DOI: https://doi.org/10.53350/pjmhs02024181231

ORIGINAL ARTICLE

Determine the Treatment Outcomes of Severe Acute Malnutrition in Pediatric Population by Using Formula F100 Therapeutic Feed

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ABSTRACT

Objective: To determine the prevalence and treatment outcomes of severe acute malnutrition in children.
Study Design: Prospective study
Place & Duration of Study: Department of Paediatrics, Niazi Welfare Foundation Teaching Hospital,Sargodha from 1st July 2019 to 31st December 2019.
Methodology: One hundred and fifty patients of both genders presented with severe acute malnutrition were included. Patient's ages were ranging from 2 months to 48 months. Patient's demographics including age, sex, malnutrition type and address were recorded after taking informed consent from patient's parents/guardians. Presentations on admission were recorded. F75 and F100 therapeutic feed were given to all the patients (WHO Guideline for malnutrition). Outcomes were recorded.
Results: There were 80 (53.33%) male patients while 70 (46.67%) were females. Sixty eight(45.33%) patients were of age less than 10 months and 82 (54.67%) were of age above 10 months. From 150 patients, 134 (89.33%) patients were marasmus and 16 (10.67%) patients were kwashiorkor. Mean weight gain by using F100 was 7.26±3.45 gm/kg/day. 92% patients were recovered and 8% died during treatment. The most common presentation was diarrhea.
Conclusion: The use of F75 and F100 therapeutic feed for the treatment of severe acute malnutrition was very effective with low rate of mortality.
Keywords: Severe acute malnutrition (SAM), Pediatric population, F75, F100 Feed, Treatment, Outcomes

INTRODUCTION

Acute malnutrition is one of the common disorders found all over the world. 52 million children under five, mainly involving Africa and Asia childrenare suffering from this preventable condition.It occurs due to lack of food and different infections.A vicious cycle between malnutrition and infections exists.[1] This disorder contains moderate acute and severe acute malnutrition[1,2], it directly effects children height and weight and these nutritional defects cause high rate of morbidity and mortality. Acute malnutrition is defined as SAM when WHZ < −3, MUAC <115mm, and/or edema.[2] In developing countries, the prevalence rate of severe acute malnutrition accounts as 2% that is equivalent to 13 million children and this type of malnutrition also leads to 1.7 million child deaths per year.[3]In southern countries the incidence rate of severe acute malnutrition in children ages less than 5 years is 1.9%.[4]

In Pakistan the prevalence of severe acute malnutrition in children reported 15% as wasted and 34% as low weight and 43% children reported stunted according to the survey conducted to examine the prevalence of SAM in 2011.[5] Severe acute malnutrition causes physical and metabolic changes in children that can lead to severe disabilities and effect mental development so the better and affective treatment is much important to reduce the morbidity and mortality. For the treatment prospect, WHO published a guideline for the treatment of severe acute malnutrition in children with ages <5 years.This treatment guideline contains F100 feeding therapeutic formulas that contain proteins, carbohydrates and sodium in specific proportion according to the needs of malnourished children. This treatment guideline is very effective and easy to apply with significant outcomes.[6] The mortality rate in severe acute malnutrition is ranging from 5-50%, WHO guidelines for the treatment of SAM resulted 30-35% reduction in case fatality rate.[7] Walking difficulties, developmental complications and many other severe disorders occur due to severe acute malnutrition. Prompt and better treatment is very helpful and effective to reduce the fatality rate in malnourished children.[9,10]

The current study was conducted aimed to determine the treatment outcomes by using WHO guideline for severe acute malnutrition in children.

Received on 22-08-2023
Accepted on 28-12-2023

METHODOLOGY

This prospective/observational study was conducted at Niazi Welfare Foundation Teaching Hospital, Niazi Medical College Sargodha from 1st July 2019 to 31stDecember 2019. A total of 150 patients of both genders presented with severe acute malnutrition were included in this study. Patient's ages were ranging from 2-48 months. Patient's demographics including age, sex, malnutrition type and residence were recorded after taking informed consent from patient's parents/guardians. Children with surgical interventions, patient having other severe disorders and those parent/guardians who were not attending the complete treatment process were excluded from the study.All the patients had received F75 and F100 therapeutic feed. At first day 130ml/kg/day feed was given 2 hourly. Duration of feed was gradually increased to3-4 hourly. F100was added in transition phase over 2days in same amount. During hospital stay weight gain was recorded and on discharge mean weight gain was determined. Treatment outcomes were recorded such as mortality and recovery.All the data was analyzed by SPSS 21.

