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Contents lists available at ScienceDirect

Diabetes & Metabolic Syndrome: Clinical Research & Reviews

journal homepage: www.elsevier.com/locate/dsx

Is subcutaneous insulin administration adequate for the management of hyperglycemic crisis in COVID-19?



A B S T R A C T

Keywords:
 COVID-19
 SARS-CoV-2
 Subcutaneous insulin
 Intravenous insulin
 Hyperglycemic crisis

There is a desperate need to explore different insulin administration strategies, particularly in coronavirus disease 2019 (COVID-19) patients with hyperglycemic crisis. Noteworthy, diabetes mellitus (DM) and poorly controlled blood glucose increase the risk of mortality and severity of COVID-19. Intravenous (IV) insulin administration with hourly monitoring of blood glucose is the ideal approach in managing patients with hyperglycemic crisis, but it is not judicious to be applied in developing countries where shortage of personal protective equipment (PPE) is a major issue. Furthermore, increasing the probability of “already greater risks” for doctors or other healthcare workers contracting COVID-19 seems inappropriate. Thus, an alternative administration strategy and more moderate glucose monitoring to reduce the contact exposure of healthcare workers with COVID-19 patients, by ensuring appropriate blood glucose levels, needs to be performed in this critical pandemic era. Subcutaneous (SC) rapid-acting insulin analog administration could presumably be a solution to this contentious issue.

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To the Editor,

We read an article by Singh et al. with immense interest [1] and agree with the authors that there is a desperate need to explore different insulin administration strategies, particularly in coronavirus disease 2019 (COVID-19) patients with hyperglycemic crisis. Noteworthy, diabetes mellitus (DM) and poorly controlled blood glucose [2,3], along with other comorbidities [4–6], increase the risk of mortality and severity of COVID-19. Although practical recommendations for managing DM in COVID-19 are presently available [7,8], they do not specifically address the management of hyperglycemic crisis in COVID-19. Intravenous (IV) insulin administration with hourly monitoring of blood glucose is the ideal approach in managing patients with hyperglycemic crisis, but it is not judicious to be applied in developing countries where shortage of personal protective equipment (PPE) is a major issue [9]. Furthermore, increasing the probability of “already greater risks” for doctors or other healthcare workers contracting COVID-19 seems inappropriate [10,11]. Thus, an alternative administration strategy and more moderate glucose monitoring to reduce the contact exposure of healthcare workers with COVID-19 patients, by ensuring appropriate blood glucose levels, needs to be performed in this critical pandemic era.

Subcutaneous (SC) rapid-acting insulin analog administration could presumably be a solution to this contentious issue. Although no specific evidence is available for comparing the SC rapid-acting insulin analogs and IV infusion of regular insulin approaches in managing hyperglycemic crisis in COVID-19 patients, both approaches are comparable in similar settings [12,13]. A systematic review of five randomized controlled trials (four in adults and

one in younger participants and children) in patients with mild to moderate diabetic ketoacidosis (DKA) revealed no significant differences in mortality, time to resolution of DKA, mean length of hospital stay, and episodes of hypoglycemia [12]. Moreover, administration of SC rapid-acting insulin aspart presented better results than those of IV infusion of regular insulin in treating moderate DKA in pediatric patients with respect to faster/shorter hospital stay [13]. Nevertheless, in one retrospective cohort study [14], SC rapid-acting insulin analog was associated with higher hypoglycemic episodes and inefficient glucose control than IV insulin, although with comparable mortality rates. Although the use of SC rapid-acting insulin analog in managing this scenario remains controversial, it is in accordance with the Association of British Clinical Diabetologist (ABCD) guideline in managing DKA of COVID-19 [15]; a 4-h SC dose of rapid-acting insulin analog with an initial dose of 0.4 unit/kg with 2–4-h blood glucose monitoring seems to be a sensible alternative approach. This specific issue should be added among the unanswered research questions [16], yet it needs to be solved during this pandemic.

Funding

None.

Declaration of competing interest

None to declare.

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8 June 2020