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OBESITY

As little food as one may take, still one always eats too much. One can become ill from eating too much, never from eating too little.

Napoleon

Obesity has become a major health problem in the United States. The amount of extra fat is directly correlated with significantly increased morbidity and mortality. The frequent and well recognized complications of obesity include diabetes mellitus, hypertensive cardiovascular disease (high blood pressure), myocardial infarction (heart attack), cerebrovascular disease (stroke), cholelithiasis (gallstones), gout, degenerative arthritis and varicose veins. Obesity leads to an impairment of gas exchange in the lungs, so that there is decreased oxygen tension in the blood and retention of carbon dioxide. When this becomes severe, it leads to the "Pickwickian Syndrome" with somnolence and lethargy to such a degree that the patient falls asleep during routine daily activities. To attempt to overcome this, there is an increase in red blood cells (polycythemia) and heart failure also may develop. Both of these can lead to further complications. In addition, the decreased oxygen tension leads to impaired performance of almost all body organs. All tissues, not only the brain, the heart and the kidneys, are dependent on oxygen for survival and cannot function without it.

Also associated with obesity are menstrual disorders (amenorrhea and oligomenorrhea) and sterility. Skin infections and hirsutism (increased body hair in females) are more common. Decreased liver function, fatty liver and cirrhosis occur with increased frequency in the obese. The risk of major surgery is enormously increased. Exercise tolerance is decreased. Psychological disturbances are commoner. Indeed, there is a significant increase in the incidence of almost all possible disorders.

However, far more striking than the above increases in morbidity due to obesity, is the dramatic increase in mortality (death rate) due to obesity. The death rate for every major cause of death in the

United States (except suicides and tuberculosis) is far higher in obese individuals. Compared to the population as a whole, the death rate is increased 13% for men only 10% overweight, 25% when 20% overweight and over 40% for those who are 30% overweight. But these are rates compared to the population as a whole. When compared to subjects in the desirable weight range, men only 10% overweight have excess mortality of 33% and those 20% overweight have an excess death rate of 50%.

The message is clear: although fat is an ideal storage form for energy, useful if hibernating for the winter or going on a long Arctic expedition, it has become a life-threatening burden which is responsible for both significant morbidity and dramatically increased mortality. Perhaps it is more than coincidence of spelling, that in the *Index Medicus* (the medical profession's bibliographic listing of references) "obesity" is followed in listing by "obituary".

Because of the clear association of obesity with increased illness and death, a tremendous research effort has been going on in recent years, trying to better understand the problem. From these investigations around the country, much has been learned of metabolic abnormalities which tend to perpetuate obesity once present. However, to date no clear single metabolic abnormality responsible for obesity has been defined. Indeed, in volunteer medical students and prisoners in Vermont, who overate to produce experimental obesity, the same abnormalities as those present in the spontaneously obese patient appeared with the development of obesity, and disappeared again with loss of weight. There is no simple means to correct the metabolic consequences of obesity. There is no simple way to correct the obesity. Loss of weight is a difficult, time-consuming task, but the resulting increased life expectancy is well worth it.

"It is not a new experience that special diets are burdensome and require the faithful cooperation of physician and patient. The rice-fruit-sugar diet is certainly no exception." So said Walter Kempner in the February 1945 issue of the North Carolina Medical Journal, in his classic article "Compensation of Renal Metabolic Dysfunction: Treatment of Kidney Disease and Hypertensive Vascular Disease with Rice Diet", which after two preliminary papers,

represented the first full report of the successful use of the rice diet, developed for the treatment of kidney and vascular disease. This unique diet, low in salt, low in cholesterol, low in protein, has proved to have a dramatic effect in the treatment of renal and vascular disease, which has far exceeded that predicted by its originator. Dr. Kempner noted in his early publications that although he had expected that insulin requirements would increase in cases complicated by diabetes mellitus, he found instead that blood sugar decreased and the insulin dose had to be reduced. Thus in the 1940's, prior to the appearance of the anti-hypertensive drugs, and in an era when renal and vascular disease were considered uniformly fatal, Kempner's rice diet offered new hope for countless numbers.

Although originally met with some skepticism, the concept that dietary therapy can play a significant role in altering renal, hypertensive, cardiac and vascular disease and diabetes is now well accepted. Virtually every physician in the country prescribes "low salt" diets for hypertension or cardiac failure. The mainstay of the treatment of renal dysfunction is the "low protein" diet. The use of low cholesterol diets has been proclaimed as the major hope for preventing atherosclerosis and coronary artery disease. And the American Medical Association's Council on Drugs recommends that "every effort should be made by the physician to control the symptomatic, maturity-onset diabetic with diet alone." The rice diet, with proven efficacy in the treatment of all of these conditions, uniquely combines a low-salt, low-protein, low-fat and low-cholesterol regimen and allows for a degree of restriction of these substances greater than ordinarily achievable. Although much work has been done to define the "active principle" of this diet, none has been stated, and the combination appears best to achieve the dramatic results which have not been duplicated by any other treatment modality.

A "fringe benefit" in the treatment of renal and vascular disease, and diabetes has been the observation of weight loss and correction of obesity. This was noted by Kempner as early as 1945 in the paper cited above, where he said "it is not unusual for the weight to decrease more or less markedly . . ." Thus, the observation of reversal of obesity, as well as of the above cited marked increase

in the obese of the vascular disorders for which the rice diet was originally developed, has led to its being used in "simple" obesity.

It is interesting, however, to note how many patients there are who, although presenting what they believe to be merely a problem of weight, already have a number of the many serious complications of obesity mentioned above. (Many of these problems became apparent only on thorough examination and laboratory testing.) These patients, by carefully following the rice diet, have the double advantage of not only correcting their obesity, but also reversing the potentially fatal complications.

Table I shows what Dr. Kempner considers to be a reasonable weight for people of different heights, who do not have diabetes mellitus, heart, kidney or blood vessel disease, or disturbances in fat metabolism, etc. Patients with such complications should, of course, have weights 10%-15% lower.

TABLE I
WOMEN

HEIGHT	*WEIGHT SHOULD BE BELOW: (pounds)
4'11"	.91
5'	.94
5'1"	.97
5'2"	100
5'3"	104
5'4"	108
5'5"	112
5'6"	117
5'7"	122
5'8"	127
5'9"	132
5'10"	137
5'11"	142
6'	147

MEN

HEIGHT	*WEIGHT SHOULD BE BELOW: (pounds)
5'2"	110
5'3"	115
5'4"	120
5'5"	125
5'6"	130
5'7"	135
5'8"	140
5'9"	145
5'10"	150
5'11"	155
6'	160
6'1"	165
6'2"	170
6'3"	175
6'4"	180
6'5"	185

*fully dressed