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Nutrition Therapy for 58-years old man with Intracerebral Hemorrhage and Post Craniotomy: A Case Report

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ABSTRACT

The nutritional status of individuals plays a crucial role during the subacute and recovery phases following a cerebrovascular event. Moreover, poor nutrition correlates with worsened disease severity, higher mortality rates, increased risk of infections, difficulty in swallowing, and limited improvement in daily activities even risk of malnutrition. A- 58 years old man was brought to emergency room with decrease of consciousness. Patient had history of hypertension and needed to undergo craniotomy with diagnose of Stroke Hemorrhage (ICH +IVH). Patient received 2100 kcal/day of total energy with 120 grams protein, fat 60 grams, carbohydrate 270 gr. Patient body weight when admitted was 100kg with height 178cm, Body Mass Index (BMI) 31.56 kg/m2 (Obesity type 2). After 21 days being admitted, nutrition intake reached the target and his clinical condition improved.

Keywords: critically ill patients; nutrition therapy; stroke hemorrhage; post craniotomy.

INTRODUCTION

Stroke is a serious event that may result in long-term disability [1]. Haemorrhagic strokes account for approximately 20% of all stroke cases, with Intracerebral Haemorrhage (ICH) being the most prevalent type. Moreover, incidence of ICH is higher in individuals with untreated hypertension [2].

The nutritional status of individuals is vital during subacute and recovery stages after a cerebrovascular event. Moreover, poor nutrition correlates with worsened disease severity, higher mortality rates, increased risk of infections, difficulty in swallowing, and risk of malnutrition [3,4]. Administering nutritional therapy to cerebrovascular patients in acute setting, improve clinical outcome where Enteral Nutrition (EN) is recommended to be administered within 24 hours or within 24–48 hours or not more than 72 hours [3,5]. During subacute and rehabilitation stages, implementing an intensive nutritional regimen for stroke patients may significantly enhance physical function compared to standard care [6]. Thus, nutritional support emerges as a potential therapeutic avenue for individuals recovering from cerebrovascular diseases.

Research on nutritional medical therapy for patients with stroke haemorrhagic and post craniotomy remains limited, and as a result, there are no established guidelines for standard medical nutrition therapy for these patients.

Therefore, we implemented medical nutrition therapy for our patient based on the recommended nutrition guidelines for critically ill patients, as outlined by the new European Society for Clinical Nutrition and Metabolism (ESPEN) guidelines of clinical nutrition in intensive care and the Society of Critical Care Medicine and American Society for Parenteral and Enteral Nutrition (SCCM-ASPEN) [7,8].

CASE DESCRIPTION

A 58 years old man was brought to emergency room with decrease of consciousness. The patient was referred from type C hospital after found unresponsive in the morning. His family said the patient could not talk but only opened his eyes when he woke up. He vomited twice since the morning and pee on the bed. No fever and short of breath were found. Patient has history of hypertension with amlodipine 10mg a day. Patient was referred to our emergency room to get further treatment. Before arriving in the emergency room, the patient had been given citicoline, paracetamol and mannitol from the type C Hospital.

From the vital sign, the patient had a Glasgow Coma Scale (GCS) score of E1 Vx (x means cannot be evaluated) M3, Blood Pressure 165/82 mmHg, Heart Rate 70 times/ minutes, Respiration 20 times/ minutes, Temperature Axilla 36,5 Celsius, Oxygen Saturation 98% with Nasal Canal 2 liters per minutes, Urine production 500cc (within 3 hours).

Both pupil reflexes were positive and isochor. Neurology examination showed normal tonus for extremities and seems to have lateralization to the right whereas pathologic reflex was not found.

Patient was checked for the ECG, random blood glucose, blood type and thorax x-ray. Complete Blood Count, Bleeding Time (BT), Clotting Time (CT), Kidney Function, Sodium, potassium and Chloride level and CT-Scan were performed at type C Hospital. The Laboratory result of complete blood count, random blood glucose, liver function, kidney function and electrolytes (Sodium, Potassium and Chloride) were found in normal limit and ECG showed sinus rhythm. CVC was inserted before the surgery was performed and the patient planned to get cito craniotomy on the same day with diagnose of Stroke Hemorrhagic (Intracerebral Hemorrhagic + Intraventricular Hemorrhagic).

A Clinical nutrition assessment was performed on the second day. The patient's consciousness was under medication (midazolam) and mechanical ventilation was used. Glasgow Coma Scale score was E1 Vx M3, blood pressure was maintained at 131/70 mmHg with MAP 96mmHg, heart rate 64 times/ minutes, Temperature on axilla was 37.5 Celsius.

