# RESIDUAL C-PEPTIDE IN PAEDIATRIC PATIENTS WITH TIPE 1 DIABETES

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## INTRODUCTION

Preservation of C-peptide is important and has become regarded a relevant endpoint as already a quite small residual C-peptide seems to be related to both less acute and late diabetes complications.

## OBJECTIVE

To assess the residual C-peptide secretion in DM1 pediatric patients with different diabetes duration.

## PATIENTE AND METHODS

Cross-sectional study of 157 patients with T1D. We analyzed: age at diagnosis and age at the time of the study (years), sex, diabetes duration (years, more than 1 year of T1D), metabolic control (HbA1c, HPLC-Menarini) and fasting C-peptide levels (chemiluminescent microparticle immunoassay, ARCHITEC CI8200, minimum detectable levels 0.01 ng/ml).

Statistical analysis was performed with SPSS program, version 17.0. Data are reported in percentage, mean and standard deviation. C-peptide levels in median and range (percentile 25-75). Comparative testing were performed with no parameter tests. Level of statistical significance p <0.05.

## RESULTS

Minimum and maximum diabetes evolution was 1-16.7 years in undetectable C-peptide subgroup and 1-11.8 years in detectable C-peptide subgroup. 58% of patients had undetectable C-peptide levels, in this subgroup the duration of DM was significantly longer, with younger, but not significantly, age at diagnosis (table 1). Only 3/24 patients with >10 years of diabetes evolution had detectable C-peptide levels (10.0-11.7 years evolution, C-peptide levels 0.01-0.09 ng/ml); 5/27 patients with <2 years of diabetes evolution had undetectable C-peptide levels (mean 1.1 years evolution, mean age diagnosis 5.1 years (0.6-10.9). HbA1c was lower in detectable C-peptide subgroup but not significantly. C-peptide levels were negatively correlated with diabetes evolution and HbA1c levels.

### FIGURE 1. Subgroups



42% n=66 — 58% n=91
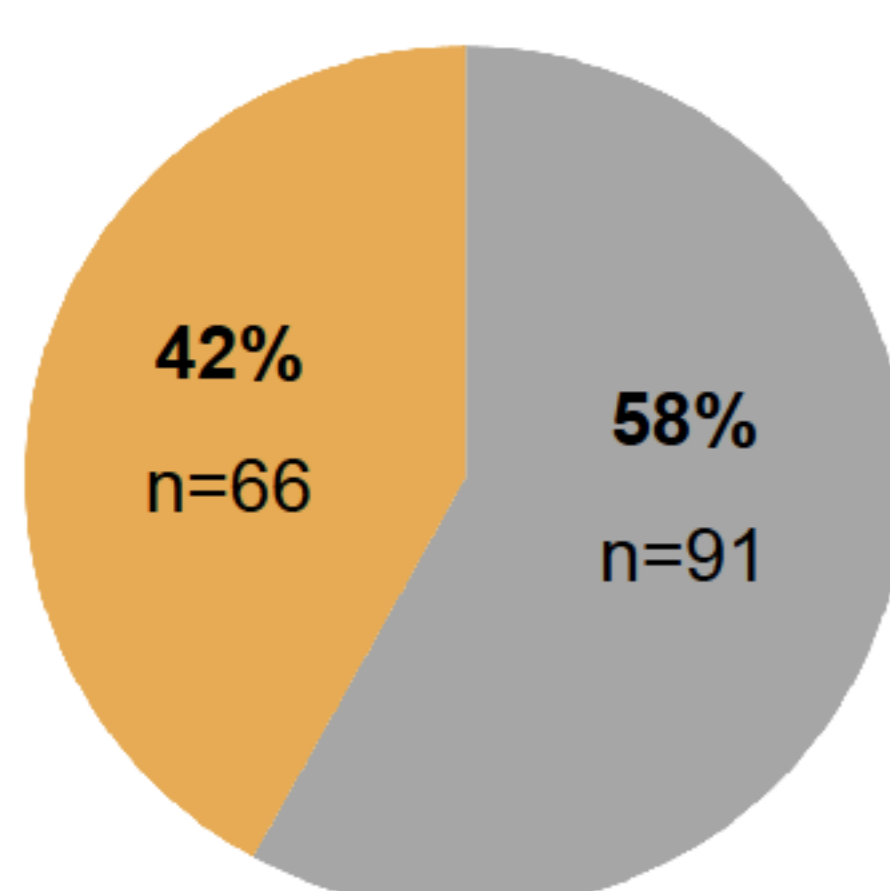
C-PEPTIDE LEVEL
- Detectable
- Undetectable

