sampling was performed conveniently at morning during diagnostics OGTT. The subjects were instructed for fasting serum glucose conditions before carrying out the tests.

A 10 ml of venous blood was obtained firstly by antecubital venipuncture using G23 needle in the sitting position, secondly, after 2 hours of the glucose load by aspiration of 2 ml venous blood for estimation of the 2-hour serum glucose level. Fasting blood was divided into:
Plain tube for lipid analyses. Serum was obtained by centrifugation for 10 minutes at 4000 rpm...

Lipid profile assay

The estimation of serum TGs and HDL-C are measured to fasting patient for 12 hour

Estimation of serum triglycerides

Specimen: serum samples frozen at –20 $^{\circ}$C for a maximum of two weeks before assay.

Triglycerides level was determined by totally enzymatic method as supplied by BioMerieux Company–France. Produce a red-colored chromogen that is read on 500 nm [12].

Estimation of HDL-C

Specimen: serum samples kept at 4 – 8 $^{\circ}$C for a maximum of one week before assay.

HDL-C was determined by precipitation with phosphotungstate-$MgCl_2$ solution followed by enzymatic determination of cholesterol in the supernatant.

Phosphotungstate-$MgCl_2$ will precipitate VLDL and LDL in the sample leaving HDL in the supernatant obtained by centrifugation and from which cholesterol content can be determined. Commercial kits with convenient HDL-C standard are supplied by bioMerieux Company-France [12].

Results

Depending the results of brief glucose tolerance test in pregnant women (24-28week); three groups were emerge in this study:-

1-Group A: had ten pregnant women (NGT), in which, the concentration of serum glucose after 2- hours oral glucose tolerance test (2h-OGTT)was in the range of less than 140 mg/dl.

2-Group B: had seven subjects (pregnant women) who is termed IGDM group, the concentration of serum glucose after 2h-OGTT is a greater than 140 mg/dl, but less than 200 mg/dl.

3-Group C had seven patients (pregnant women), who is termed GDM group. The concentration of serum glucose after 2h-OGTT is a grater than 200 mg/dl.

All statistics analysis was performed using the SPSS for windows statistics package.

In is this study, HDL-c was elevated in IGDM group (Range=47±23), (table 1) and have significance different when compared with NGDM group(Range=72±103) (table 1), however, significance different was found in group C (GDM group) (Range=29±4.4) compared with NGDM . In addition, triglyceride (TG) level was found to be significantly elevated in IGDM group and GDM group compared with NGDM group (table 2). Moreover, HDL-C was showed a significant direct correlation with serum glucose assessed by 2h-OGTT(R^2=0.173, 0.498, 0.723 for group A,B, and C respectively) (figure-3). Gestation diabetes mellitus patients (GDM) showed direct correlation between HDL-c and serum glucose level.

In addition, direct correlation between TG and serum glucose, but not reach to significant correlation (figure 4)

Table (1): The mean HDL-c level estimated by mg/dl in NGDM and IGDM groups.

Groups	No.	Mean levels of HDL-c (mg/dl)		Std. Deviation
		Statistic	Std. Error	Statistic
NGTT	7	72.4286	38.83105	102.73730
IGDM	7	47.0000	9.05539	23.95830
GDM	10	29.0000	1.40633	4.44722

Table (2): The mean TGs levels estimated by mg/dl to the three study groups.

Groups	No.	Mean levels of TGs (mg/dl)	Std. Deviation
		Statistic	Std. Error
NGTT	10	361.7000	41.24427
IGDM	7	296.1429	19.86673
GDM	7	230.4286	24.67779