The total energy given was 2100 kcal with 120grams protein, fat 60 grams, carbohydrate 270 gr. Patient's body weight when admitted was 100kg with height 178cm, Body Mass Index (BMI) 31.56 kg/m2 (Obesity type 2). On the second day of admission (a day after the surgery), the patient received Glucose Fluid D5% 30cc/3hours for gut feeding through Nasogastric Tube (NGT). Gut feeding was continued for two days and there was no residue found. Afterward, 300 kcal liquid diet was started and gradually increased according to gastrointestinal tolerance and clinical improvement. Supplementations such as vitamin B1 2x 50mg and zinc was added respectively on the second week and two days before discharged. The patient was treated for 6 days in Intensive Care Unit, 6 days in High Care Unit and to usual ward with improvement on his GCS (E3VxM5). Patient was discharged after 9 days in usual care ward. On the last day of admission, patient reached 2100 kcal/day with combination of strain food, formulated drink, and virgin coconut oil.

DISCUSSION

Approximately 20% of all strokes are haemorrhagic, with intracerebral haemorrhage (ICH) being the most prevalent subtype. The incidence of ICH rises in cases of untreated hypertension, with this particular type of stroke carrying a significantly elevated risk of extended mechanical ventilation, developing ventilator-associated pneumonia (VAP), early mortality and long-term disability [9,10]. On this patient we found hypertension as one of the risk factor of the stroke.

The guidelines from the Society of Critical Care Medicine and American Society for Parenteral and Enteral Nutrition did not address the topic of providing nutritional support specifically for critically ill stroke patients. However, the guidelines did suggest to conduct malnutrition screenings for all critically ill patients [8]. The occurrence of malnutrition after a stroke can vary widely, ranging from 6.1% to 62%. This variability is attributed to factors such as the timing of assessment, patient characteristics, and the methods used to assess nutrition status [11]. In our hospital we use Subjective Global Assessment (SGA), however there are other assessment tools recommended by ESPEN such as Malnutrition Universal Screening Tool (MUST), Nutritional Risk Screening (NRS – 2002), Mini Nutritional Assessment (MNA), Short Nutritional Assessment Questionnaire (SNAQ) and Malnutrition Screening Tools (MST) [7]. Although from the malnutrition screening tools which has been done to the patient showed no risk of malnutrition at the time of assessment, any critically ill individual hospitalized in the Intensive Care Unit (ICU) for over 48 hours should be viewed as being vulnerable to malnutrition [7].

On this patient, after craniotomy for blood evacuation, diet was hold to focus on haemodynamic improvement. After 24 hours post-surgery, gut feeding was started through NGT with glucose D5% and we observed the gastric residual emptying (GRV). This is correlated with the recommendation from ASPEN and ESPEN for critically ill patients [11]. However, On the fourth day of Admission, when 600 kcal liquid diet was delivered to the patient and GRV 350cc/ 24 hours was detected from the NGT. Hemodynamic of the patient at that time was not stable, blood pressure rose to 158/96 mmHg. Additionally, blood laboratories results showed potassium level decreasing from 3.7 to 3.0 and random blood glucose 197mg/dL. These condition may disturb stomach emptying as seriously ill patients frequently encounter a postponement in the emptying of their stomach which affected by various factors such as the movement of the stomach, including unstable blood circulation, high blood sugar levels, an imbalance in electrolytes, low oxygen levels, severe infection, heightened pressure inside the skull, and the use of a highly concentrated formula [12]. Patient was decided to go fasting and to do NGT decompression. We expected the blood pressure target was 120-140mmHg.

The patient was diagnosed with obesity type 2, the energy given was 30 kcal/ ideal body weight where his ideal body weight was 70.2 kg. Carbohydrate intake for the patient was 52% of total energy requirement, protein 23% and fat was 25%. In the absence of Indirect Calorimetry (IC), European Society for Clinical Nutrition and Metabolism (ESPEN) recommend to use simple weight-based equations of 20- 25 kcal/kgBW/day and 25 - 30 kcal/kgBW/day recommendation by ASPEN-SCCM [7,8]. Fat intake is recommended by the European Society for Clinical Nutrition and Metabolism (ESPEN) to be 20% to 30% of total calories [12]. ASPEN-SCCM recommendation for protein intake ranging from 1.2–2.0g/kg actual body weight per day [8]. Patient was discharged with clinical and contact improvement, GCS E4VxM6, right hemiparesis.

Moreover, nutrition intake during his treatment reached the target, and the patient discharged with the use of NGT.

CONCLUSION

Administering adequate nutrition for a patient with stroke haemorrhage and post craniotomy may support his recovery and treatment. In addition, early screening for malnutrition is necessary as the patient may have longer length of stay in intensive care unit, risk of dysphagia, and higher risk of malnutrition which will delay his improvement and rehabilitation. Although there is not yet specific medical nutrition therapy for these patient, nutrition treatment for critically ill patients may help improve patient condition.

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