The effect of bictegravir/emtricitabine/tenofovir alafenamide (B/F/TAF) on whole-body insulin sensitivity in volunteers without HIV

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BACKGROUND

Following reports of weight gain and metabolic changes during INSTI therapy, we investigated the impact of B/F/TAF on total body glucose disposal over 28 days in HIV-negative, metabolically healthy volunteers. Previous studies[1] had not found an effect of TAF regimens on glucose disposal when used for HIV pre-exposure prophylaxis.

METHOD

This was a 72-day, open-label, two-arm, crossover, single-centre study. Participants were randomised 1:1 to either Group 1: 28 days of B/F/TAF followed by a 14-day washout period and then a further 30 days without treatment or Group 2: no treatment for 43 days followed by 28 days of B/F/TAF. A hyperinsulinaemic-euglycaemic clamp was carried out on days 1, 28, and 72 using the De Fronzo et al protocol. The glucose disposal rate (GDR) was used as a marker of measurement of insulin sensitivity.

Statistical analysis of change in estimated GDR was done using Wilcoxon signed-rank test (within-group) and Two-sample Wilcoxon rank-sum (Mann– Whitney) test (between-group).

The primary study outcome was the change from baseline in total body glucose disposal, by the euglycaemic clamp method after 28 days of treatment

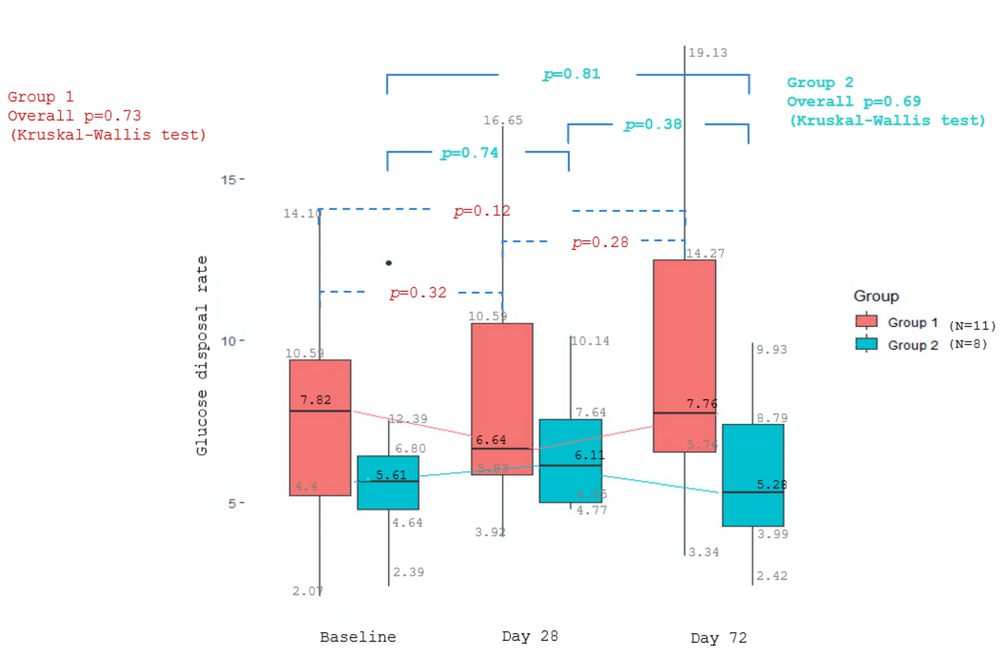

Figure 1. Boxplot highlighting the change in Glucose Disposal Rate within group 1 during the treatment phase from baseline to day 28 and in group 2 during the treatment phase from day 28 to day 72

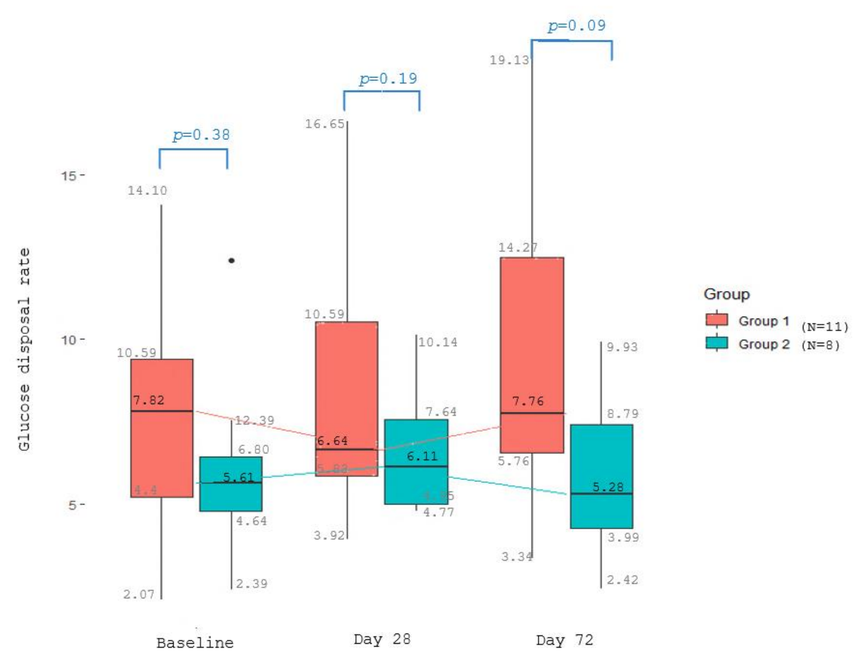

Figure 2. Boxplot highlighting the change in glucose disposal rate between group 1 and group 2 from baseline to day 28 to day 72

RESULTS

A total of 18 volunteers completed the study, with 11 in Group 1, and seven in Group 2. Within Group 1, the median GDR was 7.82 mg/kg/min (IQR 4.4, 10.6) at baseline versus 6.64 mg/kg/min (IQR 5.83, 10.59) on day 28 (p=0.32), with a mean change of 13% (Figure 1.) Within Group 2, the median GDR was 6.11 mg/kg/min IQR 4.95, 7.64) on day 28 versus 5.28 mg/kg/min (IQR 3.99, 8.79) on day 72, (p=0.38), with a mean change of -11% (Figure 1). There were no statistically significant changes in GDR between groups at baseline (median 7.82 (IQR 4.4, 10.59)) mg/kg/min versus 5.61 (IQR 4.64, 6.80) mg/kg/min, p=0.31), at day 28 (6.64 (IQR 5.83, 10.59) mg/kg/min versus 6.11 (IQR 4.95, 7.64) mg/kg/min, p=0.27), or at day 72 (7.76 (IQR 5.76, 14.27) mg/kg/min versus 5.28 (IQR 3.99, 8.79) mg/kg/min, p=0.13) (Figure 2).

CONCLUSION

In summary, treatment with Biktarvy for 28 days was not associated with a statistically significant impact on total body insulin sensitivity, as measured using the hyperinsulinaemic-euglycaemic clamp method. We await further data analysis from the study which will examine metabolic and hormonal outcomes.

REFERENCES

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