

Insulin Necessity is Better than Diabetes Duration in Predicting Liraglutide Treatment Response: the Association of British Clinical Diabetologists (ABCD) Nationwide Liraglutide Audit

Abstract

Liraglutide treatment may be more effective in earlier type 2 diabetes. Using data from a nationwide audit of liraglutide use in UK, we analyzed A1c reduction at 3 months post-liraglutide 1.2 mg initiation stratified according to (1) extent of background diabetes therapy, or (2) diabetes duration. (1) Patients were divided into those receiving 1, 2, 3 OADs (oral antidiabetes drugs) or insulin (\pm OAD), or (2) diabetes duration 0–5 years, 6–10 years, and >10 years. Effects on A1c changes were analyzed using ANCOVA using baseline A1c as a covariate. Among 4129 patients, we excluded patients who lacked 3-month A1c data, switched from exenatide, used liraglutide 1.8 mg (too few to analyze), reduced >20% insulin dose or stopped an OAD at initiation. 638 patients (1 OAD n=119, 2 OADs n=209, 3 OADs n=67, insulin n=243) and 586 patients (duration 0–5 years n=181, 6–10 years n=195, >10 years n=210) were analyzed. Non-adjusted mean (SE) A1c reduction according to OAD/insulin groups were: 1.4% (0.1), 1.8% (0.1), 1.9% (0.2) and 1.0% (0.1) (all p<0.01 compared with baseline). After adjustment, patients on 1, 2, and 3 OADs achieved greater A1c reduction compared with patients on insulin (difference of least square means and 95%CI): 0.8% [0.4,1.1%] (p<0.01), 0.8% [0.5,1.1%] (p<0.01) and 1.0% [0.6,1.5%] (p<0.01), respectively. No significant differences were found for A1c reduction between 1, 2 or 3 OADs. Mean A1c reduction among the three diabetes duration groups were: 1.6% (0.1), 1.5% (0.1) and 1.2% (0.1) (all p < 0.01). Patients with diabetes duration 0–5 years achieved greater A1c reduction compared with patients with duration >10 years: 0.5% [0.2,0.8%] (p<0.01). When analyzed together, the extent of diabetes treatment but not diabetes duration remained an independent predictor of A1c change. We conclude that the need for insulin and diabetes duration help predict treatment response to liraglutide.

Introduction

• Clinical trial data suggest that liraglutide treatment may be more effective at lowering A1c when used earlier, rather than later, in type 2 diabetes disease progression,¹ but the influence of disease progression on liraglutide response in real clinical practice remains unclear.

Aim

• To determine whether background diabetes therapy or diabetes duration are predictors of liraglutide response using real clinical practice data from the ABCD nationwide liraglutide audit.

Methods

- Reduction in A1c from liraglutide 1.2 mg initiation (baseline) to 3 months was stratified according to (1) extent of background diabetes therapy or (2) duration of diabetes.
- (1) Patients were stratified by those receiving one, two or three oral antidiabetes drugs (OADs) Data are adjusted mean (SE) and estimated differences (ED) were analyzed by ANCOVA with baseline A1c as a covariate. Cl, confidence interval. or insulin (\pm OAD), or (2) diabetes duration 0–5 years, 6–10 years and >10 years.

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- Patients were excluded from these analyses if they lacked 3-month A1c data, switched from exenatide to liraglutide, used liraglutide at the 1.8 mg dose (too few to analyze), reduced insulin dose by >20% or stopped an OAD at initiation.
- Effects on A1c changes were analyzed by analysis of covariance (ANCOVA), with baseline A1c as a covariate.

Results

• The ABCD nationwide liraglutide audit has collected anonymized data from 4129 patients treated with liraglutide from 77 centers across the UK.



Figure 1. Change in A1c stratified by background diabetes therapy.

- After exclusions, data from 638 patients (one OAD n=119, two OADs n=209, three OADs n=67, insulin n=243) and 586 patients (duration 0–5 years n=181, 6–10 years n=195, >10 years n=210) were analyzed.
- Unadjusted mean (SE) reductions in A1c from baseline to 3 months were: 1.4% (0.1), 1.8% (0.1), 1.9% (0.2) and 1.0% (0.1) patients on one, two and three OADs and insulin, respectively (all p < 0.01 vs. baseline). Figure 1 shows the adjusted mean change in A1c for each group and the estimated differences between groups after adjustment for baseline A1c.
- Unadjusted mean (SE) reductions in A1c from baseline to 3 months for the three diabetes duration groups were: 1.6% (0.1), 1.5% (0.1) and 1.2% (0.1) for 0–5, 6–10 and >10 years, respectively (all p < 0.01 vs. baseline). Figure 2 shows the adjusted mean change in A1c for each group and the estimated differences between groups after adjustment for baseline A1c.



Figure 2. Change in A1c stratified by duration of diabetes.

Data are adjusted mean (SE) and estimated differences (ED) were analyzed by ANCOVA with baseline A1c as a covariate.

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• When analyzed together, the extent of diabetes treatment, but not diabetes duration, remained an independent predictor of A1c change.

Conclusions

• A1c reductions with liraglutide 1.2 mg were significantly greater in patients with shorter duration of diabetes, compared with those with longer duration of diabetes.

• Patients with background therapy of one, two or three OADs achieved significantly greater A1c reductions with liraglutide 1.2 mg than patients with background insulin therapy.

• Liraglutide 1.2 mg was associated with significant reductions in A1c from baseline across all groups, suggesting that, while A1c reductions are greatest for patients at early stages of diabetes, liraglutide can still provide significant reductions in A1c at later stages of disease progression.

• Real clinical practice data from the ABCD nationwide liraglutide audit demonstrate that the stage of disease progression, as indicated by background therapy or duration of diabetes, can predict liraglutide treatment response.

Reference

1. Garber et al. Diabetes 2011;60(Suppl. 1):A265.

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