Sandwell and West Birmingham Hospitals NHS
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Association of British Clinical Diabetologists

Factors associated with HbA1c 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 HbA1c 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
  - HbA1c, Weight
  - Lipids
  - Blood pressure
  - Adverse Events and GLP-1 discontinuation

Methods

- Patients from both audits pooled together for analyses
- Latest HbA1c 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

HbA1c reduction – univariate analyses

	Correlation coefficient, T or F values	P-value
Baseline HbA1c	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 HbA1c	-0.117	<0.001
Baseline Weight	0.215	<0.001
HbA1c 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

HbA1c reduction – multivariate analyses

	Adjusted T-value	Adjusted P-value
Model 1 (3982 patients)		
Baseline HbA1c	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 HbA1c change

Weight reduction – multivariate analyses

	Adjusted T-value	Adjusted P-value
Model 1 (3089 patients)		
Baseline HbA1c	-5.94	<0.001
Baseline Weight	13.29	<0.001
HbA1c 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 TZD and insulin reduction results in less HbA1c reduction but more Weight reduction
- **Known findings:**
  Higher baseline HbA1c associated with greater HbA1c reduction, higher baseline Weight associated with greater Weight reduction
- **Novel findings:**
  Longer diabetes duration, insulin use and higher insulin dose associated with less HbA1c reduction but greater Weight reduction
  Inverse relationship between baseline Weight with HbA1c reduction, and baseline HbA1c with Weight reduction

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