Original Research Article

To study the prevalence of the fungal infection in Severe Acute Malnutrition children admitted in hospital.

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Abstract:

Background & Method: The aim of the study is to study prevalence of the fungal infection in Severe Acute Malnutrition children admitted in hospital. All children in the age group between 1 months to 59 months admitted in Paediatric SAM ward of Hindu Rao Hospital with severe acute malnutrition were included in the study in accordance with the inclusion / exclusion criteria.

Result: The prevalence of fungal infection in severe acute malnutrition children below 5 years age was 12.8%. Among the patients, 134 (89.9%) were diagnosed as SAM based on weight by height ratio or length < -3SD, 19 (12.8%) based on presence of edema, and 106 (71.1%) based on MUAC < 11.5 cm.

Conclusion: The prevalence of fungal infection in severe acute malnutrition children below 5 years age was 12.8%. 134 (89.9%) were diagnosed as SAM based on weight by height ratio or length < -3SD, 19 (12.8%) based on presence of edema, and 106 (71.1%) based on MUAC < 11.5 cm. Of the 149 children enrolled in the study, mean age of children was 23.9+15.6 months. Majority of children were below 2 years of age with 42 (28.2%) below 1 year and 41 (27.5%) between 12 and 24 years of age. 61 (40.9%) were females and 88 (59.1%) were males. 134 (89.9%) had weight by height less than -3SD, while 15 (10.1%) had more than -3SD.

Keywords: prevalence, fungal, Severe Acute Malnutrition & children.

Study Designed: Observational Study.

1. Introduction

In developing countries like India, poor nutrition is one of the major causes of death and morbidity in children under the age of 5 years. Classified further, severe acute malnutrition (SAM) is a key threat to children. The mortality rate in children with SAM is 9 times more than well-nourished children[1]. According to WHO, SAM is diagnosed if the child has any one of the following: weight for height (WFH) Z score < −3 standard deviation (SD), mid-

upper arm circumference (MUAC) <115 mm, malnutrition with bipedal oedema or visible severe wasting[2].

In India, there is an increasing prevalence of children suffering from SAM. According to the National Family Health Survey (NFHS)-4 [2015-16], about 57 million children in India are undernourished, and about 7.5% children below 5 years suffer from severe wasting[3]. The prevalence of underweight children below 5 years was 35.8%, stunted children below 5 years was 38.4% and wasted was 21%.3 Several factors belonging to the sociodemographic structure are held responsible for malnutrition such as age, gender, illiteracy among parents, parental income, occupation and size of family.

Malnutrition predisposes a child to increased chances of infection. Infections further aggravate malnutrition in a vicious cycle by reducing the appetite, increasing catabolism and increased demand for nutrients. Immunity is hampered in the children with malnutrition, with those suffering from SAM being the frontrunners for the risk of infections. Bacterial infections are commonly documented in children with malnutrition[4]. However, there is scarcity of data with respect to fungal infection in the children with malnutrition, more-so-over those with SAM. There have been no recent studies regarding this aspect in the last 2 decades[5]. Additionally, there is a complete paucity of data in the Indian children. During this period, there have been several changes in approaches for management of malnutrition in the last two decades. Hence, there might be a probability that the spectrum of fungal infections may have been altered in SAM children below 5 years.

2. Material & Method

All children in the age group between 1 months to 59 months admitted in Paediatric SAM ward of Hindu Rao Hospital with severe acute malnutrition were included in the study in accordance with the inclusion / exclusion criteria. The patients' information from the medical records was entered in the Case Record form.

• Relevant history present in the case record form was collected from the parents / LAR.
• The anthropometric measurements were conducted for the patients.
• Various specimens were collected from the patients for examination of presence of fungi.

Eligibility criteria

All children with SAM admitted were included in the study as per inclusion and exclusion criteria.

Inclusion criteria

1. Children between 1 months to 59 months diagnosed as Severe Acute Malnutrition with medical complications and admitted in Paediatric ward.
2. Children whose parents give informed consent for participation in the study.

