

## Lipid profile in Diabetic Children

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### Abstract

Heart problems are an important cause of morbidity and mortality all over the world. High cholesterol is an important cause which might start in childhood. The aim of this study is to assess lipid profile as a risk factor for heart disease. Fifty two children with diabetes mellitus type 1 were assessed regarding their lipid profile compared to 37 non diabetic children. The results show that growth parameters were found lagging behind the normal range for age and sex. Cholesterol and LDL (Low Density Lipoprotein) were found high compared to control group ( $P < 0.05$ ).

### Introduction

Atherosclerosis is an important disease in adults, however, studies have shown that it starts in childhood and recommended early screening of lipid profile in all children with risk factors<sup>(1)</sup>. Evidence is building up that early detection of hypercholesterolemia can markedly prevent morbidity and mortality. It has been shown by studying intima-media thickness by using high resolution ultrasound the presence of increased subclinical atherosclerosis in diabetic children with a strong correlation with LDL

( $P < 0.05$ )  
metabolism<sup>(2)</sup>. Total cholesterol and LDL were found significantly higher in children with diabetes<sup>(3)</sup>.

Early intervention to reduce cholesterol level in normal children by dietary manipulation has an important impact on lowering the risk of atherosclerosis<sup>(4)</sup> through lowering the level of cholesterol<sup>(5)</sup>. The absorption of cholesterol is higher than synthesis in diabetes type 1<sup>(6,7)</sup>. Poorly controlled diabetic children with high lipid level are at high risk of atherosclerosis and cardiovascular complications<sup>(8)</sup>.

## Patients and Methods

Fifty two children with diabetes mellitus type 1, age 1-14 years were studied during their attendance to Babylon Maternity and Children hospital for follow up, they were 29 males and 24 females and 37 non diabetic children were taken as a control group.

A fasting blood sugar (FBS) and lipid profile blood samples were collected from both patients and control. A result of FBS 3.9-5.8 was considered normal and a result more than 7 mmol/L in

diabetic range. LDL level <110mg/dL is considered normal, 110-129mg/dL borderline, >130mg/dL is high<sup>(9)</sup>. Both samples were examined in the biochemistry laboratory of Babylon College of Medicine. Results were analyzed statistically by t-test.

## Results

Fifty two diabetic children were tested for fasting lipid profile and blood sugar, 28 males and 24 females and a control group of 37 non diabetic children.

**Table(1): Patients Findings**

<b>Sex</b>	
Males	28
Females	24
<b>Family history</b>	
Diabetes	11
Heart disease	3
<b>FBS</b>	
<7 mmol/L	8
>7mmol/L	44

**Table(2): Growth measurements according to percentile charts**

Measurement	<3 <sup>rd</sup>	%	<50th	%	>50th	%	>90th	%	>95th
Height	30	58.49	13	24.5	6	11.3	3	5.66	0
Weight	17	32.07	15	28.3	14	28.3	6	11.3	0

**Table(3): Total cholesterol and LDL level for both patients and control**

Lipid profile	Group	NO	Mean	SD	S.Error
Cholesterol	Patients	45	197.7240	66.2615	9.8777
	Control	37	145.7935	37.7894	6.2125
LDL	Patients	45	102.8049	43.1927	6.4388
	Control	37	69.3630	32.2707	5.3053

## Discussion

In our study we found that diabetic children are poorly controlled on the view of their fasting blood sugar which was abnormal in 44 patients (83%) which is mainly due to an irregular attendance for follow up on behalf of patients and an erratic supply of

insulin. Poor glycemic control is a factor for lipid profile disturbances<sup>(10)</sup>.

Growth parameters were highly affected specially height which was below the third centile for age in 31 (58.49%) patients. None of our patients was found obese which is good news as obesity is one of the risk factors for atherosclerosis<sup>(11)</sup> at the same time 32 (60.3%) patients were below the

mean for their weight which is due to poor nutrition and poor control.

The mean total cholesterol and LDL level were high compared to the control group ( $P < 0.05$ ) (Table 3) which acts as a risk factor for atherosclerosis<sup>(12)</sup>. This result is compatible with other studies in the same sense<sup>(13,14)</sup>. Coronary artery calcification was found more prevalent in people with a history of risk factors measured in childhood<sup>(15)</sup>, accordingly children with risk factors for atherosclerosis should be screened by assessing lipid profile and should be treated if level found abnormal<sup>(16,17)</sup>. According to obtained results we can conclude that growth parameters and blood sugar were found abnormal in these patients which needs special consideration. Lipid profile was high compared to control group and this needs by itself to be looked at with special care and proper dietary manipulation.

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