

# Factors affecting dyslipidaemia in children and young people with Type 1 diabetes mellitus: a multicentre study

S.Upadrasta<sup>1</sup>, J.Joseph<sup>2</sup>, O.O.Ayoola<sup>3</sup>, S.Chandrasekaran<sup>4</sup>, S.M.Ng<sup>1</sup>

1. Department of Paediatrics, Southport & Ormskirk Hospital NHS Trust, UK; 2. Department of Paediatrics, Wirral University Teaching Hospital NHS Foundation Trust, UK; 3. Department of Paediatrics, Lancashire Teaching Hospitals NHS Foundation Trust, UK; 4. Department of Paediatrics, East Cheshire NHS Trust, UK

## BACKGROUND:

- Diabetic dyslipidaemia is characterized by high Triglycerides (TG), low high-density lipoprotein cholesterol (HDL-C) and presence of small, dense low density lipoprotein (LDL).
- National paediatric Diabetes Audit 2013-2014 reported that 16.1% of Children and Young People (CYP) with Type 1 Diabetes Mellitus (T1DM) have Total Cholesterol (TC) of  $\geq 5$  mmol/L.

## AIM:

- To evaluate the factors associated with dyslipidaemia in children and young people with Type 1 diabetes mellitus

## PATIENTS AND METHODS:

- Study performed at a four paediatric diabetes centres in the Northwest of UK between 2014 and 2015
- TC, LDL, TG, TC/HDL-C ratio, Insulin requirement profile (total daily insulin dose per kilogram body weight), BMI SDS, mean HbA1c over 12 months, duration of diagnosis and pubertal status of 371 CYP with T1DM were examined

## RESULTS:

- There were 201 males and 170 females of whom 93 were prepubertal, 170 were pubertal and 107 were postpubertal
- 250 CYP were on MDI and 102 on insulin pump treatment

**Table 1: Demographics and results**

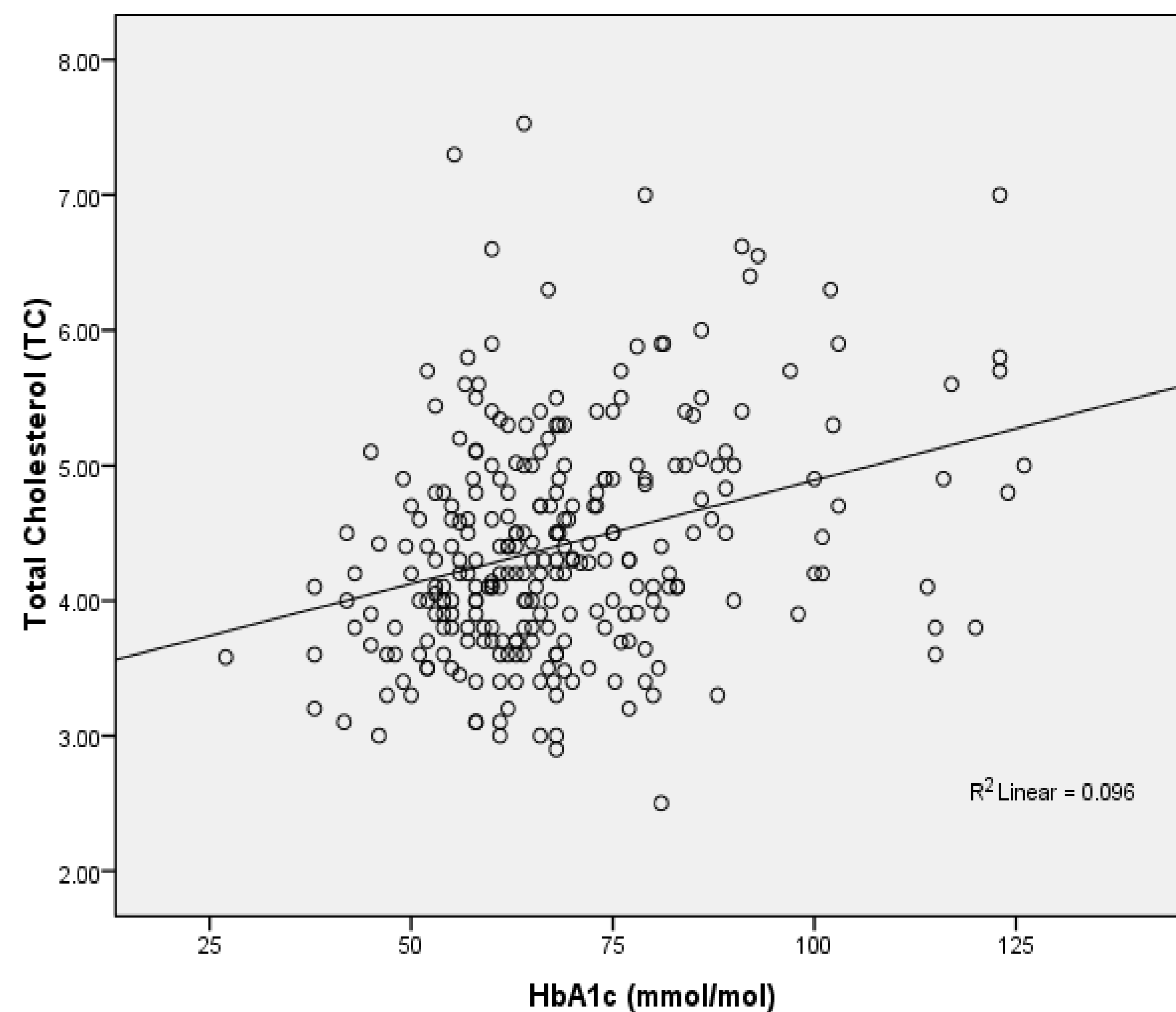
Variable	Mean $\pm$ SD
Duration of diagnosis (years)	5.21 $\pm$ 3.97
BMI SDS	0.62 $\pm$ 1.02
Total daily insulin requirement (units / kg / day)	0.91 $\pm$ 0.36
Mean HbA1c over 12 months (mmol/L)	68 $\pm$ 17
Total Cholesterol (mmol/L)	4.4 $\pm$ 0.84
TC/HDL-C ratio	2.94 $\pm$ 0.86
LDL (mmol/L)	2.18 $\pm$ 0.77
Triglycerides (mmol/L)	1.11 $\pm$ 0.73

## CONCLUSIONS:

- There was a significant association between poor glycaemic control and higher TC levels and TC:HDL-C ratio.
- HbA1c was an independent factor affecting TC, HDL-C, LDL and TG.
- Poor glycaemic control increases the risk of diabetic dyslipidaemia in CYP with Type 1 diabetes mellitus.

**Disclosure Statement:** No conflicts of interest

**Figure 1: Total Cholesterol and HbA1c**



**Table 2: Correlations with TC: HDL-C ratio**

Variable	Correlation with TC:HDL-C ratio
HbA1c (mmol/mol)	p<0.001
Total daily insulin (units / kg / day)	p<0.001
Duration of diagnosis (years)	p=0.02

**Table 3: Multivariable regression analysis of factors affecting lipid levels**

Variable	TC	TC:HDL-C ratio	LDL	TG
HbA1c	p<0.001	p<0.001	p=0.04	p=0.01
Insulin requirement	p=0.21	p=0.005	p=0.02	p=0.81
BMI SDS	p=0.35	p=0.008	p=0.56	p=0.74

