Analysis of continuous glucose tracking data in people with Type 1 Diabetes (T1DM) after Covid-19 Vaccination reveals unexpected link between immune and metabolic response, augmented by adjunctive oral medication

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Abstract

Introduction The COVID-19 vaccination programme is under way. Anecdotal evidence is increasing that some people with Type 1 Diabetes Mellitus (T1DM) experience temporary instability of blood glucose (BG) levels post-vaccination which normally settles within 2-3 days. We report an analysis of BG profiles of 20 individuals before and after vaccination. Methods We examined the BG profile of 20 consecutive adults (18 years of age or more) with T1DM using the FreeStyle® Libre flash glucose monitor in the period immediately before and after COVID-19 vaccination. The primary outcome measure was percentage(%) BG readings in the designated target range 3.9-10mmol/L as reported on the LibreView portal for 7 days prior to the vaccination (week -1) and the 7 days after the vaccination (week +1). Results There was a significant decrease in the %BG on target following the COVID-vaccination for the 7 days following vaccination (mean 45.2% ±se 4.2%) vs pre-COVID-19 vaccination (mean 52.6% ±se 4.5%). This was mirrored by an increase in the proportion of readings in other BG categories 10.1-13.9%/ [?]14%. There was no significant change in BG variability in the 7days post COVID-19 vaccination. This change in BG proportion on target in the week following vaccination was most pronounced for people taking Metformin/Dapagliflozin+basal bolus insulin (-23%) vs no oral hypoglycaemic agents (-4%), and median age <53 vs [?]53 years (greater reduction in %BG in target for older individuals (-18% vs -9%)). Conclusion In T1DM, we have shown that COVID-19 vaccination can cause temporary perturbation of BG, with this effect more pronounced in patients talking oral hypoglycaemic medication plus insulin, and in older individuals. This may have consequences for patients with T2DM who are currently not supported by flash glucose monitoring.

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