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Obesity and its Treatment

By *Ryuya Yoda**

Obesity is the excessive accumulation of body fat or adipose tissue which is ussually associated with the overweight state. But it is important to keep in mind that body weight is contributed to by all of the body tissues, such as skeleton, muscle, other fat-free protoplasma, adipose tissues and water. Although excessive accumulation of muscle tissue, as in a muscular athlete, results in abnormal increase in weight without excess adipose tissue or obesity, generally excess weight in adult is a reflection of the deposition of excess adipose tissue.

Although there are attempts to define obesity by determining the skinfold thickness in certain areas of the body irrespective of height and weight, the measurement of height and weight is simple and more acceptable in clinical medicine. For judgment of obesity from height and weight, the standard weight is necessary. To use the average weight in various ages as the standard is not desirable, because of excess weight gain in middle age and beyond. Therefore, the average weight of 25–30 age, who have completed body development and have least further weight changes, seems to be reasonable as the standard.

In comparison with the standard weight, the range within ±10% was considered to be normal-weight, that above +10% obese and that below −10% lean.

It is stated that measurement of the upper arm circumference (UAC) is a simple method of assessing the nutritional status. The sizes of bone, muscle, subcutaneous fat tissue and skin are components of UAC. Since the sizes of the bone and skin are relatively constant, the changes of UAC are due to the change of fat and/or muscle.

There is a linear correlation between UAC and percent weight deviation from lean to obese. Then, an idea of the weight-corrected UAC is introduced. It is postulated that an estimate of UAC in which the excessive accumulation of fat in the obese and the ordinary decrease of muscle mass in the lean are excluded, would give a value that represents the physiological amount of the muscle mass, and would

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be a good index for the abnormal decrease of the muscle mass.

The weight-corrected UAC was calculated as follows.

Weight-corrected UAC=Measured UAC—X·W

where X=regression coefficient

W= ± percent weight deviation

The weight-corrected UAC showed a significant decrease after 60 years of age. These findings suggests that there is a decrease of UAC with advancing age in the same height and weight, and that this decrease indicates the decrease of body muscle mass.

It is well known that obesity shortens the lifespan, particularly by increasing the incidence of diabetes, hypertension, cardiovascular disease and others. Since the men aged 40–69 are prone to diabetes, hypertension and myocardial damage in E.C.G., it is noticeable that obesity has significantly increased incidence of these diseases. Obesity of only +10~+20% is not harmless, and it is better to be controlled by weight reduction.

In the improvement of obesity, treatment by low caloric diet is effective. Either one of three kinds of diet was prescribed: 1000 cal, 900 cal or 700 cal a day, with more than 60 g a day of protein. As a rule, men were placed on 1000 cal and women on 900 cal diets. Depending upon the rate of weight reduction, 700 cal diets were prescribed in some cases. Of 352 outpatients placed on the diet, 47 (13.4%) did not continue the treatment and 17 (4.8%) faild in reducing their weight. In the remaining 288 (81.8%), weight reduction was obtained, and in 188 (53.4%) it exceeded 4 kg.