TIME EVOLUTION
- < 5 years
- 5-10 years
- > 10 years

53% n=83 — 32% n=50 — 15% n=24
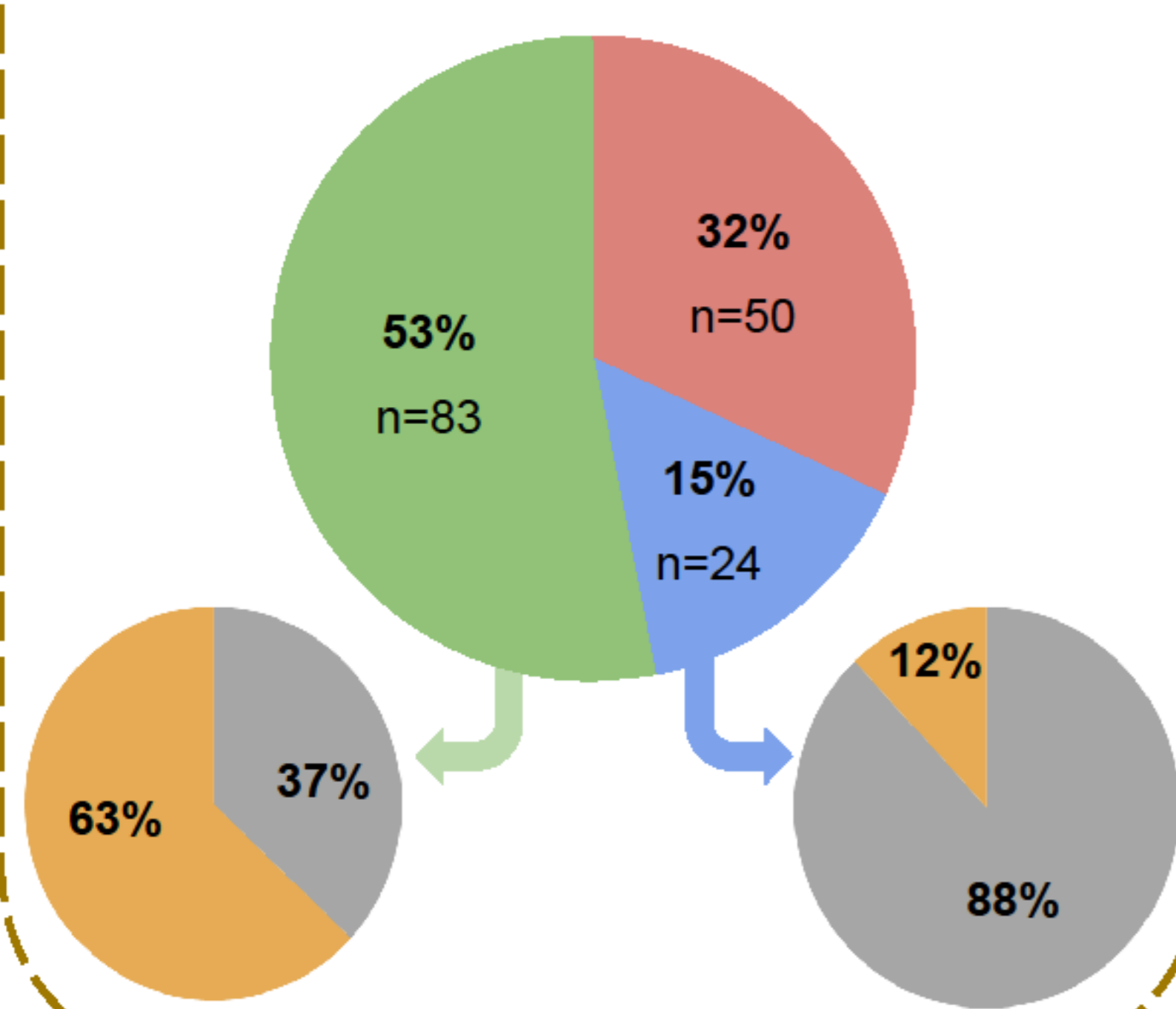
63% — 37% — 12% — 88%