Exclusion criteria

1. Severe Acute Malnourished Children who are re-admitted.

3. Results

Table No. 1: Age Distribution

Age range in months	Frequency	Percentage
<12	42	28.2
12 to <24	41	27.5
24 to <36	28	18.8
36 to <48	21	14.1
48 to 60	17	11.4
Total	149	100

Majority of children were below 2 years of age with 42 (28.2%) below 1 year and 41 (27.5%) between 12 and 24 years of age. The mean age of children in the study was 23.9+15.6 months (1.5-58).

Table No. 2: Weight by height distribution

Weight by height	Frequency	Percentage
Less than -3SD	134	89.9
More than -3SD	15	10.1
Total	149	100

Among the patients, 134 (89.9%) had weight by height less than -3SD, while 15 (10.1%) had more than -3SD.

Table No. 3: Distribution of SAM Diagnosis

SAM Diagnosis	Frequency*	Percentage*
Weight/Height or length < -3SD	134	89.9
Edema present	19	12.8
MUAC < 11.5 cm	106	71.1

*values are mutually exclusive of each other

Among the patients, 134 (89.9%) were diagnosed as SAM based on weight by height ratio or length < -3SD, 19 (12.8%) based on presence of edema, and 106 (71.1%) based on MUAC < 11.5 cm.

Table 4: Distribution of Past History

Past History	Frequency	Percentage
Not significant	117	78.5
Single hospital admission	25	16.8
Multiple hospital admission	7	4.7
Total	149	100

Among the patients, 25 (16.8%) had past history of single hospital admission and 7 (4.7%) reported multiple hospital admissions previously.

Table 5: Presence of edema distribution

Presence of edema	Frequency	Percentage
Yes	19	12.8
No	130	87.2
Total	149	100

Among the patients, edema was present in 19 (12.8%) children.

4. Discussion

SAM is known to be the commonest resons of acquired immununosupression. At the receptor lavel, there is a decrease in the IL1 and IL4 owing to the dysregulation of T lymphocytes generation cycle, which in turn leads to the dysfunction of the T cell sub-population[6]. Eventually the reduction of both cytokines in the SAM children causes the direct impairment of the various steps involving the malnutrition and differentiation of T and B cells,which further affects the antibody production,and the inflammatory processes[7]. The serum antibody lavels in the malnourished children against several microbial antigents are significantaly lower in comparison to normal healthy children . Other aggravating factor is the presence of anemia which contributes to disturbance in immune response of the malnourished children[8].

Children who have SAM are classified as 'complicated', if they show clinical features of infection, or of metabolic disturbances, severe edema or have poor appetite. It is important for the healthcare workers, to understand how SAM children present with infections which help to guide the initial treatment strategies[9]. The association of high infection levels of bacterial origin and other in severely ill SAM children has been demonstrated earlier. Mlanutrition bring an important predisposing factor for the opportunistic mycoses colonization and infection, with C. Albicans reported to be the cause of major fungal infections in such immunocompromised patients. Tuck et all demostrated that the candidial activity of leukocytes in malnourished children severely impaired which runs parellal to the higher isolation of candida species from specimen, especially throat secretions , obtained

from malnourished children[10]. The isolation of candida species has been also observed from the flora of the gastrointestinal tract in the malnourished children, which may cause chronic diarrhea. A combination of HIV and malnourishement is a conducive enviornment for oppurtunistic in less than 5 year children. Hence, it is very important to study the epidemiology of fungal infections in SAM children.

5. Conclusion

The prevalence of fungal infection in severe acute malnutrition children below 5 years age was 12.8%. 134 (89.9%) were diagnosed as SAM based on weight by height ratio or length < -3SD, 19 (12.8%) based on presence of edema, and 106 (71.1%) based on MUAC < 11.5 cm. Of the 149 children enrolled in the study, mean age of children was 23.9+15.6 months. Majority of children were below 2 years of age with 42 (28.2%) below 1 year and 41 (27.5%) between 12 and 24 years of age. 61 (40.9%) were females and 88 (59.1%) were males. 134 (89.9%) had weight by height less than -3SD, while 15 (10.1%) had more than -3SD.

6. References

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