



The treatment of obesity

Dear Sir:

Two original communications appeared in the February 1973 issue of this journal. One deals with the problem of so-called "luxus consumption" and is entitled "Response of Body Weight to a Low Carbohydrate, High Fat Diet in Normal and Obese Subjects" by Kasper et al.; the other, on the use of human chorionic gonadotrophin for the treatment of obesity, is entitled "Effect of Human Chorionic Gonadotrophin on Weight Loss, Hunger, and Feeling of Well-being" by Asher and Harper. It may not have been the intent of either set of authors, but these communications will be quoted for some time to come as adequate rationale for treating the obese with ketogenic or other unusual diets and also for the use of injections of human chorionic gonadotrophin to help in weight reduction. It is therefore particularly important to review these articles in sufficient critical detail to determine just what it is that has been established by these publications and to what extent the findings are relevant for the treatment of obesity.

The work of Asher and Harper on human chorionic gonadotrophin concludes that a group of obese patients who received this hormone or a mixture of hormones lost more weight than the placebo group and, furthermore, experienced less hunger and generally better feeling. Fortunately, data on starting weight and weight loss are supplied in a table and constituted the basis for our re-analysis of the results. On first view it looks good, percent body weight loss of the treated group exceeded that of the placebo group at highly significant values. (Our analysis of the data with the t test gave a t value of 4.67, which, with 38 degrees of freedom, suggests that such weight loss would occur on random grounds less than one time out of a thousand.) A more detailed examination, however, reveals that in the placebo group, many patients received fewer than the 36 injections which constituted the

original experimental plan. In fact, there is quite a scatter of the number of injections received. (By our calculations, the standard deviation of the number of injections received by the experimental group was 3.8, but in the placebo group it was 10.3. A t test of the differences in the number of injections received, 33.85 for the experimental group vs. 29.05 for the placebo, shows a barely significant t value of 1.95 at 38 degrees of freedom.)

It is most informative to look at the question as to whether the number of injections received even in the placebo group (who received no chorionic gonadotrophin) bore any relationship to the results. In point of fact, this is precisely the case. A correlation coefficient relating number of injections received to percent weight loss shows a correlation of 0.683. Such a correlation, occurring with a t value of 3.97 and 18 degrees of freedom, is a highly significant observation. In fact, one can say that within the placebo group, nearly one-half of the variance observed is the result of the number of injections. Clearly then, the number of injections is important. Keeping this in mind, if one then goes back to the original data and deletes both from the chorionic gonadotrophin and the placebo group, those who received fewer than 36 injections, one finds that there is still a slight increase in the weight loss of the treated group as compared with the placebo group, but the significance of this difference declines sharply and the probability that this is occurring on random grounds drops from less than 1 in 1,000; actually, it is close to 2 in 100.

One must ask why the placebo group received fewer injections on the average than those in the treated group. Was this a random occurrence? Did the patients or someone know just who was who? The authors note that the patients were told that "the slightest deviation from any of the details will result in utter disaster." Given this dire statement, it is hardly surprising that individuals who missed injections for whatever reason might feel they were on the brink of disaster. Thus, Table 3, which gives data relating to the feeling of the patients