World Nutrition Journal |eISSN 2580-7013

ABSTRACT

Vitamin D supplementation in critically ill patients: pros and cons

A. Norouzy[1], M. Arabi[2]

1. Mashhad University of Medical Science, Iran
2. Neishabour University of Medical Sciences, Iran

Received: 14 September 2023
Accepted: 18 September 2023
Published: 30 September 2023

Link to DOI:
10.25220/WNJ.V07.S1.0003

Citation: Norouzy, A. Vitamin D supplementation in critically ill patients: pros and cons. World Nutrition Journal.2023 September 30, 7(S1): 3.

Website : http://www.worldnutrijournal.org/

Abstract : ***Nutri Symposium 2023 - Speaker***

Traumatic Brain Injury (TBI) is a leading cause of death in patients admitted to the intensive care unit. Vitamin D or calciferol is a steroidal compound made of cholesterol with healing properties due to its specific receptors (vitamin D receptors) in the nucleus of brain cells and its protective properties against nervous tissue in addition to its anti-inflammatory effects.

This study is a double-blind randomized clinical trial that was performed on 72 patients with severe brain injury with a mean age of 34-50 years. They were randomly assigned to the study, thus intervention and control groups received vitamin D with a dose of 100,000 units and a dose of 1000 units for 5 days, respectively. Clinical assessments measured the levels of several biomarkers such as interleukin 6, monocyte aggregating protein type 1, the ratio of C-reactive protein to albumin, mortality rates of 28 and 120 days. Also, the scores of APACHE II, SOFA and NUTRIC questioner, serum levels of parathyroid hormones, calcium, phosphorus, calorie, and macronutrient intakes were measured before and after the intervention. Statistical analysis of the data was performed using SPSS software version 21 and $P < 0.05$ was considered statistically significant.

High-dose of vitamin D reduced 260.16 pg/ml levels of IL-6 ($P = 0.10$), 47.33 pg/ml MCP1 ($P = 0.13$) levels and 22.98 units in the ratio of CRP to albumin ($P = 0.84$) in the intervention group. The mean survival during 28 and 120 days of follow-up was 24.86 and 93.74 days in the control group and 25.72 and 99.15 days in the intervention group, respectively ($P = 0.629$, $P = 0.530$). Subsequently by the end, in the intervention group, the GCS score increased by 1.76 units ($P = 0.56$) and the SOFA and NUTRIC score decreased by 2.77 and 1.5 units respectively ($P = 0.01$, $P=0.1$). The mean serum levels of PTH in the group with a high dose of vitamin D (500000 IU) decreased by 55 pg/ml ($P = 0.005$). However, changes in the other markers were not significantly different between the two groups ($P < 0.05$).

Oral supplementations with high dose of vitamin D in patients with severe TBI could improve their clinical status by lowering PTH levels and may increase the long-term survival rate in these patients. Although further studies are required to conclusively prove these effects.

Keywords: vitamin D supplementation, traumatic brain injury, inflammation, mortality

Corresponding author:
A Norouzy
Mashhad University of Medical Science, Iran
Email: norouzya@mums.ac.ir