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HYGIENE AND DIETETICS IN DIABETES MELLITUS

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If perfect culture of mind and body was to be had, a perfect knowledge of the laws of life, an intellect and body trained, the moral faculties of man in balanced order, the human race would not perish under a grievous yoke of disease; the youth of man would be protected and become more perfect; decay of life would be blended with happiness of perfect knowledge; life would become more vigorous, disease more remote. Life is an entity, a constant growth, a resultant waste, a potential energy an eventual expenditure. No agent has been found to arrest the waste or crystallize the tissues of growth and vigor from decay. To do so would be death itself, for life is an incessant change, its vital energy dependent upon the laws of nature, a neglect of which inevitably produces lamentable results. To prolong the period of vital energy, the improvement of the nutrition of the tissues is necessary, either by hygiene or by preparing the proper food for the purposes of nutrition, or removing or preventing those chemic changes in the tissues, called decay. The benefits derived from these principles have extended the duration of life, and it is from this irresistible inference—the instruction derived from experience—that the hygienic and dietetic treatment adapted to diabetes mellitus can abridge or prolong human life. It would be wise had man a mystic elixir capable of preserving life, where there had been injurious habits and old damages, of rendering a stream pellucid which is turbid at its source, but our nature, having no *Deus ex machina*, must look to the proper supervision of that upon which health and life are dependent.

One great means in the efficacy of hygienic treatment of diabetes mellitus is *air*. The air influences, by variations in the amount or condition of its normal constituents, by difference in physical qualities, or by the presence of impurities. The patient should be surrounded by most favorable hygienic influences, because of the mischievous consequences of the disease proceeding slowly or rapidly according to the constitution, age of patient and circumstances in life. No one who has paid any attention to the condition of health in disease can doubt that impurity of air marvelously affects the individual in the convalescent state. The respiration, and cutaneous emanations of man, the impurities from combustion of light and heat, the effluvia of uncleanness of rooms and persons, demand that the sleeping-room should be well

ventilated, removed from any impure flow of air, and that the house should be wholesome and well drained. The patient should pass much of his time in the open air, the action of the sun's rays vitalizing the atmosphere and imparting vigor and energy to the system. During the cold of the winter a glass house with southern exposure is a great comfort. For cleanliness and to preserve a healthy state of the skin, bathe regularly in water not too cold, not allowing the body to be long submerged. After a warm alkaline bath in winter, or a tepid bath in summer, either on retiring at night or arising in the morning a brisk friction or massage, using coca oil, facilitates the removal of effete epithelium, and is conducive to stimulating a healthful action to an otherwise dry and harsh skin. A foot-bath of hot water, with the addition of a tablespoonful of mustard, is very useful where there is fulness of blood-vessels in the head, continued sleeplessness or obstinately cold extremities. Warm flannel next to the skin, and residence in a warm equable climate is an aid to health.

For individual life to continue to exist, the healthfulness of its envelope—the body in which it dwells—must be preserved. So the ingesta, which goes directly or indirectly to the growth, repair or the production of energy in any form, must be administered to insure the proper continuity of the body, its textures, its organs, its processes and actions. Alimentation and beverages are necessary to the existence of all organized beings, but the requisite quality and quantity depend very much upon the circumstances connected with each individual case. It is quite obvious, that to accomplish the best results in the processes of healthy nutrition, the application of dietetic principles is a most prominent feature, and in the widest acceptance of the term it is of prime importance—the corner-stone in the treatment of diabetes. A necessary reform of diet should be had in diabetes. A strict disciplinarian subjects his patient, without reason, to a stringent diet; another, more captious, permits every conceivable latitude. A conscientious, docile patient obeys the strict rule, gets disgusted with mutton or beef, and alimentation in general, consequently is nauseated by a meat diet and abandons it. A capricious, covert one, disregards all necessity, and deceives the animal economy.

