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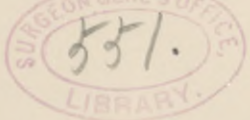
IN a previous paper we dwelt very extensively upon the theory and distribution of gout. Interesting though it may be to theorize as to its cause, the practical outcome of such study should be the recognition of the disease in its various forms and the application of a proper plan of management. The subject naturally divides itself into the diagnosis of acute attacks of gout and of the gouty diathesis, constitution, habit, or whatever else we choose to call it.

Acute gout arising for the first time in a comparatively young person can very easily be overlooked by us in this country because it is not at all common in our experience. The points to be considered are the time of the attack, the location of the pain, its character, the nature of the inflammation, and the fact that the inflammation is followed by desquamation of the cuticle. The attack usually occurs without previous foreboding in the early hours of the morning. The pain, located, as a rule, in the metatarso-phalangeal joint of the great toe, is very severe in character. The tissues of the joint will be acutely inflamed, swollen, and intensely congested. Accompanying the attack there will be a slight rise in temperature, which increases



slightly after the attack has lasted a while. Toward the afternoon of the following day the fever subsides and the pain is a good deal relieved, but the symptoms recur the next night, and the attack goes on in this way often from five to eight days, gradually wearing off. The inflammation may involve the great toe of the opposite foot or other joints. Now there occurs what will confirm our diagnosis, and that is the desquamation of the epidermis of the part inflamed. The term "suppressed gout" is applied to a series of symptoms not typical of gout, but which occur in a person subject to gout, and which from strong *negative and positive* evidence we suppose to be gouty in origin. These attacks of suppressed gout are worthy our close study because they must occur sometimes in our practice, and can so easily be overlooked. They may immediately follow an attack of acute gout, or replace an attack. The patient may have severe vomiting, pain, diarrhœa, and profound depression, or there may be cardiac failure, manifested by dyspnœa, irregular action of the heart, and pain referred to the heart or to the left shoulder. We should remember that these attacks of so-called suppressed gout may occur independently or replace an attack of acute articular gout. Here it is that a great difficulty of diagnosis occurs, and the best that we can do is to keep this in mind as the possible cause when we see obscure, severe, and often fatal cardiac attacks accompanied by extreme dyspnœa, with failure of the heart's action in force and rhythm. Our training in this country leads us to attribute all these cases to uræmia, and we go

so far as to classify cases in which there is an absence of albumin in the urine and many other of the typical signs of kidney-disease. It would seem that at least a few of these cases were cases of suppressed gout.

Nor is the diagnosis of the gouty diathesis easy or one upon which all observers will agree in every individual case. Just what the condition is from is also a matter of discussion, but that there is such a condition is not a matter of dispute.

Dr. William Draper said, in a discussion on gout occasioned by a previous paper, that the "gouty habit is a constitutional vice, a vice of nutrition." We say that a man has gout because he has too much uric acid in his blood; but the close relation between diabetes and gout suggests the idea that the former is a condition of imperfect combustion of carbohydrates, and the latter of proteids. This seems to give a good working hypothesis for the understanding of these diseases. In the same discussion Dr. F. P. Kinnicutt said: "I believe that gout exists in America to-day to a very large extent, and I should say that probably it exists more frequently in the irregular than in the typical form. We do not see so much in the hospital as in private practice. What I see in private practice perhaps more frequently than any other manifestation of it is both the typical and irregular forms in women, particularly as they approach the climacteric. I think that about the approach of this period you will find in very many women all the manifestations of gouty trouble."

The diagnosis of chronic gout following a series

of acute attacks and gradually settling down to a permanent condition is easy enough, but this is not the beginning that we usually find. Like Bright's disease, a very large number of cases are gradual in onset, and it is hard to say just where they began. This is especially true of the cases in which the articular symptoms are not very marked. In articular gout the picture of a chronic case is very typical. We have the deposits of concretions about the joints with the skin over the tophi becoming stretched and often discharging so-called chalkstones. The subject of such a condition is usually anæmic, poorly nourished, and in addition has those signs which follow in endarteritis, namely, high-tension pulse, an increased quantity of urine of low gravity and containing a trace of albumin. In studying hospital reports some years ago I was struck by the extreme rarity of diagnosis of gout and the frequency of the diagnosis of chronic diffuse nephritis. It would seem that the microscope had concentrated our gaze too much upon kidney-pathology. It is a teaching of some, or at least the impression given students, that many of these cases are primarily cases of nephritis, and that scleriasis of the vessels with the accompanying condition is secondary. Certainly a good many of these cases are cases of gout, or at least of the gouty diathesis, and should be treated, especially at the beginning, as cases of lithæmia. The importance of early diagnosis is that the avoidance of sclerotic conditions depending upon gout depends upon a proper management of the underlying vice of nutrition.

