Association of British Clinical Diabetologists

Sandwell and West Birmingham Hospitals NHS Trust

The efficacy of exenatide and liraglutide among South Asians in the Association of British Clinical Diabetologists nationwide audits

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Introduction

- GLP-1 receptor agonists (GLP-1RAs), including exenatide and liraglutide, have been shown to effectively lower HbA_{1c} and mean weight, with a low risk of hypoglycaemia, in patients with type 2 diabetes (T2D).[1]
- The nationwide liraglutide and exenatide audits are part of an initiative launched by the UK's Association of British Clinical Diabetologists (ABCD) to evaluate the real clinical use, efficacy and adverse effects of these agents.
- As part of these audits, anonymised data from patients with T2D treated with exenatide (n=6717 from 315 contributors, 126 centres, 2007–2009) or liraglutide (n=5551, 303 contributors, 106 centres, 2009–2012) were collected.
- We investigated whether exenatide and liraglutide are as effective among South Asian patients with T2D as among Caucasian patients.

Methods

- Data were obtained from two audit databases on the use of exenatide 10 µg twice daily and liraglutide 1.2 mg once daily in clinical practice. Patients switching from a thiazolidinedione, dipeptidyl peptidase-4 inhibitor or exenatide to liraglutide were excluded from analyses. After exclusions, this analysis examined 2561 exenatide-treated patients and 1526 liraglutide-treated patients.
- Latest data on HbA_{1c} and weight reduction at 32 weeks were compared between South Asian (Indian, Pakistani, Bangladeshi) and Caucasian patients, stratified by background non-insulin or insulin treatment.
- Analysis of covariance (ANCOVA) on HbA_{1c} and weight reduction was performed adjusting for baseline HbA_{1c}, body mass index (BMI) or weight, gender, age, duration of diabetes, number of oral antidiabetes drugs, total daily insulin dose and insulin dose changes as appropriate.

Results

Patients

- 134/2561 (5.2%) of patients treated with exenatide and 101/1526 (6.6%) of patients treated with liraglutide during the time periods examined were identified as non-mixed South Asian and with available HbA_{1c} data.
- Of these, 71/134 (exenatide) and 47/101 (liraglutide) were also being treated with insulin.
- Patient demographics and baseline data are shown in Table 1. South Asian patients had significantly lower mean baseline BMIs compared with Caucasian patients (exenatide 35.3 vs. 39.7 kg/m^2, $p<0.001$; liraglutide 37.1 vs. 39.6 kg/m^2, $p=0.001$).

Table 1. Patient demographics.

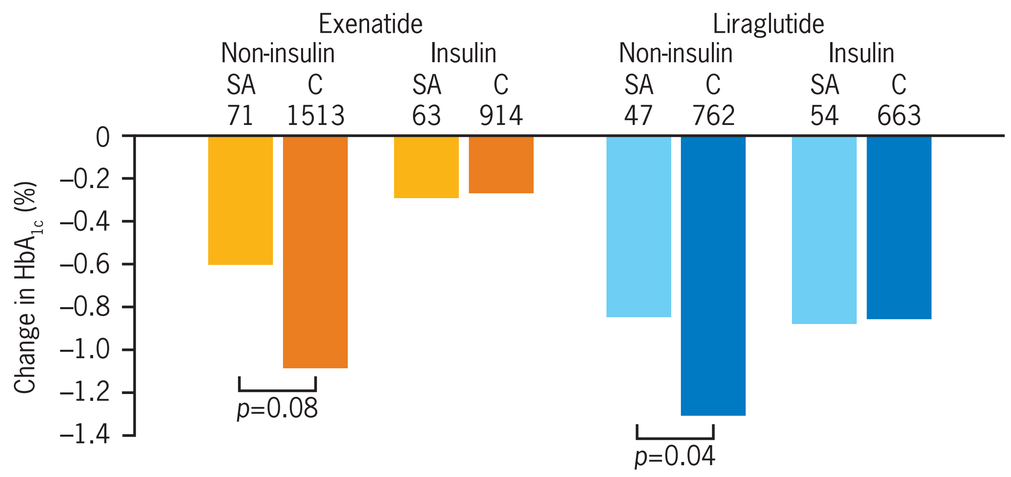
	Exenatide			Liraglutide		
	Caucasian	**South Asian**	***p*-value**	**Caucasian**	**South Asian**	***p*-value**
Age (years)	55.3±10.5	51.4±9.6	<0.001	55.8±10.7	49.5±11.1	<0.001
Duration of diabetes (years)	9 [5–13]	10 [7–15]	0.003	9 [6–13]	10 [7–16]	0.037
HbA_{1c} (%)	9.55±1.64	9.72±1.61	0.24	9.41±1.68	9.19±1.63	0.189
BMI (kg/m^2)	39.7±8.2	35.3±7.4	<0.001	39.6±7.1	37.1±6.8	0.001
Weight (kg)	114.6±23.2	96.5±18.8	<0.001	113.1±22.7	100.5±19.3	<0.001
Gender (M:F)	1362:1065	65:69	0.085	781:641	47:54	0.103
Insulin:non-insulin	914:1513	63:71	0.032	663:762	54:47	0.177