The efficiency of diet depends upon the proper elimination of all ingesta containing grape-sugar, cane-sugar, beet-root sugar and starch. The glyco-genic function of the liver and its hepatic action on carbohydrates renders food of such assimilative nature injurious, aggravates the glycosuria, and the excretion of sugar gradually increases. A certain, exact determination of ingesta and its effects in reference to carbohydrate metabolism should be outlined and noted. The normal, assimilative action of the liver should be enabled to be approximately defined, and its carbohydrate metabolism estimated, by exclud-

ng the patient from a generous diet and directing a strict diet from ten days to a fortnight. After having followed this cautious procedure, a standard is obtained whereby the effects of a stringent diet can be readily determined.

In many cases, a gradual substitution of articles of a mixed diet, in definite quantities, may be cultivated with advantage, and should sugar reappear, the diet can be duly regulated. In severe cases, carbohydrates should be permitted and results noted. In a large number of diabetics, a pure skim-milk regimen results in a total disappearance of sugar, whereas others can take milk and potatoes, in small quantities, with success, and with slight increase in amount of sugar. Individual idiosyncrasies must be watched and suspected, as some patients tolerate starch in one form better than in another, as bread rather than potato. Many diabetic foods possess an injurious amount of starch, and others are useless and absolutely indigestible, so that the *summum bonum* of diet must be insisted upon with such additions as are judicious. An exclusive animal diet may reduce, or cause the sugar to disappear, but it can not always be tolerated, for appetite will grow "stale," and the necessity of a mixed diet becomes a serious study. In this disease, the nervous system is correspondingly implicated and a rigid devotion to animal ingesta increases the tension, for there is a physical degeneration peculiar to this affection, and a mixed diet is the wisest course to pursue. When thoughtfully regulated, such a regimen is more likely to keep the disease stationary by upholding vitality than by being confined to one diet, while the stomach and system become debilitated with results of innutrition, and sooner or later succumb to the fell destroyer. Milk, when assimilable, is a boon to the invalid. When digestion is apt to be deranged, peptonized milk may be substituted, but the monotony of a milk diet becomes unbearable. Cream, as long as it agrees, may be allowed, and cod-liver oil is a nutriment, particularly where fatty articles are easily retained.

To many of the laity there are certain fixed principles by which this disease must be attacked; and one is that complete abstinence from amylaceous food or any liquid or substance convertible into sugar is necessary. Logically true these premises may be, yet a suitable diet, eliminating all saccharine and amylaceous, sugar-producing substances, strictly speaking, is impossible. There is skim-milk treatment, best used in the incipient stage, causing the sugar to disappear, and an abatement of symptoms as long as the diet is rigidly followed; in others, where disease is persistently established, it is not of any use, despite all treatment. Even in later life, when diabetes is most amenable, fat meats, eggs, soups and fish may be taken daily, to vary the diet as much as possible, taking the hearty meals in the earlier part of the day. The most important article of diet—bread—deprivation of which is illy borne by the patient, is a source of careful thought to the physician—the substitutes of bread are so various, imperfect and injurious. Gluten flour, however prepared, possesses starch. Where extreme discipline is required, the carefully prepared bran, thoroughly washed and free from starch, or bran prepared by the cold-air blast process, may be used. Pavy's almond food, Seegeus' almond food, Camplin's method of making biscuit of bran flour, Kuelitz's biscuits of inulin from Iceland moss, are substitutes for bread. When exclusive diet is not determined the ordinary bran may be used.

In the nature of beverages, milk, combined with lime water, soda water, or buttermilk, is good, or a refreshing draught is Apollinaris, Vichy or carbonated waters. There is no water that so alleviates the distressing thirst of the diabetic as Waukesha Bethesda water. Certain mineral waters have long enjoyed an overestimated reputation in diabetes, as the Vichy and the Carlsbad, due to their aperient action on the liver and bowels. Mineral waters in America are legion, and each has its exponent with proofs accordingly.

