Original Communications.

ON THE PATHOLOGY OF SCIATICA.

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I THINK that I shall be expressing the opinion of many thoughtful men, when I say that the pathology of sciatica is in an unsatisfactory state at the present time. If we turn to Dr. Mayne's *Dictionary* for the meaning of the word, we find it given thus :—"Term for a *rheumatic* affection of the hip joint"; "applied likewise to a *neuralgic* affection of the sacro-sciatic nerve." If we consult Dr. Copland's *Dictionary*, we find no separate article on sciatica, but the complaint is treated of under the head of Sciatic Neuralgia; and the author remarks: "This form of neuralgia was formerly confounded with all painful affections of the hip and adjoining parts .... and the pain was referred to the joint, to the muscles, to the bones, to the tendons, to the nerves, etc., according to the views of the writers." Under the head of *nerves*, he says, "Sciatica is a proof of this want of precise knowledge; for information is still required as to the state of the nerve in this affection." Dr. Watson says, "Sciatica, or pain radiating from the sciatic notch, and following the course of the sciatic nerve, is sometimes an inflammatory complaint, and yields to the remedies of inflammation, bleeding and blistering; sometimes it is plainly a part of rheumatism, and then may be relieved by calomel and opium, or by colchicum; sometimes, again, it results from irritation within the pelvis ..... sometimes it is a purely nervous and neuralgic pain, and then the treatment of facial neuralgia will, *mutatis mutandis*, be applicable to it." (3rd edit., pp. 717-8.) If we put all this into plain English, it means that "sciatica" is a name given to pain about the hip, respecting which our knowledge is not precise.

Can anything like precision be attained? Many things combine to induce us, at the present period, to answer this question in the negative; but we see no reason why a greater amount of certainty shall not be attainable hereafter.

Our current difficulties arise from the one word being employed to express many very different phenomena, and from the insufficiency with which many cases are reported. To have definite notions of the disease and its causes, we must classify the symptoms so far as we can; examine into their concomitants, the condition of individual sufferers, the alliances (so to speak) of the disease, and the means by which improvement seems to have been secured. These will afford us data which may serve as a starting point for subsequent observations. Perhaps I ought to crave indulgence, because I profess to call attention to the "scent," rather than to be an infallible guide to the object sought. I do not so, however; for the keen-nosed hound does not incur censure, though his quest be unsuccessful; the knowledge that there is something to be hunted up, and the pleasure of seeking is, often proves the sportsman's only pleasure.

I propose to inquire: 1. What is the actual locality of the disease; 2. What classes of persons are most subject to it; 3. Under what circumstances it comes on; 4. What are the symptoms which attend it; 5. What are the most successful empirical modes of treatment. We may then deduce its probable nature, and the philosophic line of treatment indicated.

1. The actual locality of the disease varies in different individuals. In none of the cases I have seen, about fifteen, has it been referred to the exact locality of the sciatic nerve or any of its branches; but the patients, while describing it, have invariably mapped out the origin, course, or insertion, of one or more of the gluteal muscles, and with these the "biceps cruris" and the fascia lata are frequently included. The semitendinosus is rarely complained of; but it is by no means uncommon to find the outer origin of the gastrocnemius implicated when the biceps is affected severely. In these latter cases the tendinous structures seem to be the chief seat of the suffering. This is conspicuously the case in a patient under my care at the Liverpool Royal Infirmary, who refers his pain almost entirely to the strongest part of the fascia lata, and acknowledges none in the course of the nerve. This at once takes sciatica out of the list of pure neuralgias, and approximates it to that other class, to which the name myalgia has been given.

2. If we examine those most subject to the disease, we find them to be the old, the gouty, the dyspeptic, those of consumptive family, those who have been much exposed to vicissitudes of temperature, or have been reduced in vigour from any depressing agency. In these individuals we almost always find the muscles flabby, irritable, diminished much in contractile power, occasionally withered or semipalsied, and frequently the seats of pure myalgia.

