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Estimation of plasma insulin and endogenous insulin secretion in critically ill patients using intensive control insulin-nutrition-glucose model (Article)

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Abstract

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The objective of this study is to estimate total plasma insulin level and endogenous insulin secretion by using Intensive Control Insulin-Nutrition-Glucose (ICING) model and 90 critically ill patients' data from Hospital Tengku Ampuan Afzan, Kuantan. Integral-based method was applied to solve mathematical equations defined in ICING model to find critical parameters of insulin sensitivity (SI) and results of total endogenous insulin secretion and total plasma insulin level were presented in median and 95% confidence interval (CI). It is reported that the total median plasma insulin is 1.35×10^6 mU while (6.59×10^5, 2.79×10^6) mU is in 95% CI, and the total median endogenous insulin secretion is 12.9% from the total median plasma insulin. The results elucidated the effectiveness of current practice via Intensive Insulin Infusion Therapy (IIT) and also suggest a further study on investigating the incretin mechanism which is strongly believed to contribute to the total plasma insulin level and help to simulate endogenous insulin secretion.

Author keywords

Critically ill | Endogenous insulin | Exogenous insulin | ICING model | Plasma insulin

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