Nursing Process of Enterocutaneous Fistula Patient with Severe Acute Malnutrition in Pediatric Surgical Ward

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Abstract

Objective: This case study aims to prove the effectiveness of nursing intervention, particularly management of nutrition, fluid and electrolyte, ostomy care, and risk for infection management, at managing enterocutaneous fistula patient with severe acute malnutrition in pediatric surgical ward.

Methods: This case study was performed by giving nursing care of enterocutaneous fistula patient with severe acute malnutrition for about 13 days based on the patient’s length of stay.

Results: The target for weight gain in malnourished children was ≥ 50 grams/kg/week. Within thirteen days, weight of the patient rose 450 grams from 4700 grams to 5150 grams. Patient’s weight gain target was 470 grams in 14 days, this condition showed that increase in body weight was quite appropriate. Fistula output was decreased day by day and feces that came out from anus has better solid consistency than before.

Conclusion: Nutrition management aims to increase body weight during the preoperative period of the client. Hospital treatment managed to increase weight, the child did not experience vomiting and diarrhea from the first day of treatment, and appetite continued to increase every day. This is in accordance with the outcome criteria that has been established for the main problem of imbalanced nutrition: less than the body requirement. Furthermore, children are advised to get follow up care with regular weekly control obligations.

Keywords: child; enterocutaneous; fistula; malnutrition; nursing

Introduction

Urban environment is an area that grow simultaneously with economic and technology development. The development not only has positive impact on the progress of a city, but also an adverse impact. Population gap and pollution that occur in urban areas are one of the problems that must be faced by urban society. The result that can be seen from the emergence of these two factors are infection problem and nutritional deficiency or malnutrition. The Pan American Health Organization found that the main cause of death for preschoolers in America was infection (58%) and according to the study, 61% of the children who died also experienced malnutrition¹. Infection and malnutrition are very closely realted because malnutrition is the main cause of body immunodeficiency which makes children very susceptible to disease. Similarly, infection is very easy to occur in children with malnutrition.

Several studies in Asian and African countries show that the incidence of acute or wasted malnutrition is more common in urban areas². This is based on various factors such as limited availability of clean water, inadequate air ventilation, and high spread of disease. A research that held in Yogyakarta city and Sleman regency shows that the prevalence of severely malnourished children is more prevalent in urban and rural areas, namely 59% compared to 41%³. This prevalence is based on various risk factors including the number of toddlers in one family, not exclusive breastfeeding history, and also parents’ work and education level.

Malnourished children who are hospitalized, classified as children who experience poor nutrition with complications⁴. The complications are infectious diseases that cause malnutrition to continue if not treated immediately. On of the infectious disease that requires complex treatment in both adults and children is enterocutaneous fistula. Enterocutaneous fistula is an abnormal gap formed between the digestive tract and the
skin. This condition causes incomplete absorption of the intestine so that it has a direct impact on significant weight loss.

The prevalence of enterocutaneous fistula continues to increase and is followed by complex management due to the complications that arise. The incidence of enterocutaneous fistula can occur depending on the pathological conditions of the gastrointestinal tract, the study shows 2 – 25% of enterocutaneous fistula occur in patients who have abdominal trauma, 20 – 25% are found in septic conditions and the remaining 50% is found in pancreatic necrotic wounds. Previous studies have also shown that enterocutaneous fistula can be caused by a variety of factors, 80% of which are primarily technical factors from previous surgeries. It shows that the preparation of the client’s condition before surgery on the gastrointestinal tract is important to prevent enterocutaneous fistula occurrence.

The health medical record of pediatric surgical ward of a hospital in Jakarta where the patient was treated from January to March 2018 showed that there were 228 patients treated. While the problem that often occurs is gastrointestinal problems, that reach 32.89%. The most cases are anorectal malformation cases, that is 48%. While enterocutaneous fistula cases accounted for 5.3% of the total cases of patients treated. Although the percentage is smaller that others, the mortality rate due to enterocutaneous fistulas tends to be high, ranging from 6% - 33%.

Enterocutaneous fistula is a disease with a large mortality rate due to complications such as sepsis, malnutrition, and fluid and electrolyte imbalances that are very easy to occur in a short time and often occur together. It makes the treatment of enterocutaneous fistulas must involve collaboration of health workers and families. One of the goals of treating enterocutaneous fistula is to manage nutrition so that the child reaches the ideal body weight so that surgery can be done.

The treatment of enterocutaneous fistula patients prior to the closure surgery in the form of nutrition management also needs to be balanced with other management such as fluid management, infection prevention, and skin care to avoid injury. It aims to avoid new problems that can delay the operation time again. Nurses need to provide nursing care plan with measurable goals so that patients with enterocutaneous fistula can be free from serious conditions such as sepsis. Treatment and prevention of sepsis conditions must also be accompanied by management of nutrition, fluid, and skin integrity so that patients are ready to undergo surgery with ideal conditions.