Use of alcohol in diabetes demands careful attention. If used, non-saccharine wines are prescribed—hock, Bordeaux, and German or French wines, even dry sherries and madeira—but under suitable restriction. Bordeaux claret is preferable to whiskey, and no malt liquors or strong alcoholic drinks should be allowed. Alcohol should be prohibited when it acts detrimentally to the nervous system and when albuminuria is present. With all due regard to alcohol, the animal economy is best without it. The great object, in dietetic treatment of diabetes, is to manage digestion, and check or diminish the formation of sugar.

The writer, having confined the paper to hygiene and dietetics, has purposely avoided medicinal treatment, and trusts, however inefficient the line of thought has been, the reader will pardon the meager discussion of a subject most important to the laity. He will now offer a bill of fare, trying to be liberal enough to satisfy the palate of the diabetic, and subject to the blue pencil of the physician in his special case:

PERMITTED.

Meats.—Flesh meats of every variety: beefsteak, beefsteak with fried onions, mutton or lamb chops, roast beef, corned beef, kidneys, broiled or stewed, smoked beef, calves' head, sweetbreads, lamb fries, veal, tripe, ham, bacon, tongue, sausage, pigs' feet. *Poultry and Game.*—Broiled chicken, chicken salad, game cooked in every way. *Fish, fresh and salted.*—Fish in oil, sardines, spawn, lobsters, oysters, clams, crabs and shrimps. *Eggs.*—In every way, scrambled, boiled, omelets of all kinds, wherein flour, sugar and prohibited vegetables are not used. Cream, butter, cheese, sour milk. *Soups.*—Animal broths, beef, veal, chicken, ox-tail, turtle, oyster broth, clam broth, terrapin, avoiding vegetables inadmissible, and flour and starchy substances, as rice and vermicelli. *Green Vegetables.*—Summer cabbage, turnip tops, spinach, watercress, mustard and cress, green string beans, green ends of asparagus tops, green parts of lettuce, celery tops, sorrel, mushrooms, dandelions, sauerkraut, cucumbers, olives, pickles. Use moderately cauliflower, brussel sprouts, young onions, broccoli. *Fruits.*—Gooseberries, red currants, plums, cranberries, strawberries, cherries—acidity neutralized with soda bicarbonate. *Bread.*—In known amount, made of gluten, bran, almond flour or inulin. *Custard.*—Made without sugar. *Nuts.*—Almonds, walnuts, brazils, hazels, filberts, pecans, butternuts, cocoanuts. Salt and pepper may be used. *Drinks.*—Tea, coffee, cocoa from nibs, mineral waters, soda waters, dry sherry, claret, acid wines, dry sauterne, rhine, moselle, burgundy, chablis, hock, brandy, gin. No malt liquors. Burton, when long bottled; light beer in moderation, also bordeaux. Glycerin may be used instead of sugar in tea or coffee when imperative, but it is wise to eliminate it as a substitute for sugar altogether.

PROHIBITED.

Sweet dishes—sugar in any form. *Bread.*—Wheaten bread, ordinary biscuits of all kinds; cake, desserts made with flour or sugar; puddings and pastry of all kinds; honey, rice, corn, flour, sago, tapioca, arrow-root, macaroni, vermicelli. *Farinaceous or Saccharine Vegetables.*—Potatoes, artichokes, turnips, carrots, parsnips, peas, beans, beets, spanish onions, asparagus, tomatoes, stalks and white parts of cabbage, lettuce, cauliflower, celery, broccoli, radishes. Liver of all animals; nuts, chestnuts; fruits of all kinds, fresh or preserved; jams, syrups, sugars; diabetic foods, sweet pickles. *Drinks.*—Chocolate, sweet wines, sparkling wines, port wine, liquors, sweet ales, mild and old; porter and stout, cider. Milk does not need to be absolutely banished, but if used, use sparingly.

IMPORTANCE OF PHYSIOLOGY AND DIETETICS TO THE SURGEON.

Presented to the Section on Physiology and Dietetics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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The dimensions of this subject are such that it is impossible to encompass it by the confines of a single article, in a limited time.