Values are mean±SD, duration median [interquartile range]. BMI, body mass index; SD, standard deviation.

HbA_{1c}

- Mean change in HbA_{1c} during the period examined did not differ significantly between South Asian and Caucasian patients treated with exenatide (–0.47% and –0.81%, respectively) or liraglutide (–0.93% and –1.10%).
- An analysis of response based on concurrent treatment with insulin found a smaller mean change in HbA_{1c} in non-insulin-treated South Asian patients compared with non-insulin-treated Caucasian patients for both exenatide (–0.60% vs. –1.09%, $p=0.08$) and liraglutide (–0.85% vs. –1.31%, $p=0.04$) (Figure 1). No difference was seen among insulin-treated South Asian patients compared with Caucasian patients.

Figure 1. Change in HbA_{1c}, by insulin use.

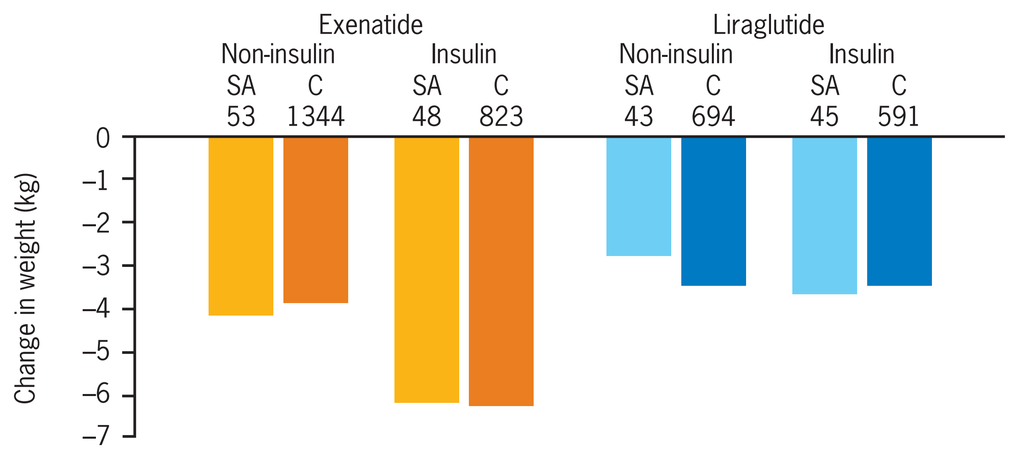


Adjusted for diabetes treatment, baseline HbA_{1c}, BMI, age, gender and diabetes duration; SA, South Asian; C, Caucasian

Weight

- Prior to adjusting for lower baseline weight, South Asian patients overall showed significantly lower mean weight loss from exenatide (–5.0 kg vs. –3.5 kg, $p=0.006$) or liraglutide (–3.6 kg vs. –2.4 kg, $p=0.033$) when compared with Caucasian patients. This difference disappeared when adjusted for diabetes treatment, baseline weight, age, gender and diabetes duration.
- When analysed according to presence of concurrent insulin treatment, there were no differences in weight response seen between South Asians and Caucasians for either exenatide or liraglutide treatment (Figure 2).

Figure 2. Change in weight, by insulin use.



Adjusted for diabetes treatment, baseline weight, age, gender and diabetes duration; SA, South Asian; C, Caucasian

Conclusion

- Exenatide and liraglutide may be less effective in improving glycaemic control among non-insulin-treated South Asian patients. This may warrant further examination with larger sample sizes.
- South Asian patients achieved lower weight reduction with GLP-1RA treatment compared with Caucasian patients but this difference disappeared after adjusting for the effects of lower baseline weight.

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Reference

1. Monami *et al. Exp Diabetes Res* 2012;2012:672658.

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