Are we adequately adhering to protocol for steroid induced hyperglycemia in COVID-19? An audit on steroid induced hyperglycaemia in COVID-19 inpatients in the Mater Hospital, Belfast.

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Introduction

Steroid induced hyperglycemia is common in inpatients with COVID-19 due to the use of Dexamethasone in their treatment. Steroids cause hyperglycemia by a combination of increased gluconeogenesis, decreased insulin production and increased insulin resistance. It has been reported that acute hyperglycemia occurs in approximately 50% of patients hospitalized with COVID-19 (1), . Due to the pro-inflammatory effects of hyperglycemia and the resultant endothelial dysfunction and thrombosis, it is an independent risk factor for poor prognosis in COVID-19. Hyperglycemia is associated with worse outcomes and, therefore, early intervention to gain good glycemic control, by adhering to protocols, may improve outcomes (2).

Aims

To ascertain the adherence to the Belfast Trust 'Steroid induced hyperglycemia in COVID-19' protocol for inpatients and to assess adherence to the NHS London de-escalation guidance for patients who experienced Dexamethasone-induced hyperglycemia during hospital admission for Covid-19 treatment.

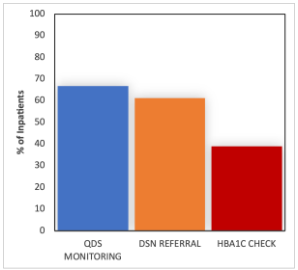


Figure 1: Percentage adhering to Belfast Trust SIH protocol

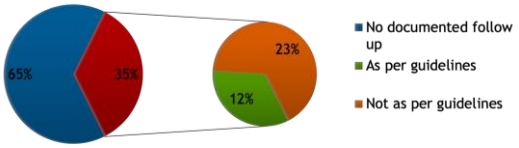


Figure 2: Documented follow-up as per HbA1C

Methods

We carried out a chart review of inpatients in the Mater Hospital who were being treated for COVID-19 with Dexamethasone, in accordance with the Recovery trial recommendations. This took place during a two day period in January 2021 when COVID-19 hospital admissions were at a peak. Relevant data was gathered by reviewing notes, kardexes and insulin charts. Specifically, we calculated how many patients treatment adhered to Belfast Trust protocol guidance on frequency of CBG monitoring, inpatient HbA1c check and timely diabetes specialist nurse (DSN) referral.

We also carried out a medical records review of COVID-19 inpatients, with steroid induced hyperglycemia, during a 2 week period in February 2021 to collect data on adherence to the NHS London diabetes de-escalation guidelines on follow up. These guidelines are based on HbA1c during admission. We calculated the percentage of these patients who had an HbA1c taken during their admission and then assessed the number who had appropriate follow-up, based on their HbA1c. We did this by observing the follow-up documented on discharge letters.

Results

We found that the majority of patients (67%) receiving Dexamethasone had adequate CBG monitoring and referral to the DSN (61%). However, only 39% had an HbA1c sent during their admission. The majority (65%) had no endocrinology follow-up documented on discharge. Of those documented, only 12% was as per the NHS London de-escalation guidelines.

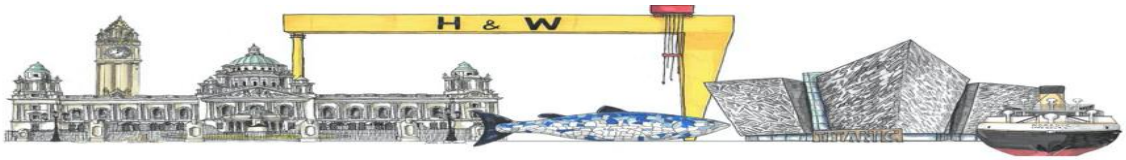
Discussion

The results suggest some improvement is required in CBG monitoring and DSN referral, but mainly a deficit in HBA1c tests and adequate endocrinology follow-up, in this cohort of patients.

HbA1c is very useful for planning follow up and future management of patients with steroid induced hyperglycemia. However, only 39% of the hyperglycemic inpatients sampled here had an HbA1c during admission. The majority (65%) of patients with steroid induced hyperglycemia did not have endocrinology follow up documented on their discharge summary.

Of those who did have documented follow up, only 33% had follow up consistent with the NHS London guidelines, based on their HbA1c during admission.

Based on these results, we would recommend early identification of those patients at risk of steroid induced hyperglycemia on admission, such as COVID-19 patients being started on Dexamethasone, and highlight the importance of regular CBG monitoring. We also recommend ensuring an HbA1c is requested during their admission. On discharge, based on HbA1c, appropriate endocrinology follow-up arrangements should be made and documented ia accordance with the NHS London guidelines.



References

(1) https://www.thelancet.com/journals/landia/article/PIIS2213-8587(20)30315-6/fulltext
(2) Pisa covid-19 study (Copelli et al 2020)
(3) NHS London COVID-19 dexamethasone and hyperglycemia: diabetes de-escalation guidance

Belfast Health and Social Care Trust