The discussion of the diagnosis of gout would not be complete without a consideration of some of the more irregular manifestations. These may be nervous, gastric, cutaneous, pulmonary, or may affect the organs of special sense. Their irregular manifestations are as often due to hereditary tendencies as to acquired gout, hence we see them often in very young people. The gouty habit or lithæmic state may even appear in infants. Infantile eczema may sometimes be due to hereditary gout when it is unusually obstinate to treatment. In older people cutaneous affections are very closely allied to this constitutional vice. So firmly is this belief held in these days, that no one would think of treating chronic psoriasis without attention to diet; but skin-affections are not always gouty, and the effect of diet and the modification of other conditions of the system upon the course of the disease should be studied before arriving at the conclusions that any particular skin-disease is due to gout.

While writing this there comes through the mail a pamphlet on psoriasis, in which Dr. L. Duncan Bulkley, in speaking of the relation between gout and these very troublesome skin-affections, says:

"It is often very difficult to determine with certainty the underlying causes which operate to produce the eruption, for it is observed in those presenting widely diverse conditions of life and under the greatest variety of circumstances. It develops with about equal frequency among the poor and the rich. Not only will it appear after exhaustive diseases, after pregnancy, and in those debilitated by various excesses, but it comes also in subjects who are apparently in the best of health and enjoying the surroundings of a healthy and apparently proper life. No single cause or element, or any

combination of causes or elements, can be traced in every case.

"The evidence increases, however, that it is more or less closely allied to the blood-states which are known as the gouty and rheumatic."

The gout-factor in the production of pulmonary affections and affections of the organs of circulation is also pretty clear, for gout is certainly often a factor in the production of chronic bronchitis and in the sclerosis of vessels and valves, which is so familiar as the cause of those diseases of the heart and bloodvessels which are of gradual onset. That chronic bronchitis is often due to gout might be inferred from the fact that it occurs so often in gouty people, and that it is sometimes ameliorated by a course of treatment for the underlying constitutional state when more direct methods have had but little effect. Gastro-intestinal disorders are often of a gouty origin. This is especially true of attacks of biliousness in which the tongue is dirty, the bowels constipated; headache and all the other usual symptoms are not only present, but rather persistent. When these bilious attacks occur with unwonted frequency and are not modified by ordinary treatment, it is well to investigate for other evidences as to the gouty diathesis. To some of the nervous manifestations we have already alluded in quoting some remarks of Dr. Kinnicutt.

The nervous manifestations of gout may be divided into two classes, the immediate and the remote. The immediate are such as are due to the effect of sodium urate circulating in the blood and coming in contact with nervous elements or being deposited in them; the secondary effects are due to

the gouty ravages upon tissues in the neighborhood of nerves or upon the bloodvessels by which the large nervous centres are nourished. Perhaps the commonest manifestation of gouty state in its recurrent form is a migraine. The investigations of Haig caused him to come to certain conclusions after elaborate clinical and chemical investigations. After trying a great variety of alternations of diet, he gave up all butcher's meat and replaced it by milk and fish. On this diet the headaches disappeared by the intervals becoming longer, until finally he went eighteen months without an attack of notable severity. In searching for the cause of this phenomena he discovered the relation between his headache and the excretion of uric acid, and means by which he could control the excretion of uric acid from day to day, or from hour to hour, and that in altering the uric acid he could alter the symptoms relating to it. He noticed that when he produced the headache, mental depression, etc., there was an increased excretion, and when he stopped the plus excretion with an acid he removed all these symptoms. But he noticed that in curing the headache by giving the acid he produced a certain amount of shooting-pain in the joints, the meaning of which probably was that the uric acid which failed to appear in the urine must have been held back in the joints and produced pains. The headache depended upon the absolute quantity of uric acid circulating in the blood.

