SUMMARY AND CONCLUSION

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Thirty two malnourished children of both sexes , IO of the edematous and 22 of the non edematous form were included in the present study . Their age varied between 2 months to 24 months . Eighteen apparently healthy children of a similar age group and living under the same socio-economic conditions as patients served as controls .

A full clinical sheet and anthropometric measurements were recorded for each subject . Every child was given I/2 ml. intramuscular typhoid vaccine containing IOOO million organism percubic milliliter .

Five ml blood sample was withdrawn from each subject before as well as 2 weeks after vaccination . The serum was seperated to be used for determination of the antibody titre against typhoid antigens H and O , before and after immunization

IOO% of control subjects showed normal antibody response to typhoid H antigen with a mean of 524.44 $\pm$ 46.32 . Two control subjects only did not show antibody response to typhoid O antigen (mean : 234.44 $\pm$ 63.58) .

In the oedematous group 40% and 60% of subjects did not show any antibody response to H and O antigen respectively 4 out of IO patients did not show any response to both antigens

2 other patients showed response to H but not to O antigen . The mean of the anti H titre was 34 ± II.I8 while that of the anti O titre was I2 ± 5.34 .

First grade marasmic patients showed I00% response to typhoid H antigen with a mean of 86.67 ± 4I.32 , while 66% (2 out of 3) did not show any response to typhoid O antigen (mean : 6.67 ± 6.79) .

33% and 44% of the second grade marasmic subjects did not respond to typhoid H and O antigens respectively . 3 out of 9 patients showed no antibody titre to both antigens , one only showed a response to H but not O antigen . The mean of anti H titre was 75.56 ± 23.52 , while that of anti O titre was I7.78 ± 6.I9 .

50% and 90% of 3rd grade marasmic subjects did not show any response to H and O antigens respectively . 5 patients out of I0 did not show response to both antigens , 4 further patients did not show response to O antigen only . The mean of the anti H titre in the 3rd grade marasmus was 26 ± I0.36 while that of the anti O titre was 2 ± 2 .

The statistical analysis of antibody response to typhoid antigens in the different groups of PEM subjects as compared to controls revealed a highly significant and a

significant drop in antibody response to typhoid H and O antigens respectively in both forms of PEM (oedematous and non oedematous) .

Observing the antibody response to typhoid antigens in oedematous group as compared to the non oedematous group could not reveal any statistical difference .

Antibody response in the different grades of non oedematous group of PEM as compared to control subjects revealed a decreasing titre with increasing severity of marasmic state . A highly significant and a significant drop in antibody response to H and O antigens respectively were observed in the 3 grades .

Comparing the antibody response in the different grades of non oedematous form of malnutrition between each other, no significant change was noticed between I^{st} and 2^{nd} grades while significant decrease in the immune response was traced in 3^{rd} grade as compared to the I^{st} and 2^{nd} grades . This leads to suggest that the antibody response to typhoid vaccine is diminishing significantly with increasing severity of the malnourished marasmic state .

From the present study we are justified to conclude that the immune response of malnourished subjects is defective.

The defect is more marked in oedematous subjects although not statistically significant as compared to non oedematous patients . In these subjects the immune defect is rising with increasing severity of the marasmic state .

Malnourished subjects can not benefit adequately from typhoid immunization although no complications were detected in any subject . Before adminstration of this vaccine patients should be treated with a suitable protein rich diet in order to gain the power of normal immune response to typhoid antigens .

Inspite of the elevated level of serum immunoglobulins in children with PEM (Suskind et al I976) , their blunt response to typhoid antigens demonstrates that this elevation does not always signify a completely intact humoral immune system .