3. The circumstances inducing an attack of sciatica seem very significant of its seat. In the cases under my notice, it has apparently been brought on by frequent stooping and rising again. Thus, in the case of a lady, it arose from her dusting and polishing the whole of her drawing-room furniture; the pain in this instance came on suddenly, while she was walking out, and was so intense that she almost unable to move the limb for four hours. After one buttock got well, the other was attacked. In the case of an elderly gentleman, the attack was determined by his standing for many hours in the cold, superintending workmen, himself staking out certain boundaries, and frequently using the pick-axe. He was at the time recovering from a severe illness, during which he had had an acute attack of myalgia in Poupart's ligament. In former years he had experienced four severe fits of gout. Of four cases at present under my care, one is a fireman, another a dock-gateman, another an ostler, and another a foundryman and moulder; and in all the attack can be referred to the excessive use of the gluteal and crural muscles. So far as I have seen, patients appear to get well by remaining quiet; but they tell you that they are not cured, for the pain returns *as soon as they begin to walk*. This at once seems to imply that there is some connection between the pain and *motion*, and leads to the inference either that its seat is in the organs of locomotion, or that when these are exercised they injure neighbouring parts. As the nerve is the part most likely to be affected, we ask ourselves whether it is possible that it can be bruised by the contractions of the glutæus; and the answer is in the negative; for if it were, we should have in the foot and leg a sense of pain and tingling, such as we have in the arm and hand when the ulnar nerve is struck. When a man strikes his "funny bone", he tries to relieve the pain produced by squeezing the inner part of the hand; when a man has sciatica, he places his hand on the hip to relieve the pain, and leaves the foot alone.

Yet we do have sometimes the symptom of "pins and needles" in the foot complained of in sciatica; and this leads us to the belief that the nerve must then be implicated. I was consulted respecting a case of this kind a few days ago, and the history I elicited was sufficiently interesting to deserve detail. The gentleman was a large made, healthy-looking, burly man, a captain in the army, and between forty and fifty years of age; but he had seen much hard service in the West Indies, the Bermudas, Gibraltar, and Greece, and had suffered severely from the hardships attending the Crimean war, during which the sciatica first came on, attacking the left but-

tock, and in the end implicating the whole pelvis, anteriorly and posteriorly. This affection was attended by a swelling of the leg. apparently analogous to phlegmasia dolens. He recovered from this, but did not regain his usual condition, which, he said, had never been a strong one, notwithstanding his good looks. Latterly, he had been subject to faintness, general *malaise*, indigestion, languid circulation, etc. His duties generally kept him to his desk; but he had been recently obliged to do more active work, which involved much walking, standing, and stooping to examine stores. This brought on lumbago and sciatica; the first had subsided, the latter still remained, although his occupation was once more sedentary. This seemed to involve the idea that there must be some cause keeping up the irritability of the gluteal muscles; and, as the foot was affected, I imagined that the nerve was obnoxious to the same thing. On closely questioning the patient, I elicited the fact that, when writing, he always sat on the left buttock exclusively, and thus very effectually squeezed both its muscles and the nerve against the bone; and, as the former were very soft and compressible, it was clear that they could not protect the nerve from external pressure so fully as if they were firm. A careful sifting of the symptoms now proved that the sensations in the foot were general after sitting; those in the sciatic region came on after motion. I have, in my own person, often felt what I feared might be the preliminary signs of sciatica; but I have latterly been able to connect them invariably with a prolonged use of the pen, which involves much stooping forward and pressure upon the flexors of the thigh, etc. It is generally noted that sciatica is induced by damp and cold weather. In this and some other respects, it seems to be influenced by the same causes which bring on the phenomena described as muscular rheumatism.

4. The symptoms accompanying sciatica are not so fully described by writers as could be wished; but we infer that there are generally signs which point to a nervous temperament or to a gouty or rheumatic diathesis. Dr. Copland says, "In some cases the accessions of suffering are followed by *convulsive or trembling movements of the limb, by slight numbness or partial palsy, and an attack generally leaves the limb emaciated, flabby, and weakened.* When the attack has been very severe, or of long continuance, lameness, or dragging of the leg, great emaciation of the limb, a weakened, or partially paralysed, state of the muscles and disorder of the digestive organs are experienced for some time afterwards." (I have italicised a sentence, as I shall have to make special reference to it shortly.) In a subsequent paragraph, a case is noted where the pulse was quick and irritable; in it the pain is referred to the middle of the rectus femoris, and spoken of as crural, and not sciatic neuralgia. In all the cases which have come under my own notice there have been well marked symptoms of constitutional debility.