The relationship existing between physiology and surgery, in every phase of our profession, is so intimate that, to think or work in the latter without a thoughtful consideration of the former, can never lead to successful results. When we look at what is done by our masters in surgery, we are convinced that they only attained such perfection in their handling of surgical subjects by close application of the very principles of the science. To become merely a flash operator or a mechanic demonstrator of what the human hand, aided by a well-trained eye, is capable of in a dexterous way, may go a long way toward giving that one a wide reputation as a surgeon, but, in the long run, the surgeon is known by his results. The brilliant operator is bound to secure certain excellent successes, but, if he maintains his standing in the major work that comes to him, he can not give the cold shoulder to physiology and dietetics. They are his guiding stars. No definite line can be followed; he must cut according to his cloth, and he who lacks physiologic good sense, no matter how otherwise endowed, is no surgeon. But time will not permit me to go into the minutiae of the physiologic and bacteriologic laboratories, or into the very essence of physiology itself, and trace out its many ramifications. Such an exhaustive treatise on the subject can be found in any of the most recent text-books, in much better form and more acceptably than I am able to place it before you.

There is no reason why a surgeon should be a better physiologist than a practitioner of medicine, an obstetrician, a gynecologist, an oculist, or any other disciple of the many branches into which the profession has been divided. The very foundation-stone of the science of medicine is physiology; it must be, from its very nature, for surgery is really but a branch of medicine; and all who do work in our numerous specialties, must, by wise legislation, first attain the degree of Doctor of Medicine. Anatomy must be what some might term almost the right arm of the surgeon. But if this be true, physiology is the right

arm of anatomy. For, of what satisfaction is it to him who performs an operation, to look over his work, dress the wound, and then to see his patient die because the normal functions of the body go unattended? Is it not physiology that steps in here, takes up the work where the knife left off, and by intelligent management adds another success to the surgeon's credit? The knife in the most skilful hands the world ever knew can do only so much. It may relieve organs of the burden of diseased tissue, it may lop off unnecessary and useless members, but who ever heard of its replacing extirpated tissue of the stomach or intestinal tract, that could perform the functions of that lost? How long would our patients survive if, for instance, the entire alimentary canal were removed? Very true, indeed, sections of great length have been made from the intestinal tract, huge slices have been cut from the stomach, and the patient made an excellent recovery, but, if the physiology of the bowel be destroyed, or even too greatly interfered with, if the destruction of the glands of digestion take place, death comes inevitably.

Thus at the very elbow of the surgeon stands physiology, to warn the too venturesome operator that a halt must be called if he values his patient's welfare. By physiologic forewarnings we come to recognize malignant conditions interfering with alimentation and other functions, and to be forewarned is to be forearmed. These indicate to the surgeon, not only the position, but the character and extent of the involvement of normal tissue, thus enabling him to lend a helping hand to his greatest ally.

Great successes have been recently announced wherein the adaptability of the least remnant of the stomach, left after excision for malignant disease has been demonstrated. Schlatter (vide JOURNAL, vol. xxx, p. 265), Krönlein, Schuchardt, and Langenbuch have related to us their partial or complete gastrectomy, and the duodenum took up the task of playing stomach for the living example, and did it with success.

We do not know all of physiology as yet. Still, without paying it our most profound respect the most brilliant results of modern surgery would come to naught. Thus, with due respect to anatomy, to express myself more clearly, the surgeon must be equipped with two right arms; physiology first and anatomy second.

Were it not the fact that all bodies or engines of use must, in order to perform their necessary functions, be supplied with the proper elements to replace loss and repair damages, there would be very little for the surgeon to do beyond the mere exhibition of his skill and dexterity in handling the scalp. Then all operations would be successes, and the surgeon would be the only truly great one among us.

The principle, that attention to the physiologic details of all operative work must ever be borne in mind holds good under all circumstances. The operator who willfully violates a physiologic principle, either in the immediate operation or in the post-operative care of his cases, will pay for it as dearly as he who goes contrary to any established surgical procedure. Infection of the intestinal tract, for instance, is as easily accomplished as infection of an open wound, and usually causes more disturbance to the patient than if the operated area became one solid slough. There is not enough attention paid to the ante-operative and the post-operative care of patients, especially