SUMMARY AND CONCLUSION

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Realizing the fact that protein deficiency malnourishment does exist among communities included in the National Family Planning Programme especially in rural areas, this presentation aimed at studying the metabolic changes that might occur due to the use of one of the commonly used oral contraceptives under the condition of existing malnourishment.

To achieve this goal we designed our experiment on the basis of developing protein deficiency malnutrition in adult female rats over a long period of time followed by treatment of the malnourished animals with daily oral doses of the drug chosen. Adult female albino rats with average body weight of 150 - 200 gms and showing two consecutive normal estrus cycles were used for the experiment. The rats were divided into two main groups, a normally nourished control group that received standard diet containing 20 % casein, and malnourished protein deficient group which received standard diet with 7 % casein. The control and test animals were allowed known weighed amount of the corresponding diet (20 gms/rat/day). The estrus cycles of both groups were followed by daily vaginal smear.

The low protein fed animals gradually developed signs of malnourishment untill after 90 days, when all animals exhibited the full picture of malnourishment based on the following criteria:

1 - Signs of malnourishment.

2 - Body weight changes.

3 - Vaginal smear cytology changes.

4 - Plasma protein pattern changes.

Results of all the above parameters were compared with those of the normally nourished groups.

Following the development of malnourishment both the control and test animals continued to receive the same corresponding diet. Each main group was divided into 2 groups a nontreated and a treated one. The treated animals received daily 1/10 of the human dose of the combined contraceptive preparation for the whole observation period (180 days).

Consequently four groups were recruited for the required tests:

1 - Normally nourished non-treated group (N).

2 - Normally nourished treated group (N+C).

3 - Malnourished non-treated group (M).

4 - Malnourished treated group (M+C).

Daily observation and daily vaginal smears were done and

recorded for all groups. Blood samples were withdrawn every 15 days during the whole observation period. Changes in the following parameters every 15 days were recorded.

1 - Body weight.

2 - Vaginal smear cytology.

3 - Plasma protein pattern (using Biuret technique for total protein and cellulose acetate electrophoresis for plasma protein fractions).

4 - Plasma hormonal pattern (FSH, LH, estrogen and progesterone using RIA).

Each treated group was compared to its control non-treated, together with a comparison between the malnourished and normally nourished treated groups.

Summarising the results observed, it was found that continuous feeding of low protein diet following development of malnourishment resulted in marked significant decrease of body weight and cessation of cyclicity of the estrus cycle at the diestrus phase.

Administration of daily oral contraceptive dose to normally nourished and malnourished groups caused shift of estrus cycle towards estrus phase with final cessation at estrus in all animals of both groups.

Protein pattern was altered in the normally nourished and malnourished treated groups in respect to their control animals.

In general, total plasma protein as well as albumin and A/G ratio were decreased in the malnourished groups whether treated or non treated, but the change was more significant with treatment. The globulin fractions showed flactuating patterns though mostly towards increased levels. The change in protein pattern in the normally nourished treated animals was not prominent with a more or less similar pattern to that occurred in the malnourished groups.

Oral contraceptives are known to influence the normal pattern of the hormones of reproduction namely the gonadotropic and steroid sex hormones. Under normal condition the estrogen part of the pill supresses the FSH and the progestogen supresses the mid-cycle peak of LH, consequently ovulation is disturbed or even inhibited.

In the present study daily administration of oral contraceptives to the normally nourished group resulted in changes of the hormonal pattern previously recorded by other investigators. Malnourishment per se resulted also in disturbance of the balance of hormones of reproduction where the estrogen and progesterone were decreased as well as final decrease of

FSH and LH following prolonged freeding of low protein diet.

Daily treatment of the malnourished animals with oral contraceptives also resulted in marked decrease of estrogen, progesterone, LH and unstable level of FSH. It could be deducted that low-protein in diet has basically a deleterious effect on the hormonal pattern, which is partially augmented by the administration of oral steroidal contraceptives.

Finally by assessing the results of all parameters obtained in this investigation , it is quite obvious that protein deficiency plays a major and main role in the metabolism of the body as well as on the hormones of reproduction. Therefore, one can safely conclude that in communities where malnourishment protein deficiency exists or could be detected, correction of the malnutritional status of women is to be recommended before the use of steroidal contraceptives which were found to add a burden on the already deranged metabolic and hormonal levels.