Haig's interpretation of the phenomenon is as follows: He supposes that gouty symptoms are due to an accumulation in the body of uric acid de-

pending upon a diminished excretion. He points out that if excretion falls behind secretion by a minute quantity, in the course of time there will be an accumulation. He supposes that so long as this accumulation is quietly stored up in the tissues there are no constitutional symptoms, but when for any reason this is liberated and circulates in the blood the symptoms appear, and naturally enough an excess appears in the urine. This theory certainly explains very well the increased excretion that he observed at the time when symptoms were present or imminent. This also explains the periodicity of attacks. He believes that in persons in whom the balance of secretion and excretion is but very slightly deranged there is a very gradual accumulation, and that such persons will suffer from gout in some of its more obscure forms after years have elapsed.

In practice, however, we would not wish it to be thought that gout is by any means the cause of all or even the majority of cases of migraine. This most interesting affection, in all probability, has a number of very different origins. Neuralgia affecting the sciatic nerves, the intercostal nerves, the fifth nerves, or, more rarely, other nerves, are often gouty in origin. The gouty subjects are also liable to neuralgic pains of a shooting, drawing character, lasting a moment and then disappearing in almost any part of the body. They also suffer from visceral pains of a neuralgic character. A true neuritis most commonly affecting the sciatic nerve is common in gouty subjects, especially if alcoholic. In speaking of the more or less indefinite nervous symptoms of

gout, Gowers says "that cases which may be regarded as functional are those in which symptoms, commonly subjective in character, result from some morbid blood-state."

Occasionally there is definite failure of power, lasting for a few days or weeks, without objective symptoms, and passing. But the most common symptoms from this cause are sensory and subjective, feelings of tingling and formication in the legs, dull aching, and sometimes actual pain; this is usually transient, but occasionally continues for some days or weeks, varies in position, but in gouty cases often felt in the heels. Symptoms due to morbid blood-states, like other symptoms of the same class, are especially common in persons who inherit a tendency to gout, but have not suffered from attacks of definite arthritis. Indirectly due to gout are the effects of the interruptions of circulation which go with gouty endarteritis. The thickening of the cerebral arteries may give rise to attacks of dizziness, temporary loss of consciousness, and even impaired mental conditions. When a condition of endarteritis sufficient to cause these symptoms is present, there is, of course, great danger of thrombosis and an accompanying destruction of brain-matter, with symptoms corresponding to its location.

Of the effects on the special senses, due to gout, we will speak briefly. It may attack almost any of the tissues of the eye. As a cause of conjunctival irritation it seems to be quite frequent. Iritis, though perhaps more commonly rheumatic, may still be due to gout. Even glaucoma has been attributed to it, but the evidence is not very strong.

Gout as a cause of deafness is sometimes due to urates being deposited between the layers of the membrana tympani. Gouty subjects are especially liable to inflammations of the throat and larynx, and to catarrhal conditions generally, but there is no direct evidence that it is more than the increased liability which would come with the depressed vitality of a constitutional disorder.

The manifestations of gout have not by any means been covered by this enumeration, but we must pass now to a brief consideration of the management. The word management, as a name given to our efforts to bring about a cure of gout, is better than the word treatment, because treatment carries with it a trace of an idea of a specific plan of medication. It is a trite remark that the management of gout is chiefly a question of hygiene, and that though the value of drugs cannot be disputed when applied to proper cases at the proper time, still no one drug is always available. To a condition like this we are apt to apply the statement that its management is chiefly a question of hygiene. A good many persons, both laymen and physicians, fall into the error of supposing that a hygienic treatment is easy of accomplishment. This is a deep error. The cure of a disease by the modification of patient's surroundings and the habits of action of his organs may well tax the patience, knowledge, and ingenuity of his doctor. Hygienic treatment includes not only the modification of air, mode of life, food and drink, but the skilful use of drugs, which are directed to the improvement of the physical action of the organs. It does not seem quite philosophical to

include tonics, blood-foods, and laxatives under the head of a drug-treatment of the disease.

The first question that arises is that of food. We must modify the popular notion in regard to different classes of food. We are not in a position to draw a line between carbohydrates and proteids. Clinical evidence is brought forward by Dr. William H. Draper and others that some gouty patients do well on animal diet, controverting the theoretical conclusion that meat is to be avoided. The safest hypothesis upon which we can work is that in gout there is an impairment of the chemical powers of the body, which in different patients affects somewhat different processes. Some hold that it is a question of deficient oxygenation, so, of course, we think immediately of remedying the defect by supplying more oxygen. This we attempt, but we must also take pains that the amount of these foods, concerning which there is a failure of chemical action on the part of the body, shall be in as small a quantity as possible.