RESULTS

There were 80 (53.33%) male patients while 70 (46.67%) were females. Sixty eight (45.33%) patients were ages less than 10 months and 82 (54.67%) were ages above 10 months. 100 (66.67%) patients had rural residency while 50 (33.33%) patients had urban residency. From all the patients 134 (89.33%) patients were marasmus and 16 (10.67%) patients were kwashiorkor (Table 1).

Table 1: Demographic information of the patients

Variable	No.	%
Gender		
Male	80	53.33
Female	70	46.67
Age (months)		
<10	68	45.33
>10	82	54.67
Residence		
Rural	100	66.67
Urban	50	33.33
Type of SAM		
Marasmus	134	89.33
Kwashiorkor	16	10.67

Table 2: Clinical presentations at the time of admission

Presentations	No.	%
Diarrhea	75	50
Phneumonia	35	23.3
Hypoglycemia	20	13.33
UTI	12	8
Otitis Media	8	5.33

Table 3: Treatment outcomes of severe acute malnutrition by using F100 feeding formula (WHO Guideline)

Outcomes	No.	%
Recovered	138	92
Died	12	8

Presentations at admission were recorded as diarrhea, pneumonia, hypoglycemia, urinary tract infection and otitis media in 75 (50%), 35 (23.3%), 20 (13.33%), 12 (8%) and 8 (5.33%) patients respectively (Table 2). According to the treatment outcomes, we recorded mean weight gain by using F100,it was 7.26+3.45 gm/kg/day. 92% patients were recovered/discharge and 8% died during treatment (Table 3).

DISCUSSION

Severe acute malnutrition is one of the most common paediatric disorders in developing countries and it accounts for 5 to 50% of mortality among children with ages less than 5 years.[11,12] Many of treatment modalities were used for severe acute malnutrition with significantly better results but WHO guidelines for the treatment of SAM,F100 feed showed better results with respect to weight gain and quick recovery.[13] The recent study was conducted aimed to determine the outcomes of F100 feeding formula for the treatment of severe acute malnutrition. In present study, 150 patients who presented with severe acute malnutrition were included in which 53.33% patients were males while 46.67% were females. These results showed similarity to many other studies in which male patient's population was high as compared to females, 50% to 60%.[14,15] In our study majority of patients were ages above 10 months (54.67%). A study conducted by Sadia et al[16] regarding treatment outcomes of severe malnutrition in children reported maximum patients were of ages above 6 months.

In this study we found that 100 (66.67%) patients had rural residency while 50 (33.33%) patients had urban residency. From total patients, 134 (89.33%) patients were marasmus and 16 (10.67%) patients were kwashiorkor. These results were comparable to some previous studies in which majority of patients belonged to rural areas.[17] In our study we found diarrhea was the most common presentation at admission and accounted 50% of patients followed by pneumonia 23.3%, hypoglycemia 13.33%. Sadia et al[16] reported diarrhea was the most common presentation in children presented with severe acute malnutrition. Many of other studies showed similarity in which diarrhea and hypoglycemia were the most common presentations found in malnourished children.[18,19]

In present study we found mean weight gain was 7.26±3.45 gm/kg/day. Many of previous studies were reported average weight gain was 4 to 12g/kg/day as treatment outcomes.[20,21] The mortality rate was 8% in our study and 92% patients were recovered and discharged. These results were similar to several studies in which recovered rate was 85 to 95% and mortality rate ranged between 5 to 15% by using F100 therapeutic feed for the treatment of severe acute malnutrition.[22,23]

CONCLUSION

The use of F100 therapeutic feed for treatment of severe acute malnutrition was very useful and effective treatment modality with very low rate of mortality. Moreover we should provide awareness to the people about this life threatening disorder so that mortality rate could decrease.

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This article may be cited as: Sherazi SH, Liaqat S, Nisar R, Khalid M, Hashim R: Determine the Treatment Outcomes of Severe Acute Malnutrition in Pediatric Population by Using Formula F100 Therapeutic Feed. Pak J Med Health Sci, 2024;18(1):231-232.