### TABLE 1. Characteristics in each subgroup

| C-PEPTIDE | n (%) | SEX male (%) | AGE diagnosis (years) | HbA1c (%) | AGE study (years) | T1D EVOLUTION Time (years) | T1D EVOLUTION <5 years | T1D EVOLUTION >10 years | C-PEPTIDE LEVELS (ng/ml) |
|---|---|---|---|---|---|---|---|---|---|
| GLOBAL | 157 (100%) | 49% | 6.5 4.0 | 6.8 0.7 | 12.2 4.6 | 5.6 3.8 | 83 (53%) | 24 (15%) | -- |
| Undetectable | 91 (58%) | 50% | 5.1 3.4 | 6.9 0.8 | 12.4 4.6 | 7.2 3.8 | 31 (37%) | 21 (88%) | --- |
| Detectable | 66 (42%) | 47% | 8.5 3.9 | 6.6 0.7 | 11.9 4.6 | 3.3 2.6 | 52 (63%) | 3 (12%) | 0.14 (0.04 – 0.35) |
| p | -- | NS | 0.188 | 0.855 | 0.927 | 0.004 | <0.001 | 0.001 | -- |

### FIGURE 2. Differences between subgroups



Age at diagnosis — HbA1c leves — Time evolution

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C-PEPTIDE LEVEL: Detectable — Undetectable

### FIGURE 3. Correlation study



C peptide levels (ng/ml)

Time evolution (years) — HbA1c levels (%)