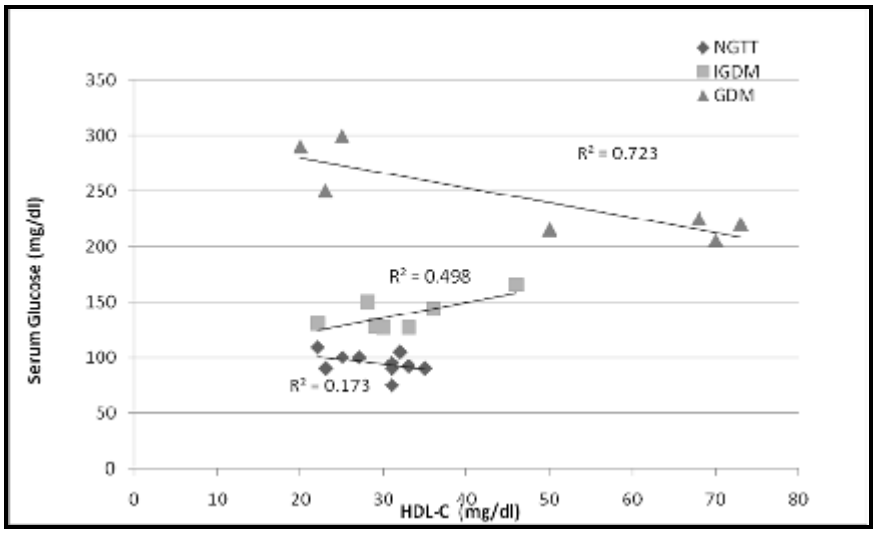

Figure 3: The correlation between HDL-C and serum glucose assessed by 2h-OGTT in study groups.

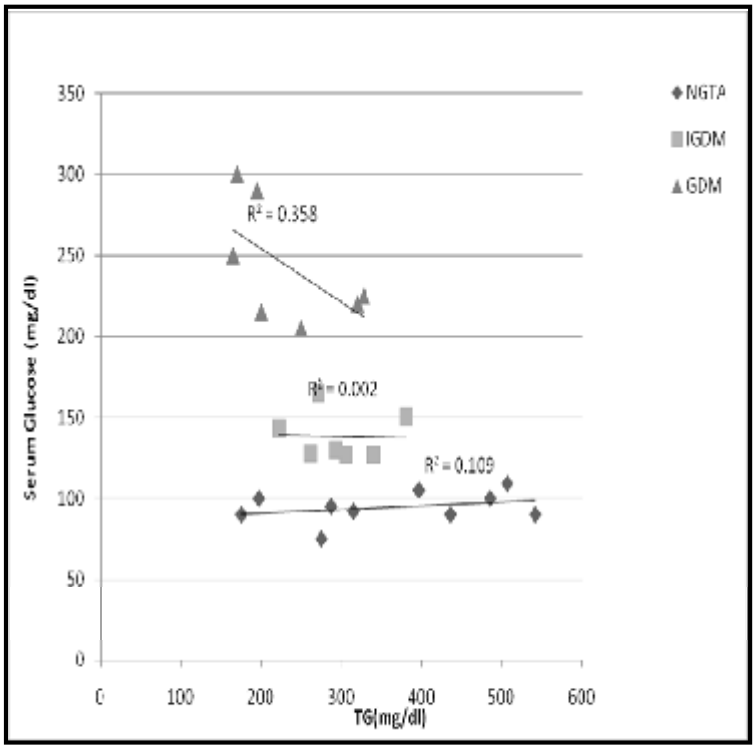

Figure 4: The correlation between TGs and serum glucose assessed by 2h-OGTT in study groups.

Discussion

The set of carbohydrates metabolism abnormalities during pregnancy referred to gestation diabetes mellitus (GDM) [13] . The main reason for these changes is insulin resistance, which increases in pregnant whose aimed to ensure appropriate supply of glucose to the fetus and increase and increase utilization of fats by mother [14] .

Insulin resistance lead to increased production of maternal amount of insulin, although in some women the amount of insulin secreted is insufficient for maintenance normal glucose tolerance within suitable range [14] .

In our group of patients with gestation diabetes mellitus, we observed higher levels of lipoproteins (HDL-C) compared with normal glucose tolerance test (NGDM) and impaired gestation diabetes mellitus (IGDM). These results is similar to the results demonstrated by Toescu *et al.* [14] .

Toescu *et al.*, showed that women with gestation diabetes mellitus had significant increase triglycerides in second trimester compared with normal glucose, suggestion that the expected hypertriglyceridaemia occurs earlier in pregnancy in this group (GDM)([15] .

Noan *et al.* noted a strong positive correlation between morning non-fasting triglycerides concentration with glucose intolerance [15] .

The HDL-c is high in GDM in this study may be due to newly diagnosed patients GDM.

As pregnancy progresses the diabetogenic also increase of some potent hormones increase between 26-32 weeks. Thus insulin sensitivity decrease by 50-70 %. The glucose tolerance deteriorates in all pregnant women. The impairment is large enough to fulfill the diagnosis of GDM [15] .

Women with GDM have markedly increase risk of developing to T1DM and T2DM. postpartum follow up is crucial lifestyle modification should be reinforced several clinical trials have shown that the lifestyle changes can prevent diabetes high risk groups[16] .

Offspring of women with GDM are at increased risk for obesity- glucose intolerance and DM in the late adolescent and young adulthood[17] .

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