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Addressing Glucocorticoid-Induced Hyperglycemia in COVID -19 Patients: The Expanding Role of Steroid Stewardship

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Background: Hyperglycemia has been identified as an independent predictor of mortality in hospitalized patients with COVID-19. Administration of systemic corticosteroids can worsen the incidence of hyperglycemia in COVID-19 patients.

Objective: To characterize the incidence of Glucocorticoid Induced Hyperglycemia (GCIH) in COVID -19 patients and to evaluate the effectiveness of a Steroid Stewardship Program in countering this effect.

Methods: This prospective, interventional study included 100 COVID-19 confirmed patients admitted between March 12 – May 12, 2021 who are categorized into B & C as per the guidelines of directorate of health services, Kerala, India. A five-item Steroid Appropriate Index (SAI) was prepared based on the onset of symptoms, weight of the patient, CT Thorax severity score, preferred route of administration and the underlying diseases for choosing the appropriate drug of the preferred corticosteroid. Demographic profile of these patients was collected and they were followed up till discharge/death to track the incidence of worsening of hyperglycemia or new onset of diabetes. The effectiveness of SAI was analyzed by comparing the data of treatment and clinical outcome among 100 COVID-19 confirmed patients admitted before and after implementation of the scale.

Results: Majority of the patients were males (57) and the mean age was 45.7 ± 16.6 years. The incidence of new onset of hyperglycemia i.e., GCIH was more among the retrospective cohort when compared with the SAI cohort (7% vs 26%, $p < 0.001$). The study also revealed that past history of diabetes ($p < 0.001$), age ($p = 0.002$), number of medicines used for treatment ($p < 0.001$) are significantly associated with glucocorticoid induced hyperglycemia.

Conclusion: The appropriate selection of corticosteroids based on the real-world scenarios can decrease the incidence of adverse events associated. Implementation of steroid appropriate index and proper monitoring can be an aid for the same.