

ABSTRACT

CORRELATES OF THYMUS SIZE AND CHANGES DURING TREATMENT OF CHILDREN WITH SEVERE ACUTE MALNUTRITION(SAM)

AIMS &OBJECTIVES:

*Primary objective:*To radiologically demonstrate increase in thymus size with clinical recovery following nutritional rehabilitation in children with severe acute malnutrition.

Secondary Objective:

1)To correlate the improvement in the clinical status of such children with severe acute malnutrition using objective markers such as MUAC, weight,weight for height, etc

2)To correlate improvement in the clinical status of such children with biochemical parameters .

METHODOLOGY:

Study design-Prospective observational study

Study setting- General medical wards in Institute of child health, Egmore, Chennai.

Study period -May 2017 to July 2018

Study population-

Inclusion criteria:All children aged 6 months -24 months presenting with severe acute malnutrition admitted in the hospital.

Exclusion criteria:Children with Severe respiratory distress requiring intubation and inotropic support at admission, Hemoglobin <4gm%, infections like HIV, Tuberculosis.

- **Sample size:** 59(Sample size is calculated using **nMaster software version 2.0.**)
- After obtaining informed consent from parents, demographic data like age, sex and locality of the family was collected. History regarding the complaints for which the child was admitted to the hospital was noted. History regarding the neonatal period like birth weight of the child and hospitalization for any illness was noted. History regarding breast feeding practices whether exclusively breast fed or not, given any other type of milk (animal or commercial) apart from breast milk was also enquired. History regarding developmental milestones was asked and noted. Immunization status of the child whether completely or partially immunized was also asked.
- Detailed clinical examination including anthropometry like weight, height/length, mid upper arm circumference, head circumference measured as per prerequisites was done. Cardiovascular system, respiratory system, abdominal system and neurological examination was done. Presence of edema or wasting was noted. All relevant blood investigations done were noted down. Ultrasonogram of the chest for thymus size was done and noted
- All children were followed up during the course of hospital stay till discharge and was also followed up after 2 months. Relevant blood investigations and ultrasonogram of chest for thymus size was also done during follow up and noted down.

RESULTS:

- Mean age of presentation was 14.21 months.
- The sex ratio male: female is 1.06:1.
- Around two third of children were from rural area.
- 48% of the children were not completely immunized.
- The increase in weight, length, weight/length, mid upper arm circumference, hemoglobin, total protein, serum albumin, serum globulin from admission to discharge and from discharge to 8 weeks after admission was statistically significant in paired t test.
- Change in thymus size is positively correlated with change in ionised calcium.
- Change in thymus size is negatively correlated with head circumference.

CONCLUSION:

- Thymus size in severe acute malnutrition was initially small and in some sick cases it is invisible and the thymus size was found to be increasing in size with statistical significance on follow up scan after 8 weeks of admission as the child is nutritionally rehabilitated and recover from the illness indicating that thymus size can be used as a marker of immunological dysfunction in severe acute malnutrition and as a marker of severity of the illness.
- Change in thymus area was statistically significant and positively correlating with the anthropometric indicators such as weight, weight/length and with ionised calcium levels, indicating the importance of calcium supplementation in severe acute malnutrition. Change in thymus area is negatively correlating with head circumference.