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METABOLIC DISEASES: RESEARCH, DIAGNOSIS AND TREATMENT

Whys And Wherefores Of The Rice Diet

Nowadays almost everybody knows that there is a large group of so-called *"deficiency diseases"*, such as scurvy, rickets, and pellagra, caused by a lack of some necessary substance or substances in the body. Body cells under certain circumstances are not able to form enough of vitally needed substances, and these substances cannot be derived in adequate amounts from the usual food. They can and must be added as specific supplements.

In contrast to these diseases in which there is *too little* of certain necessary substances, there are diseases in which *too much* of certain substances gets into the body, substances which the person is not able to "handle" or to get rid of, be it by excretion or by metabolism (i. e. by changing them into harmless substances). The public calls such substances poisons, and thinks of such conditions as lead, arsenic, and carbon monoxide poisoning or of food poisoning.

Until a few years ago, heart diseases, diabetes mellitus, high blood pressure, obesity, and kidney diseases were not grouped together nor thought to have any common factor. Too many of the factors causing them were unknown. However, there is increasing evidence that these diseases, too, might often have something to do with "external agents," such as some component or components of food which may act as poisons, not to all, but to certain people who are unable to "handle" them.

Like nations and individuals, the cells which make up the tissues of all living animal beings live and grow by exchanging certain materials. The term "metabolism" refers to this exchange.

In the lungs, the oxygen which we breathe in is eventually exchanged for carbon dioxide which we exhale. Before this, the oxygen which we have breathed in is carried throughout the body

to all the organs. A large part of the food we eat—carbohydrates, fats or proteins—is converted, partly by the use of this oxygen, into such harmless end products as carbon dioxide and water which are then excreted, for instance by the lungs and the kidneys.

Dr. Kempner's work leading up to the Rice Diet treatment has clarified certain basic aspects of metabolism, especially by his stressing the importance of the metabolic functions of the kidney, an organ which before had been viewed primarily as an organ of excretion. Disturbances in its metabolic activity may produce serious disease.

One of Dr. Kempner's earlier papers in this field, published in 1945, was called "Compensation of Renal Metabolic Dysfunction", subtitled "Treatment of Kidney Disease and Hypertensive Vascular Disease with the Rice Diet." The first sentence of this paper states: "In kidney disease there may be impairment of both the *excretory* and the *metabolic* functions of the kidney, or of either one alone."

We can understand the connection between renal metabolism and hypertensive vascular disease when we look at the metabolic work of the kidney. Like other organs the kidney takes in nourishment, and utilizes and metabolizes certain substances while it releases others. These are then either discarded by the body in the urine or returned to the blood stream and further handled by other organs. The healthy kidney can do this job well, to the benefit of the whole organism. On the contrary, the sick kidney holds on to everything it should throw out and throws out everything it should hold on to.

A kidney which has become damaged by disease or accident may consist largely of non-functioning dead cells or scar tissue. Dr. Kempner explained this once when he gave a talk before the New York Academy of Medicine in 1946 (Bulletin of the New York Academy of Medicine 1946, Vol. 22, p. 358) saying that it is not these dead cells that do the damage, because they are not active any more and cannot produce anything, either good or bad. The trouble comes from cells which are not dead, but have been injured, or those whose proper functioning is hampered by a pathological environment, which is, for example, too acid, or which contains too little oxygen, or too much sodium. The injured cells or the healthy cells in the "sick" environment still work, but they work

in a wrong way: they might only start the work without completing it, or make other "mistakes" which sometimes have very serious consequences.

The body breaks down proteins first to peptides, then to sulfates and phosphates and amino acids. A great number of these are then metabolized in the kidney. The intermediate breakdown products, if not further transformed to harmless substances, as would normally occur in a healthy kidney, may be harmful to certain cells of other organs to which they are carried again and again by the blood stream, particularly the heart and the blood vessels, and—in a truly "vicious circle"—cause even further damage to the kidneys themselves. The longer this process continues, the more harm will, of course, be done.

Early recognition and compensation of dysfunction of the kidneys is, therefore, of great importance. To prevent damage from an ill-functioning kidney, a diet had to be found which required only such work as the kidney was capable of performing correctly.

A diet limited to foods that do not require much handling and "processing" in the kidney has to be low in protein and fat, though containing all the essential amino acids, and low in sodium and in acids such as phosphates and sulphates (mainly derived from protein). These requirements have been met adequately by a diet consisting of rice, fruit, fruit juices, and sugar. After the patient's condition has improved, vegetables, other carbohydrates, and, at times, small amounts of fat and animal protein may be added.

Figure 1 shows the differences in the excretion of some substances in the urine of patients on a "normal" diet and on the Rice Diet.

