CHAPTER: 15

ROLE OF HDIVC IN CRITICALLY ILL PATIENTS

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INTRODUCTION

Ascorbic acid, commonly known as Vitamin C, is water-soluble and offers a myriad of benefits to the human body. It plays a crucial role in promoting body growth and serves as a defense against immune-depleting diseases, dysfunction, coronary artery diseases, pre and postnatal health issues, cancers, stroke, eye diseases, and skin conditions [1]. Notably, it has proven effective in repairing connective tissues, addressing the essential needs of the body when subjected to various infections and diseases that may have caused prolonged damage to tissues and organs [2]. A study, published in Seminars in Preventive and Alternative Medicine, reviewed 100 studies over a decade, highlighting the emerging advantages of Vitamin C.

Ascorbic acid is among several antioxidants that protect against damage caused by harmful free radicals, toxins, and pollutants. Vitamin C is pivotal for maintaining a robust and well-functioning immune system [3].

RESEARCH OBJECTIVES

1. To investigate the advantages of incorporating Ascorbic Acid as a dietary supplement.
2. To examine the role of High-Dose Intravenous Vitamin C (HDIVC) in critically ill patients.

RESEARCH METHODOLOGY

The secondary research was conducted through a narrative literature review. Keywords such as Antioxidants, Ascorbic acid, Vitamin C, Biological Availability, Critical illness therapy, Nutritional requirements, Dose-response Relationship, oxidative stress, Biological Availability, Oxidation-Reduction were utilized to search for publications relevant to the aim and objective of the review. A total of 34 articles published between 2012 and 2021 were included in the study, and a compilation of 10 such articles was summarized for the literature review.

RESULTS & DISCUSSION

Several studies indicated that premature recovery from shock and multiorgan failure could be achieved by administering repeated doses of Vitamin C at 2 to 3 g intravenously, in conjunction with thiamine at a dosage of 100 mg per day.

Additionally, the studies suggested that death could be averted with a pharmacological dose of 2g intravenously and thiamine at a dose of 200-400 mg per day, monitored closely. However, these studies were limited in number and varied in terms of dosage, duration, pathogenesis, and prognosis of the disease. Despite the variations, more biological evidence is needed to confirm these results.

Observational research also demonstrated the synergistic effect of Vitamin C and corticosteroids used against septic shock. The administration of Vitamin C, both orally and intravenously, to COVID-19 patients showed a reduction in inflammatory markers and aided in active recovery, as well as the prevention of viral function. Nevertheless, ongoing research is actively exploring the role of Vitamin C in supporting the immune response to viral infections.

CONCLUSION

While there are statistical variations in significance across different studies, recent research suggests a positive correlation between the inclusion of Vitamin C in critical care treatment for patients experiencing high oxidative stress. This correlation is associated with a shortened stay in the ICU and a reduction in the need for mechanical ventilation. However, more data is needed to establish a causal relationship.

Vitamin C shows promising potential for enhancing critical care management in various diseases, particularly focusing on conditions such as sepsis, burns, and respiratory infections like ARDS and pneumonia. This, in turn, has the potential to decrease the mortality rate in patients.

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