Factors associated with HbA_{1c} and weight changes at 6 months in the Association of British Clinical Diabetologists (ABCD) nationwide exenatide and liraglutide audit

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Introduction

- Treatment with GLP-1 agonists in type 2 diabetes has the advantage of weight loss but they are not effective in every patient. Clinical indicators that help predict response to treatment are needed.

- ABCD conducted two nationwide audits on the use of exenatide and liraglutide based in real-life clinical practice.

Aims

- To identify factors that were associated with HbA_{1c} and weight changes with GLP-1 agonists treatment.

The ABCD nationwide exenatide and liraglutide audits

- Exenatide audit – 126 centres with 6717 patients.

- Liraglutide audit – 64 centres with 3010 patients (ongoing).

- Collected anonymised data of patients treated with exenatide or liraglutide in the UK

  – Patient demographics

  – Diabetes medications

  – HbA_{1c}, weight

  – Lipids

  – Blood pressure

  – Adverse events and GLP-1 discontinuation.

Methods

- Patients from both audits pooled together for analyses.

- Latest HbA_{1c} and weight changes by 6 months analysed as response variables.

- Variables with significant association (p<0.05) in univariate analyses entered into stepwise multivariate regression analyses.

- **2 multivariate models**

  – 1st model – all patients with relevant data

  – 2nd model – insulin-treated patients with variables of baseline total insulin dose and insulin dose change.

Results

HbA_{1c} reduction – univariate analyses

	Correlation coefficient, T or F values	P-value
Baseline HbA_{1c}	0.426	<0.001
Baseline weight	−0.061	<0.001
Weight change	−0.086	<0.001
Age	0.021	0.140
Diabetes duration	−0.082	<0.001
Gender (male/female)	1.07	0.286
Ethnicity (Caucasian/South Asian/ Afro-Caribbean)	2.43	0.063
Sulphonylurea change (reduced/unchanged/increased)	−2.89	0.056
Thiazolidinedione change (reduced/unchanged/increased)	−28.68	<0.001
Insulin use (yes/no)	−8.49	<0.001
Insulin dose (log transformed)	−0.064	0.011
Insulin dose reduction	−0.096	<0.001

Weight reduction – univariate analyses

	Correlation coefficient, T or F values	P-value
Baseline HbA_{1c}	−0.117	<0.001
Baseline weight	0.215	<0.001
HbA_{1c} change	−0.086	<0.001
Age	0.053	<0.001
Diabetes duration	0.092	<0.001
Gender (male/female)	−1.80	0.072
Ethnicity (Caucasian/South Asian/ Afro-Caribbean)	6.51	<0.001
Sulphonylurea change (reduced/unchanged/increased)	3.38	0.034
Thiazolidinedione change (reduced/unchanged/increased)	11.34	<0.001
Insulin use (yes/no)	3.78	<0.001
Insulin dose (log transformed)	0.020	0.437
Insulin dose reduction	0.240	<0.001

HbA_{1c} reduction – multivariate analyses

	Adjusted T-value	Adjusted P-value
Model 1 (3982 patients)		
Baseline HbA_{1c}	30.44	<0.001
Baseline weight	−3.79	<0.001
Weight change	NS	NS
Diabetes duration	−4.16	<0.001
Thiazolidinedione change (reduced/unchanged/increased)	−7.96	<0.001
Insulin use (yes/no)	−10.02	<0.001
Model 2 (1134 patients)		
Insulin dose (log transformed	−3.60	<0.001
Insulin dose reduction	−3.72	<0.001

Model 1 accounted for 22.0% of the variance in HbA_{1c} change

Weight reduction – multivariate analyses

	Adjusted T-value	Adjusted P-value
Model 1 (3089 patients)		
Baseline HbA_{1c}	−5.94	<0.001
Baseline weight	13.29	<0.001
HbA_{1c} change	NS	NS
Age	2.06	0.040
Diabetes duration	3.25	0.001
Ethnicity (Caucasian/South Asian/ Afro-Caribbean)	NS	NS
Sulphonylurea change (reduced/unchanged/increased)	NS	NS
Thiazolidinedione change (reduced/unchanged/increased)	7.02	<0.001
Insulin use (yes/no)	7.06	<0.001
Model 2 (1002 patients)		
Insulin dose reduction	9.21	<0.001

Model 1 accounted for 8.4% of the variance in weight change

Conclusions

- **Intuitive findings:**
  Higher thiazolidinedione and insulin reduction results in less HbA_{1c} reduction but more weight reduction.

- **Known findings:**
  Higher baseline HbA_{1c} associated with greater HbA_{1c} reduction, higher baseline weight associated with greater weight reduction.

- **Novel findings:**
  Longer diabetes duration, insulin use and higher insulin dose associated with less HbA_{1c} reduction but greater weight reduction. Inverse relationship between baseline weight with HbA_{1c} reduction, and baseline HbA_{1c} with weight reduction.

Acknowledgment

Where EVERYONE Matters