## CONCLUSION

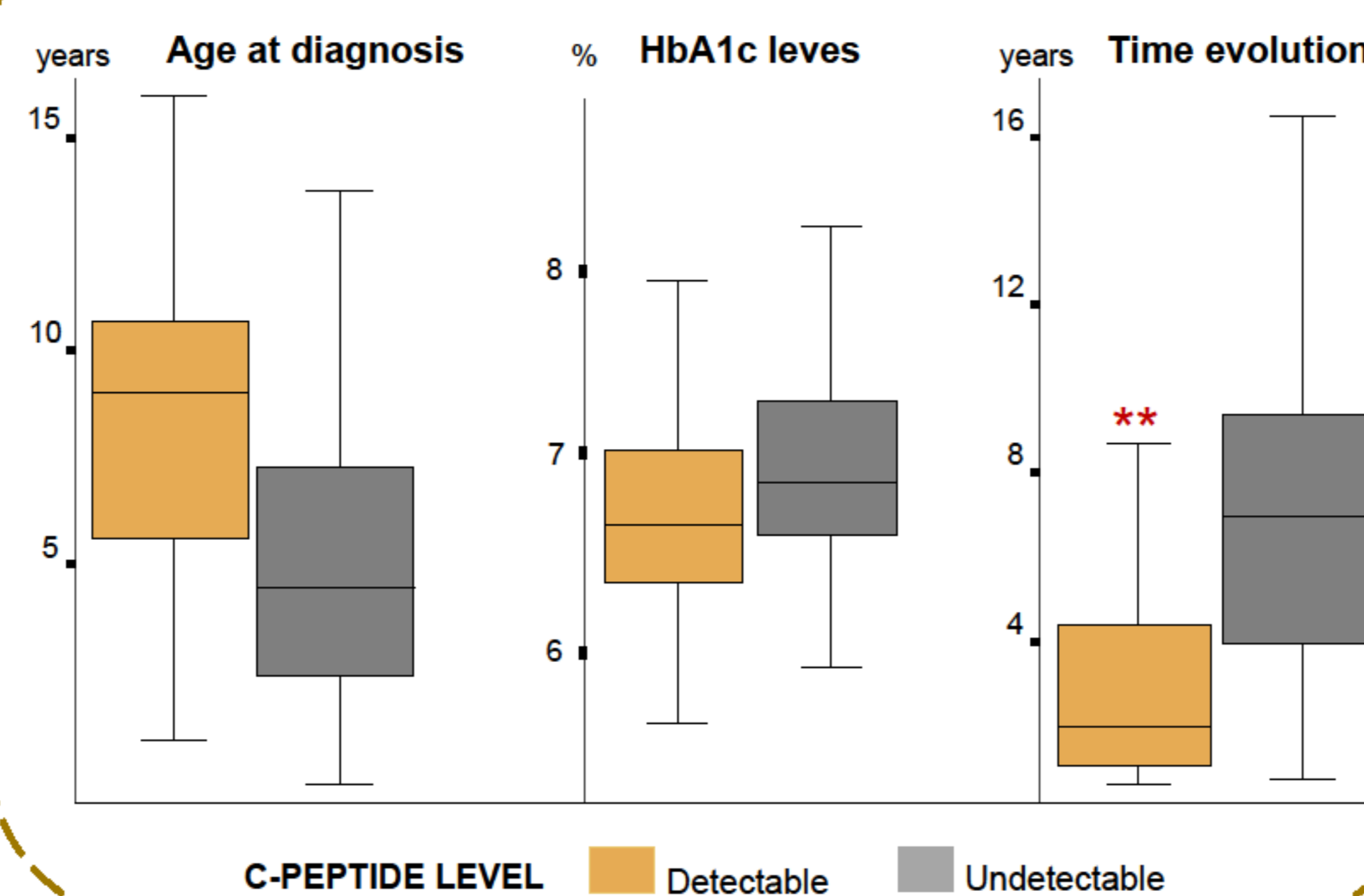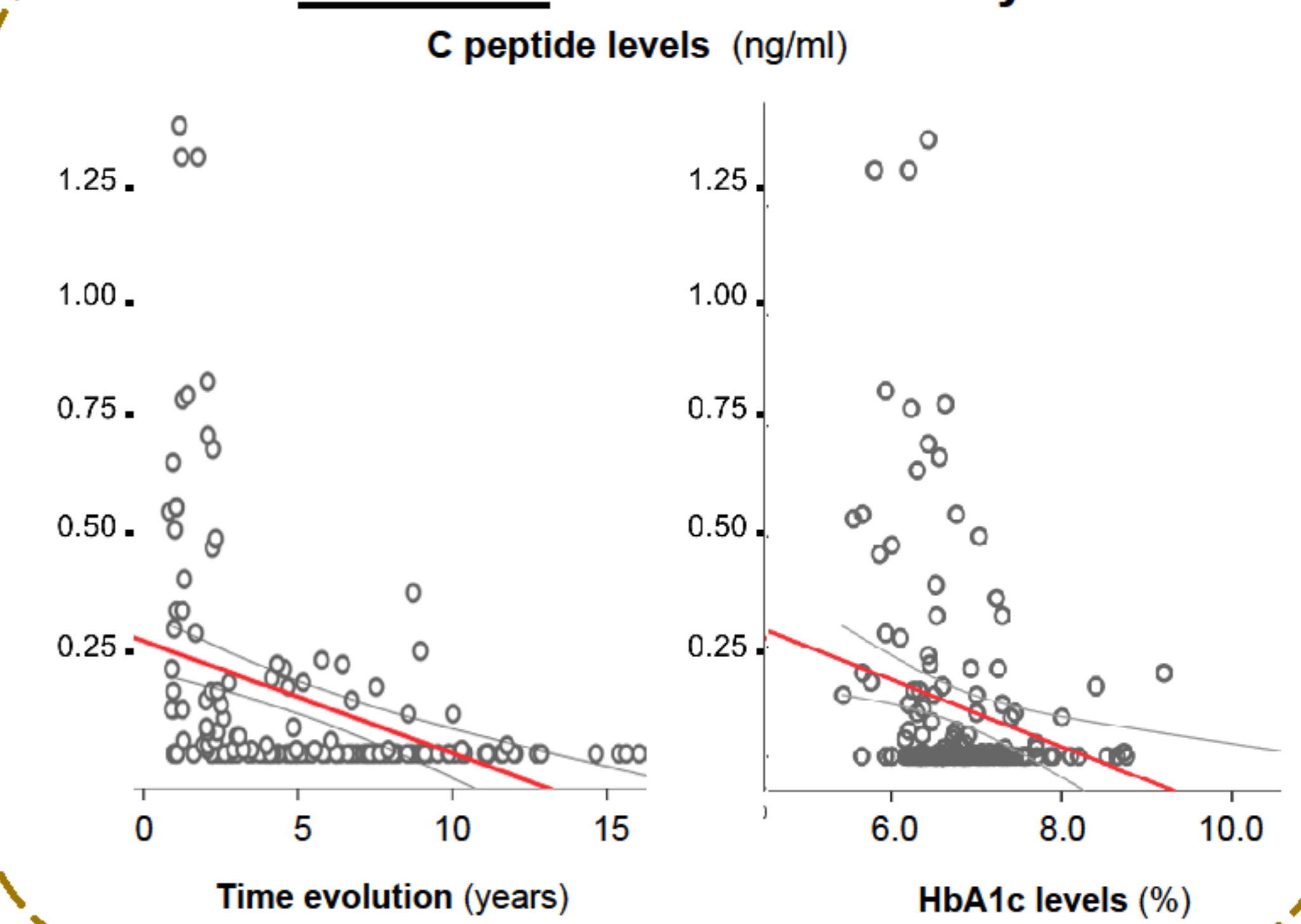### The natural course of T1D in paediatric age is heterogeneous
### Earlier age at diagnosis leads to a faster loss of pancreatic reserve