When the Rice Diet was developed by Dr. Kempner in the late 1930's and early 1940's, it was given only to patients in the terminal stage of kidney disease. It had the desired effect of compensating for the inability of the poorly-functioning kidney to handle other foods correctly; and it was found that, as the kidney's work was limited to tasks which it could perform well, many apparently unrelated disabilities of the patient disappeared. The blood pressure often decreased, the heart became smaller, the electrocardiogram showed the heart muscle to be functioning better, and if the patient had become blind from blood vessel disease of his eyegrounds, he frequently became able to see again.

URINARY EXCRETION (GM. IN 24 HR.) ON "NORMAL" DIET AND ON RICE DIET (FOR 2 MONTHS OR MORE)

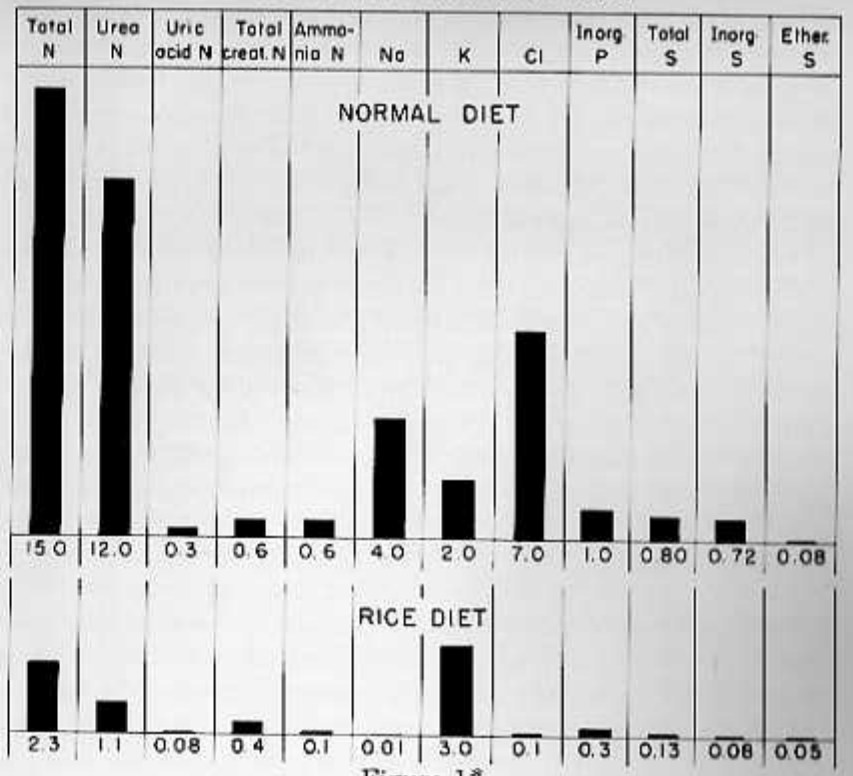

Figure 1*

These gratifying results led to using the Rice Diet also in the treatment of patients who had high blood pressure, or damaged hearts or eyes, but no *apparent* kidney disease; and in these cases the success has been equally dramatic. Another metabolic disturbance, sugar diabetes, has also been treated successfully by this diet. In Dr. Kempner's research it even became apparent that, in spite of the high carbohydrate content of the Rice Diet, in most cases of diabetes mellitus the restriction of protein, fat, and salt decreases the blood sugar and the urine sugar and lowers the insulin requirements.

The medical profession accepted without too much reluctance the idea of restricting sodium in the treatment of edematous states, that is conditions in which there are obvious accumulations of fluid in the body, regardless of whether the fluid accumulation resulted

*Reprinted from Annals of Internal Medicine, 31:5, p. 822, Nov. 1949. (Copyright 1949.)

from heart or kidney disease. Perhaps this was because these conditions often responded quickly to such treatment, and the benefits were immediately obvious. In later years, the beneficial role of long-term salt restriction, as provided by the Rice Diet and its several modifications which Dr. Kempner devised, has come to be recognized in other conditions of fluid accumulation, such as ascites in liver cirrhosis, effusions from malignancies, obesity, and high intraocular pressure (glaucoma).

Severe restriction of salt, fat, and protein extending over months and years—the length of time required to treat advanced cases of heart, kidney, eye, and brain diseases, diabetes etc.—requires not only highly specialized skill and knowledge on the part of the physician, but long and careful cooperation on the part of the patient. For both patient and physician the easy way out would seem to be to "take a handful of pills, whatever they may cost your purse and your body, and eat what you like." Clinical experience, however, has proven many times over that in serious problems the hard way is the best.