**Case Report**

A 13-month-old (L) with a female sex was treated in pediatric surgical ward with a major complaint of significant weight loss due to excessive intestinal fluid discharge due to a gap in the colostomy lid. The patient had a history of anorectal malformation without fistula because when the age of 2 days the patient's abdomen bulged and there was vomiting with greenish yellow color, when she was taken to the midwife, it was only discovered that the patient did not have anus. At the age of 3 days the patient performed a colostomy at hospital, the operation was smooth and there were no problems so that she could get follow up care. At the age of 9 months, patient performed Posterior Sagittal Anorectoplasty (PSARP) surgery in the same hospital, smooth operation, no complications, and parents were also taught to do regular busination.

At the age of 11 months a colostomy closure is performed, there was fever and bloated abdomen after surgery but the bowel movements and flatus have come out a little. After being treated for one week, the patient allowed to go home. However when the patient was at home, the stomach got bigger, the bowel movement was presence but there was no vomiting so she was treated again. After one week of monitoring, complaints were reduced so she was allowed to go home. However, after 14 days at home the complaints of enlarged abdomen reappeared, the fever disappeared, the colostomy lid was swollen and red, then it collapsed so that the intestine fluid and feces came out from the broken gap. The patient was immediately taken back to the hospital and carried out a colostomy surgery on March 4, 2018 to repair a broken stitch condition, but after the surgery, the body weight dropped, the patient looked thin, and was transferred to pediatric surgical ward of a hospital in Jakarta and diagnosed, enterocutaneous fistula with severe acute malnutrition.

Nursing assessment for patient was conducted on May 2, 2018, the condition of the patient was comos mentis, a pulse oximetry monitor that showed a heart rate of 102 beats / minute, 100% oxygen saturation, other vital signs such as temperature: 37.9°C, and respiratory rate 30 times / minute. The patient attached to a colostomy bag, the production was in the form of a brownish yellow liquid, a little dregs, the patient's parent said that in one day, she threw away stoma fluid three to four times and the stoma tends to quickly seep, the colostomy bag was removed and changed once every 2-3 days. Patients did not wore with a urine catheter so that she void in the diapers. Patient was also attached to a Nasogastric Tube (NGT) pro diet with pregestimil 8 x 10 ml per day. The patient's parent said the child slept enough about 8-10 hours per day but tended to have trouble sleeping if there was fever. Body weight was 4.7 kg, body length was 69 cm, and Mid-Upper Arm Circumference (MUAC) was 7.5 cm, Weight-for-length ≤ -3 SD. Fluid status as of May 1, 2018: fluid balance for 24 hours -124 ml with diuresis per 24 hours 3.38 ml / kg / hour.

On examination of the chest, abdomen, and back, there was piano ribs (ribs visible due to fat loss), the patient...
looked very thin with prominent bones, flat abdomen, reddish appearance of the spinal protrusion, a colostomy attached to the abdomen of the left lumbar region, the skin around the fistula appeared reddish and wide enough. Redness also appears on the skin of the sacrum. It also showed decreased muscle strength due to lack of energy and reduced muscle tone.

Laboratory examination results on April 28, 2018 showed an increase in procatechol levels of 0.55 ng / ml, a decrease in sodium levels to 129 mmol / L, an increase in potassium to 5.43 mmol / L, a decrease in chloride to 89 mmol / L, SGOT 36 mg / dL, SGPT 27 mg / dL. On May 1, 2018, the values of sodium, potassium and chloride were normal, hemoglobin was 8.1 gr / dl, hematocrit was 24.7%, leukocytes were 11.93 x 10 3 / μL. The results of colon in loop diagnostic examination on May 3, 2018, examination of the enema with a solution of contrast water soluble refers to the conclusion: the stoma was located distal to the descending colon, caliber of the sigmoid colon leading to the small and irregular descending colon.

Results and Discussion

Nursing care for the patient is carried out for 13 days while the patient is in the hospital for the preparation of surgery, from May 3 2018 to May 15 2018. Implementation for patient was done based on four nursing problems, including: imbalanced nutrition: less than body requirement, impaired skin integrity, risk for deficient fluid volume, and risk for infection. Imbalanced nutrition: less than body requirement is raised as a major problem in patient and accomplished by carrying out various interventions, including: assessing the patient's nutritional status, weighing the client every day at the same time and condition, documenting intake for 24 hours, assessing intake tolerance such as vomiting, diarrhea, or tachycardia, checking blood glucose to prevent hypoglycemia and other laboratory values related to nutrients such as albumin and complete blood. In addition, other interventions are carried out by maintaining the patency of NGT, collaborating the provision of Peripheral Parenteral Nutrition (PPN) according to client needs, and educating families to provide milk according to schedule, amount, and same type of milk.

