ISW26-243-03 (0627)

ACUTE KIDNEY INJURY ON MAJOR SURGERY AND CLINICAL PRACTICE OF INTRAVENOUS AMINO ACIDS: A DESCRIPTIVE STUDY IN JAPAN

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Introduction:
The use of aggressive perioperative intravenous amino acid administration to prevent postoperative acute kidney injury (AKI) has been examined. While it is crucial to understand the clinical course of postoperative AKI for a nutritional strategy, few studies have investigated real-world postoperative AKI after major surgeries and nutrition practices.

Material and Method:
We analyzed the incidence of postoperative AKI and intravenous amino acid use in patients without renal dysfunction who were admitted to the intensive care unit after major surgery in an administrative claims database. Postoperative AKI within one week was evaluated according to the Kidney Disease: Improving Global Outcomes creatinine criteria.

Results:
In 30,751 patients analyzed, AKI occurred in 7.1 %. Blood urea nitrogen levels had not returned to baseline two weeks after surgery, even in patients with stage 1 AKI. The incidence of delayed AKI was higher in patients who underwent non-cardiovascular surgery. Patients with delayed AKI had a significantly poorer prognosis than those diagnosed with AKI on day 1. Although the practice of intravenous amino acids varied across surgeries, few patients received aggressive doses, such as 2 g/kg/day. No significant differences were observed in the incidence of AKI between patients who received and did not receive an amino acid infusion on the day of surgery.

Conclusion:
In real-world settings, perioperative aggressive amino acid administration was not a common practice, and renal protective effects may not be achieved with usual doses. Nutritional assessments with the daily monitoring of AKI stages may be warranted for the provision of nutrition therapy, including the protein load.

ISW26-243-04 (0473)

PILOT IMPLEMENTATION OF AI IN THE GENERATION OF INDIVIDUALIZED PARENTERAL NUTRITION PLANS (TPN PLAN CREATOR)

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Introduction:
Artificial intelligence (AI) is increasingly integrated into clinical workflows to enhance precision and efficiency. This pilot study aimed to assess the clinical utility and limitations of TPN Plan Creator, an AI-based tool for generating individualized total parenteral nutrition (TPN) protocols.

Material and Method:
We conducted a prospective pilot study using TPN Plan Creator, a GPT-4-based chatbot trained to formulate TPN plans based on patient-specific data: anthropometry, SGA status, laboratory values, and fluid losses. The study enrolled 150 hospitalized patients requiring TPN due to various indications, including short bowel syndrome, high-output enteric fistulas, bowel obstruction, CRBSI, and postoperative complications. All AI-generated plans were reviewed by a clinical nutrition expert and compared against ESPEN and ASPEN guidelines.

Results:
Of the 150 generated plans, 48 (32%) were fully compliant with clinical standards. Moderate errors were identified in 57 cases (38%), including inaccurate electrolyte dosing, unclear fluid balance, or suboptimal micronutrient selection. Notably, critical errors were observed in 45 cases (30%), involving incorrect glucose concentrations, inappropriate lipid dosing, or infusion volumes exceeding venous access limitations. Despite these issues, the AI tool significantly shortened preparation time and supported consistency across cases.

Conclusion:
TPN Plan Creator shows considerable promise as a supportive technology in the personalization of TPN therapy. While expert oversight remains essential, the integration of AI into clinical nutrition planning offers a path toward improved efficiency, reduced workload, and standardized protocol generation. With further training on real-world datasets and ongoing validation against clinical outcomes, such systems may evolve into reliable decision-support tools, reshaping the future of parenteral nutrition planning.