

## Lectures.

### CLINICAL LECTURES ON THE DISTINCTIONS BETWEEN THE INFLAMMATORY DISEASES OF JOINTS.

DELIVERED AT BELLEVUE HOSPITAL.

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#### I.

GENTLEMEN,—Inflammatory diseases of joints are necessarily much alike in their symptoms, owing to the nature of the parts affected. The functions of joints are so simple and mechanical that they do not admit of a great variety of signs in their derangements, no matter how these may differ in kind or origin. A swollen and painful knee, for example, may look to you and feel to the patient very much the same, whether it was due to a fall on the ice, or to an attack of gout, or to rheumatism, or to pyæmia, or to scarlet fever, or to gonorrhœa. These are each very different morbid conditions, so distinct, indeed, that there can be no crossing between them. Thus there is no such hybrid as a rheumatic gout any more than a fall on the ice can cause an attack of clap, but so similar are the mere symptomatic characters of all arthritic inflammations that they are readily confounded, and are likely to occasion more errors in diagnosis than any other common affections of the body. The most serious inconvenience from this fact, however, is that it leads to worse confusion in treatment, because it is only after correct diagnosis that we can choose the most proper procedure to adopt in each case, and hence it has appeared to me as a profitable subject for us to learn how we can discriminate between the various inflammatory affections to which joints are liable.

We will begin, therefore, with the contrasts between those of them which you will oftenest meet in practice, namely, rheumatism and gout. When called to a case with the first attack of either of these maladies, the differential diagnosis is often easily made, but not so after the patient has had so many returns of his trouble that most of the joints of both upper and lower extremities have suffered, perhaps repeatedly or for prolonged periods. Your ultimate decision, however, need never be very uncertain, to show which we will proceed at once to point out in these patients which we have before us now those features which will serve to distinguish the one from the other, no matter how much they may come in time to resemble each other.

The first is a young man, twenty-six years of age, by occupation a hotel porter, who gives the following history: In his work he was frequently exposed to cold draughts, and often had to step out in his shirt sleeves on cold winter days while in a state of perspiration. He enjoyed excellent health, however, until nine weeks ago, when he says that he caught cold while at work, and without any preliminary period of malaise he began to suffer in his left foot, which became very painful and swollen about the instep. In three or four days he was unable to wear a shoe on it, and shortly afterwards he was attacked with pains all over his body, affecting successively the knees, shoulders, elbows, and wrists, accompanied with high fever and much perspiration, when he was removed to this hospital, where he has been slowly improving for six weeks with the usual course of varying returns of in-

flammations in different joints. Our second patient is also a young man with a similar history, this also being his first attack, but definitely dating from a prolonged wetting while at work. The third patient, however, presents wholly different features. He is not only an elderly man, but a veteran in "rheumatism," as he says. His first experience of it was nineteen years ago. It began in the left foot and it remained there alone during that attack. His second attack was about a year afterwards, and in the same foot, but this time especially in the great toe. His next attack was in the ankle of the same foot, then, about two years afterwards, in the right foot; shortly afterwards in the right knee, then the left knee, and then, some years afterwards, his fingers, wrists, and elbows were successively affected, until now his relapses are about equally divided between the two extremities.

Here, therefore, we have polyarthritic inflammations in all three of these patients, and yet, from the facts already elicited, without entering upon many other contrasts between them, we can hardly be mistaken in diagnosing the first two as rheumatism and the third as gout, for these reasons:—

The ages of the first two almost as surely exclude gout as they afford a presumption of rheumatism. A first attack of articular rheumatism after forty is rare, a first attack after thirty is also uncommon. Acute articular rheumatism is a disease of early youth and early adult life. It may occur in children, but its first invasion is oftenest between fifteen and twenty-one years of age. After it has once made its ill-omened visit, however, it is almost sure to recur again and again up to middle life or even a little longer, but the liability to it progressively diminishes with each year after thirty, even with those who have suffered severely from it in early life. Chronic muscular rheumatism, on the other hand, is a very different disease. In contrast to articular rheumatism it is the torment of post-middle and advanced life, and often occurs in persons who never had acute articular rheumatism at all, as we will show further on.

Gout, on the contrary, is almost exclusively a disease of adult or advancing age. The liability to it increases with every year after thirty up to fifty. With this man it commenced when he was about forty years old, and began in a way so characteristic that it should be noted as a distinguishing mark from rheumatism. It began in the left foot. But so also did the rheumatism in the first young man. There was this important difference, however, the rheumatic foot did not remain the only suffering part in the first attack, instead of that in a few days it spread to the whole body. Gout almost never does this. In the great majority of cases its first attack is local and solitary. Not only so, but it continues for a long time, for years in most cases, to return only to the lower extremities. When once, however, it gets above the knees it becomes quite indiscriminate in its selections, as our present patient illustrates.

We now proceed to another contrast to be found in the pulse. Very often it is practicable to be tolerably sure which of the two we have to deal with from a few qualities of the pulse alone. To demonstrate this fact, however, a few words about pulse examination are useful in explanation.