In discussing the previous paper already alluded to at the New York Academy of Medicine, Dr. William H. Draper said:

"Shall he confine himself to starchy foods and take as little proteid food as possible, or shall he take proteid food with the proper proportion of starchy food? My own experience leads me to think that a gouty person does best upon a diet in which there is a good proportion of proteid food, but that he should have a fair amount of starchy food as well. Gouty persons digest proteids freely, but the carbohydrates are exceedingly difficult of digestion.

"Now, in regard to sugars, sweets of all kinds, in gouty persons, what has been your experience? There

is an inability in gouty persons to digest a large amount of sweets; often they have to forswear sweets. They may indulge in spirituous drinks and suffer no inconvenience, but if they take fermented wines they suffer, and how? They have eructations of wind and are made very uncomfortable by it. Or they may suffer some of the nervous symptoms of gout as a consequence of a glass of wine or beer. Many gouty persons learn to shun the fermented preparations of alcohol. The gouty person may take distilled liquor, while he cannot take it as a fermented preparation. This is, I think, a very striking fact in the history of gouty people and one that complicates very much a uric-acid theory of the disease.

"Now, in regard to starches. It is a very curious feature—but it is one which experience confirms—that there are persons who cannot take much starch, who are made uncomfortable thereby by nervous troubles as well as by the physical distresses to which they render themselves liable. This is especially true of potatoes. The simple injunction, 'Don't use potatoes,' is often of great value to the sufferer from gout. There is something in the vice of nutrition from which gouty people suffer, which is above and beyond the question of ingestion of food. What this is we do not now understand; but I believe that some day we shall understand why it is that gouty people, who ought to eat starchy food, cannot eat f it, and can eat proteid food."

After all, the diet which Dr. Draper has found by his long experience to be best can be brought within a line of theory by considering that by not overtaxing the digestion with carbohydrates its forces are more at liberty to take care of the proteids. We will not attempt at this time to give a dietary, because in truth that must to a large extent be worked out for the individual case. We must study food from the theoretic side, but in the presence of the disease each patient must be studied by himself.

The drug-treatment of gout is not a specific treatment. After we have controlled as far as possible

the supply of foods to be taken care of, we attempt to modify favorably the chemistry of the body, and here the probable philosophy of mineral-waters becomes plain. Nearly all chemical operations are carried on with water as the vehicle for the chemical agents and reagents. Every chemist knows that in seeking a chemical result the reaction of the fluids—that is, its degree of acidity or alkalinity—must be right. Now by supplying to the system fluids in abundant quantities, especially if these fluids tend to modify favorably the reaction of the system, we are certainly benefiting the chemistry of the body.

Lithia seems to have vindicated its right to a place among useful drugs in gout. Its action is probably not, as was formerly supposed, principally by increasing the solubility of sodium urate, but it seems to have also a catalytic action; that is, by its presence it favors the action and reaction of the fluids of the body to a degree out of proportion to its amount. In giving lithium, and this remark may be applied also to other drugs, it should be given in definite amount. There is no magic in native mineral-waters. Artificial waters are just as good, and have the advantage of a definite formula and safety from possible infection in rural neighborhoods. We would not think it necessary to unfold this doctrine to a patient to whom we thought the surroundings, the mode of life, and mental effect of a watering-place were necessary, but scientific truth is not modified by popular beliefs. And the verdict of the laboratory upon the absence of any magic combination in native waters is positive.

Colchicum has been shown by clinical experience

to be of great value in controlling the symptoms of gout. It relieves the pain of acute attacks and modifies the course of chronic cases. It is an English tradition, still held, that the suppression of acute gout by colchicum is liable to the production of dangerous internal diseases. Between the paroxysm colchicum can be given from day to day with apparent benefit. Piperazine is a drug that is attracting so much attention that it cannot be passed without mention, but conclusions are not yet positive. Besides these drugs iodide of potassium in chronic gout is the only one well established. The drug-treatment of gout is so much a question of adapting the well-known therapeutic agents to particular conditions that details are best left to individual judgment. Thus we see that gout is a disease which may manifest itself in a great many different ways, and the recognition and management of which must always be of great interest to physicians in every department of the profession.