The main intervention of the nursing problem is nutrition management. The goal of nutrition management in child with enterocutaneous fistula who experience severe acute malnutrition is to achieve a minimum increase in body weight according to the age and length of the child's body, increased levels of albumin, prealbumin, or transferrin, and fulfillment of micronutrient requirements for fistula healing. In achieving this goal, nutrition management is carried out by monitoring daily weight, tolerance of nutritional intake, observation of maternal nutrition and programs to improve nutrition intake in collaboration with nutritionists and doctors.

Observation of enterocutaneous fistula case was made on two toddlers, but the main patient was “L” (female, 13 months) for 13 days. Enterocutaneous fistula of patient was caused by a wound after the colostomy lid that has dehiscence, so that a 4 cm fistula appears. This condition caused significant weight loss because the intestine has malabsorption so that nutrients could not be absorbed by the body.

Management of nutrition for malnourished children with complication of enterocutaneous fistula that has been managed, is slightly different because it does not follow the management chart of malnutrition established by the Indonesian Ministry of Health. On the report of the initial admission to the patient, it was found that before being treated at the pediatric surgical ward, the patient was once given Formula-75 (F75) in the Public Health Center for the initial management of malnutrition, but tolerance was not good enough and cause increased fistula output and weight loss significantly. This intolerance cause the patient suggested to consume pregestimil milk diet per NGT on the first 4 days and then orally and at the same time PPN until the tenth day.

Nutritional management was done by educating to parent on how to help child drink the milk, monitoring the mother in providing her child's milk diet, taking note for milk intake and tolerance, and weighing and calculating fistula output in relation to fluid management. Patient who was 13 months old was given 8 x 10 ml pregestimil milk diet on May 3, 2018 and Dextrose PPN 5% (165 ml) + Dextrose 10% (165 ml) + Aminoleban 8% (62.5 ml) + Ca Glukonas (10 ml) + 3% NaCl (28 ml) + MgSO 4 20% (1 ml) + KCl (5 ml) with a number of drops of 23 ml/hour through peripheral venous access.

The target for weight gain in malnourished children is ≥ 50 grams / kg body weight / week. Within thirteen days, weight of the patient rose 450 grams from 4700 grams to 5150 grams. Patient’s weight gain target was 470 grams in 14 days, this condition showed that increase in body weight was quite appropriate and only less than 20 grams with the remaining time of one day.

Nutritional management as measured by weight gain in the patient put out a good result because of an increase in weight ≥ 50 grams / kg body weight / week. This result can be achieved because of the influence of other interventions that work simultaneously and influence each other. The concept of the cycle of infection and malnutrition developed by UNICEF is very visible in the case of patient. Weight gain can be achieved not only because of proper planning and nutrition, but also because of the prevention of appropriate infections from aspects of pharmacological therapy and aseptic treatment techniques in patient. Similarly, infection did not occur.
due to the influence of patient’s nutritional improvement\textsuperscript{10}.

Appropriate target of patient's weight gain with severe acute malnutrition must be maintained by the family when the patient is allowed to go home. This caused the author to also conduct health education to prevent acquired infection at home by encouraging families to always wash their hands before and after interacting with the child. In addition, the author provided leaflets that explain the importance of preventing infection and other activities that can be increased to prevent infection. Such activities include always washing children's eating utensils with running water and drying them, using running water when cleaning children's skin after void and defecating, cutting children's nails and family member.

\textbf{Conclusion}

Based on the results of the study that has been carried out, there are several nursing problems that appear in patient, include imbalanced nutrition: less than body requirement, impaired skin integrity, risk for deficient fluid volume, and risk for infection. In manage the patient, nursing interventions focus on the problem of imbalanced nutrition: less than body requirement without neglecting other nursing problems for the client because its work affects each other. The management of nutrition carried out to increase the patient's weight must be accompanied by supporting examinations and other management, such as fluid and electrolyte management, wound care, and prevention of infection or sepsis.

Nursing care, which begins with assessment, is followed by the establishment of a nursing diagnosis according to the client's condition. The next step is to prepare a nursing plan, implement, and evaluate. Implementation on patient was done based on four nursing problems, including: lack of nutritional imbalance from the body's needs, impaired skin integrity, risk of lack of fluid volume, and risk for infection. The role of nurses in dealing with malnutrition is carried out by independent interventions related to nutrition management, education, and collaboration with health workers in the acute phase and definitive phase for preoperative preparation of enterocutaneous fistula closure. Patients who do not experience tissue abscess or necrotic conditions are encouraged to increase their body weight according to their age and body length\textsuperscript{11}.

Nutrition management aims to increase body weight during the preoperative period of the client. The minimum body weight that must be achieved at the age of 13 months based on body length is 8 kg\textsuperscript{12}. Hospital treatment managed to increase the child's weight from 4700 grams to 5150 grams in 13 days, the child did not experience vomiting and diarrhea from the first day of treatment, and the appetite continues to increase every day. This is in accordance with the results criteria that have been established at the diagnosis of nutritional imbalances: less than the body's requirement. Furthermore, children are advised to get follow up care with regular weekly control obligations.

\textbf{References}