The commonest elements in any given pulse are six, namely, three cardiac and three vascular. Those elements in the pulse which depend exclusively upon the

action and state of the heart, are first, its frequency, second, its strength, and third, its rythm, while those which depend upon the state of the arteries are first, its size, that is, whether it be large or small, second, its length, that is, whether it pass rapidly or slowly under the finger, and third, its tension, that is, whether it be incompressible or hard, or whether it be compressible or soft. Now it is in these latter two respects that a striking difference is to be detected between rheumatism and gout. The pulse of rheumatism is at all times remarkably short and compressible, much like the pulse of phthisis, and of the fevers and inflammations generally, except scarlet fever, peritonitis, and the earliest stage of pleurisy. The pulse of gout, on the other hand, is as characteristically long and incompressible; resembling closely in these respects the pulse of Bright's disease and of scarlet fever.

What is the cause of this difference in the pulse between rheumatism and gout? An incompressible pulse always means that the arteries are *overfull*, owing to obstruction in the arterioles and in the capillaries. This may be due to nervous irritation leading to narrowing spasm of these vessels, as in peritonitis and the first stage of pleurisy from shock, or to a permanent lessening of their calibre from chronic endarteritis, as in Bright's disease, or to both causes combined. Let obstruction to the exit of the blood from the arteries, therefore, obtain from either of these conditions, and the vessel becomes more and more like a hose filled with water with the stop cock shut off. You have to use greater pressure to obliterate the radial under your finger, and the pulse, therefore, feels hard, or, as it is technically termed, incompressible. Moreover, the vibration of the onward moving blood in such a vessel necessarily becomes more prolonged in proportion to the overfilling of the vessel, and hence gives you the other character, namely, the long pulse. On the contrary let the arterioles and the capillaries be widely relaxed or open, and the arteries must necessarily be easily and quickly emptied, and hence, also, the pulse be easily compressed on the one hand, while the pulse wave on the other will be correspondingly short, because it flows so quickly under your finger.

The indications, therefore, which these contrasts show as to the different nature of these two diseases are plain. In gout we have a well-known, insoluble poison, uric acid, circulating in the blood, which acts as an irritant to the walls of the arterioles and capillaries, and thus leads to their contraction. In rheumatism, on the other hand, if we have any blood-poison at all, it is evidently a perfectly soluble one, like the poison from decomposed pus in hectic from any cause, as phthisis, from abscess, etc., and which always acts as an arterial paralyser instead of as an irritant, and hence dilates the arterioles instead of contracting them, thus producing the characteristic compressible short pulse. What an important bearing this fact has, not only as indicating the essentially different nature of these two diseases, but also what different consequences to the bodily textures result from this difference, we will soon discuss. You need only examine the radials of these patients before you to appreciate readily this distinction. In the case of these young men you cannot feel their arteries either at or above their wrists, you can only tell that they have these blood-vessels by feeling the throb of the pulse. In the gouty patient, on the other hand, you can feel his radial half way up his arm, as if it were a hard cord lying among the tendons, and it rolls under your finger

almost like a wire. In the rheumatics, also, you can readily obliterate the pulse by slight pressure with one finger; in the gouty patient, on the other hand, you may place three of your fingers on the vessel and find that the pulse remains distinct under all three fingers, even though you use much more pressure with them than you did with one finger in the others. Now it is true that the arteries naturally harden with age, and yet it is not usual to find them so rigid and incompressible as in this case unless caused by toxæmic endarteritis, either from deficient action of the kidneys or from the prolonged irritation of the gouty poison.

We now come to the anatomical differences characteristic of the operation of these two affections. Rheumatism is remarkable for the insignificant traces which it leaves behind it in the textures which it attacks. When you see a knee, for instance, acutely inflamed by rheumatism, and note the great redness, heat, and swelling, and find also that it is exquisitely tender, you very naturally conclude that such a high inflammation must be very injurious to the joints. Indeed, if symptoms of the same degree of severity were caused in a joint by anything else than rheumatism, by a railway accident, for example, you would have much cause to fear that the joint would be irretrievably ruined. But should your rheumatic patient die in only forty-eight hours thereafter, it is very likely that you would find strangely few indications that his knee had been seriously inflamed at all. Great cry and little wool, as the man remarked when he sheared the sow, no pus, no ulceration, and perhaps not even effusion of any kind. Moreover, without death, you will often find that a seemingly violent inflammation of some joint, present one day, has apparently been all transferred to a distant joint the next day, and then to another the next.

It is unfortunately true, however, that some very serious anatomical changes accompany certain rheumatic inflammations, namely, when the heart or its appendages are involved, but there is a special reason for this, quite independent of the natural action of the rheumatic process itself. Thus if you should seize a badly inflamed rheumatic knee and move it briskly one hundred times a minute it is hard to say what would become of the joint. The patient, at least, takes good care not to move it at all; but he cannot keep his heart quiet, no matter how badly it is inflamed, and it is probably due to this fact alone that rheumatic carditis is so apt to be followed by textural changes. This inference is also borne out by the similar, though much rarer, changes caused in rheumatic pleurisy, for here we have also an unresting texture, though proportionately less liable than the heart to structural lesions of rheumatic origin as its movements are the fewer.

In complete contrast to the insignificant and transient damage done by rheumatism, gout never fails to leave its mark wherever it has made a visit. A man will show a white spot in the articular cartilage of the great toe made by a solitary attack of the disease in him twenty years before, and each time it returns it adds to its previous mementoes. Sooner or later it distorts one articulation after another with its deposits and its thickenings, for which there is no cure. Not so with true rheumatism. The prognosis for a rheumatic joint is good no matter how long the disease has lasted or how old the patient may be, as we will show when we come to the subject of treatment.

(To be continued.)