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MORTALITY IN CHILDREN WITH SEVERE ACUTE MALNUTRITION: A PROSPECTIVE OBSERVATIONAL STUDY OF RISK FACTORS

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Abstract: 86 Children with Severe Acute Malnutrition (SAM) were studied over a period of two years from January 2012 to December 2013 at Government Gen Hospital, Kurnool medical college, Kurnool in the department of pediatrics. WHO definitions and protocols of management of SAM were used. 64 children were in <1yr age and 22 children in 1 to 5yrs age group. SAM with oedema were seen in <1yr only. Sepsis was seen in 44.19% (38/86) but is 47% (30/64) in <1yr age. Oedema was seen in 46.62% (14/30) of SAM with sepsis where as it is 17.65% (6/34) in SAM without sepsis. Overall mortality in SAM is 13.95% (12/86). Though mortality of SAM in <yr is 15.63% (10/64) it is 30% (9/30) when SAM is in <yr with sepsis. If edema is with sepsis in SAM the mortality is 45% in <1yr.From the above study the risk factors identified for mortality in SAM are (1) <1yr age group (2) presence of sepsis (3) presence of edema.

Key words: Severe acute malnutrition (SAM); Risk factors; Mortality

INTRODUCTION

Severe Acute Malnutrition (SAM) is a major obstacle to achieving MDG 4 i.e. decreasing mortality in children under 5 yrs of age. SAM is mostly due to poverty and lack of nutrition. SAM predisposes children to recurrent infections further perpetuating malnutrition and increasing mortality in this vulnerable age group of under-five. Chronic diarrhea is still an important precipitating cause of malnutrition particularly edematous malnutrition. Presence of edema in a child with SAM makes the child prone to death one and half times than those children with SAM without edema.

MATERIALS AND METHODS

All children less than 5 yrs with SAM admitted in pediatrics ward were taken in to study.in case selection WHO definitions were used. As per WHO protocols the treatment strategies were used. F70/F100 formulas were used appropriate for the clinical situation. The data of all children were subjected to statistical analysis using SSP statistical software.

RESULTS AND DISCUSSION

A total of 86 children with SAM were studied.74.44% were in <1yr age and the rest were in > 1yr age. When sepsis was correlated with age it was seen that sepsis was in 46.68% of SAM in <1yr age.

Table 1: Children with SAM in relation to age group vs sepsis

Age	Sepsis	No Sepsis	Total (%)
<1 YR	30(30/64 ie 46.68%)	34(53.32%)	64(74.44)
>1YR	8(8/22 ie 36.36%)	14(63.64)	22(25.56)
TOTAL	38(44.19)	48(55.19)	86(100)

Table 2 showing children with SAM relation to edema vs sepsis (edema was seen in <1yr age only Oedema was seen in 46.62% (14/30) of SAM with sepsis where as it is 17.65% (6/34) in SAM without sepsis.

Table 2: Oedema in relation to presence or absence of sepsis

Edema	Sepsis	No Sepsis	Total
present	14(46.62%)	6((17.65%)	2031.25%
absent	16(53.37%)	28(82.35)	44(68.75%)
total	30	34	64

Girma *et al.,* (7) in their cross sectional study in Ethiopia found opposite results with oedema occurring more in children above five years of age where as oedema is dominantly noted in less than one year of age. This difference might be related to cross sectional study of GIrman *et al.,* compared to the present study which is hospital based study.

Table 3 showing overall mortality in SAM Mortality with sepsis 26.31% compared to mortality of 4.19% without sepsis. Mortality is 6.5 times more in SAM with sepsis than without sepsis. It is statistically significant with p value of 0.0043.

Table 3: Outcome in SAM without sepsis

Sepsis	Died	Survived	Total
Present	10(26.31%)	28	38
Absent	2(4.17%)	46	48
Total	12(13.95%)	74(86.05%)	86(100%)

Umesh Kapil and HPS Sachdeva (8) in their perspective review article quoted eight data sets from low income countries that the risk of death increased with decreased SD scores for wasting and steeply so

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below -3SD.In SAM children confounder adjusted odds ratio for mortality was9.4(95% CI 5.3,16.8)

Table 4 showing mortality in SAM in < yr age. Mortality is 30% with sepsis in SAM in <1yr of age compared to2.94% of mortality in SAM without sepsis in <1yr of age. It is statistically significant with p value of 0.0043.

Table 4: Outcome in relation to sepsis in < 1yr of age only

Sepsis	Died	Survived	Total
Present	9(30%)	21(70%)	30(46.88%)
Absent	1(2.94%)	33(97.06%)	34(53.12%)
Total	10(15.63)	54(84.37)	64(100%)

Shanka NA *et al.,* (9) in their study have shown that the probability of a SAM child to recover is 1.25 times more than in children of less than two years of age and reported that 25% to 30% of children with SAM requiring hospital admission die. But no study studied in particular the mortality in less than one year.

Table 5 showing mortality in SAM with edema. Mortality in SAM with edema is 14/20(70%) compared to mortality of 16/44(36.36%) in SAM without edema.

Table 5: Outcome in relation to presence or absence of oedema

Edema	Died	Survived	Total
Present	14(9.38)(2.28)	6(10.62)(2.01)	20
Absent	16(20.62)(1.04)	28(23.38)(0.98)	44
Total	30	34	64

The chi-square statistic is 6.2471.The P value is 0.012439.The result is significant at P<0.05. James Berkely *et al.,* (10) reported similarly high mortality in edematous children. Unduly high mortality in this study is probably the result of late admissions.

CONCLUSIONS

a) A total of 86 children with SAM were studied.74.44% were in <1yr age and the rest were in > 1yr age. When sepsis was correlated with age it was seen that sepsis was in 46.68% of SAM in <1yr age.
b) Oedema was seen in 46.62% (14/30) of SAM with sepsis where as it is 17.65% (6/34) in SAM without sepsis.
c) Mortality with sepsis 26.31% compared to mortality of 4.19% without sepsis. Mortality is 6.5 times more in SAM with sepsis than without sepsis. It is statistically significant with p value of 0.0043
d) Mortality is 30% with sepsis in SAM in <1yr of age compared to2.94% of mortality in SAM without sepsis in <1yr of age. It is statistically significant with p value of 0.0043
e) Mortality in SAM with edema is 14/20 (70%) compared to mortality of 16/44 (36.36%) in SAM without edema.

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