Optimal Evidence Summary for Nutritional Management of Critically Ill Patients After Cardiac Surgery

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Abstract: Objective: To summarize the best evidence for nutritional management of critically ill patients after cardiac surgery. Methods: Using nutritional management of critically ill post-cardiac surgery patients as the evidence-based question and referring to the '6S' evidence model, domestic and international medical research databases (CNKI, Wanfang, VIP, etc.) were searched for reports on nutritional management in this population, including guidelines, systematic reviews, expert consensus statements, and clinical trials, with the search timeframe set from March 2022 to August 2023. Three professional researchers analyzed the retrieved documents, and relevant evidence was synthesized, integrated, summarized, and analyzed. Results: A total of 5 articles were included, comprising 3 clinical controlled trials, 1 research report, and 1 literature review. Conclusion: Targeted nutritional management for critically ill patients after cardiac surgery, including early enteral nutrition interventions, can significantly improve enteral nutrition tolerance, nutritional status, and prognosis, facilitating patient recovery.

Keywords: Cardiac Surgery; Critically Ill; Nutritional Management; Evidence Summary

1. Introduction

Cardiac surgery imposes significant physiological stress on patients, often leading to a hypermetabolic state postoperatively and an increased risk of malnutrition. This study summarizes the best evidence for nutritional management in critically ill patients after cardiac surgery, aiming to provide clinical references for optimizing postoperative care.

2. Materials and Methods

2.1 Problem Formulation

The evidence-based question was defined using the Fudan University Evidence-Based Center tool. Target population: Critically ill patients aged ≥18 years after cardiac surgery. Interventions: Nutritional assessment/ monitoring, nutritional support (enteral/ parenteral), individualized nutrition plans, complication management (gastrointestinal/ metabolic), and health education.

2.2 Search Strategy

In this study, HowNet, Wanfang, VIP and other domestic medical research databases were selected as the retrieval platform. When searching in Chinese, the keywords were set as follows: cardiac surgery, intensive care, nutrition management, perioperative period, early enteral nutrition, and when searching in English, the keywords were set as follows: Cardiac surgery, intensive care, nutritional management. The time is set from March 2022 to August 2023.

2.3 Inclusion and Exclusion Criteria

Evidence inclusion criteria: The main object of literature research is severe patients after cardiac surgery. The included cases were not complicated with other respiratory diseases or cancer diseases. The type of literature belongs to clinical controlled trials, literature review and research reports.

Evidence exclusion criteria: There are repeated publications in the literature. The literature source is not clear. It belongs to interpretation literature.

2.4 Quality Assessment

Retrieved articles were evaluated by three researchers with ≥5 years of clinical experience. Evidence was graded using the JBI Evidence Pre-grading and Recommendation System (Levels 1-5; recommendation grades A/B).

3. Result

3.1 Search Results

Five articles were included: 3 clinical controlled trials, 1 research report, and 1 literature review.

3.2 Best Evidence Summary

The best evidence of nutritional management for critically ill patients after cardiac surgery is summarized in Table 1.

Table 1. Summary of Best Evidence for Nutritional Management

Category Evidence Content Grade/Recommendation	Category Evidence Content Grade/Recommendation	Category Evidence Content Grade/Recommendation
Assessment & Monitoring	Conduct comprehensive nutritional assessment postoperatively, including weight, body fat, muscle mass, albumin, and transferrin levels.	Level 2/A
	Monitor weight, serum electrolytes, urine output, bowel movements, blood pressure, and glucose dynamically.	Level 2/A
Nutritional Support	Initiate enteral nutrition within 48 hours postoperatively, tailored to energy/protein needs. Use nasogastric tubes with controlled delivery.	Level 3/B
	For enteral intolerance, administer parenteral nutrition (glucose, amino acids, lipids) via central venous access.	Level 3/A
Individualized Plans	Develop personalized plans based on age, comorbidities (e.g., increased protein for elderly; glucose control for diabetics)。	Level 2/A
Complication Management	Adjust enteral formulas for diarrhea/constipation.	Level 2/A
	Monitor and manage metabolic disorders (diabetes, hypertension, dyslipidemia).	Level 2/A
Health Education	Provide psychological support and nutritional education to improve compliance.	Level 2/B
	Educate patients/families on self-monitoring and dietary adherence.	Level 2/B

Nine evidence points were synthesized across five domains. All evidence was graded Level 1-3, with recommendations A/B.

4. Discussion

4.1 Nutritional Assessment Informs Individualized Care

Due to the serious condition of critically ill patients undergoing cardiac surgery, the postoperative physical consumption in the process of rehabilitation is large, and the energy demand is large. Timely nutritional assessment and monitoring of patients after operation can make targeted nutritional programs for patients according to their physique, condition and complications, so as to promote the good recovery of patients after operation. Many evidences in this study show that[1-2], timely nutritional assessment and monitoring of patients during postoperative recovery can effectively formulate targeted nutritional management plan according to the specific situation of patients and achieve the purpose of personalized management.

4.2 Nutritional Support and Complication Management Enhance Outcomes

Targeted nutritional support for critically ill patients after cardiac surgery, enteral nutrition support and parenteral nutrition support can improve the postoperative nutritional status of patients, improve the metabolic ability of patients, and significantly improve the cardiopulmonary and biochemical indexes of patients. The incidence of complications in patients can be reduced by the management of complications according to gastrointestinal discomfort, metabolic abnormalities and other symptoms. In this study, a number of evidences show that[3-4] patients' effective nutritional support and complication management during recovery can improve patients' cardiopulmonary function, improve patients' quality of life and

reduce the incidence of complications.

4.3 Education Improves Compliance

Due to the long postoperative recovery cycle of severe patients after cardiac surgery, effective cognitive management of patients, strengthening psychological nursing and nutritional knowledge education, and guiding patients and their families to carry out nutritional self-management can correct patients' misunderstanding of nutritional management and improve patients' nutritional management ability. And a number of evidences in this study show that [5] during the period of patient nutrition management, effective nutrition and health education can improve patient compliance and enthusiasm.

4. Conclusion

In this study, we summarized the evidence of nutritional management for critically ill patients after cardiac surgery, including nutritional assessment and monitoring, nutritional support, development of personalized nutritional programs, complication management, nutritional health education and other aspects. It showed that the implementation of early enteral nutrition management measures for critically ill patients after cardiac surgery could effectively improve the enteral nutrition tolerance and nutritional status of critically ill patients after cardiac surgery, improve the prognosis of patients, and make patients recover as soon as possible.

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