Amongst those symptoms which are not generally present, we must include sensations in the leg and foot, similar to those felt in the hand when the ulnar nerve is struck. The absence of these signs seems to be of great importance when we take into consideration the phenomena attending the application of a direct irritant, etc., to a nerve. If we employ simple pressure to the sciatic or popliteal nerve, as by prolonged sitting in a certain posture, we have—1, powerlessness to move the muscles of the foot, and cutaneous insensibility to external impressions; 2, after the pressure is removed, we have a strange pricking sensation in the foot. The portion of the nerve we have squeezed is not complained of at all. Again, if a nerve be divided, the act of division produces a sensation of pain referred to the parts to which it is distributed, and not to the spot which is cut; and if, after amputation, any inflammatory or other affection implicates the divided ends of the nerves, pain is not referred to them, but to the limb which was removed. Still farther, if we lay bare the sciatic nerve of a frog and irritate it, we have certain contractile phenomena in the muscles to which it is distributed; and if the frog could speak, we should expect to hear a complaint of pain in the foot and leg.

Now, if sciatica be an inflammatory affection of the neurilemma, this must be thickened, and, as a necessary result, the nerve must be squeezed; and if the nerve be squeezed, partial paralysis and anæsthesia of the foot must ensue, and the sensation of pins and needles will be the proof of the pressure being diminished. Or, if sciatica be a real nervous irritation, we should still have as a symptom muscular contraction or modified sensation in the parts to which the nerve goes, or from which it comes, and not solely in the spot irritated. There is then a *primâ facie* difficulty in considering sciatica to be purely a nervous affection dependent on some physical change in the nerve.

5. The empirical means found most successful in the treatment of sciatica are—*a*. Such tonics as quina and steel; *b*. Such warm medicines as spices, guiacum, or turpentine; *c*. Such local stimulants as blisters and rubefacients; *d*. Anodynes used locally; *e*. Firm strapping to preclude motion of the limb; *f*. Colchicum. On the other hand, low diet, purging, and mercury, have been proved to be prejudicial.

Two hypotheses have been put forward to explain the phenomena of sciatica—one, that the affection is rheumatic; the other, that it is neuralgic. I will not attempt to discuss them; for both words are so vague in their signification that they bring us no definite ideas. I propose no new theory, but would call attention to a series of facts which possess much significance.

a. The locality of the pain is referred by the patient to muscular and fibrous parts.

b. In describing it, the same movements are made as when myalgic pains are complained of elsewhere.

c. The nature of the pain resembles that of certain forms of myalgia.

d. Myalgic pains elsewhere are common when sciatica is present.

All these point to the muscles and tendons or fascias as being very generally, if not invariably, the seat of the pain.

We have next to ask ourselves whether the muscles are ever the seats of such severe suffering as attends sciatica. We first note the fact that in sciatica the muscles are more or less weakened, withered, or palsied; and we are led to inquire into the symptoms which attend wasting palsy. I have already recorded one case of muscular paralysis which was attended with acute and persistent pain (*Myalgia*, p. 68). This is by no means a rare occurrence; for Dr. Roberts, in his interesting work on this subject, remarks, "Pain is by far the commonest of the symptoms . . . . it is (sometimes) sharp and lancinating, shooting down in the course of the nerves, having all the character of neuralgia . . . . . resembling, and often called rheumatic pain. . . . . *In several instances it marked the outset of the disease, and passed away as the atrophy set in in good earnest.*" (P. 119.) Compare the two sentences from Dr. Roberts and Dr. Copland which are in italics, and their connexion seems to be well marked. Again, we read in the same authority "that unusual sensitiveness to low temperature is a prominent symptom of wasting muscles; and two cases are mentioned, one where there was a sensible falling off of muscular power in the cold; the other where power was partially restored by warmth. In this we see some glimmering of the reason why damp cold so frequently induces sciatica—it makes weak muscles weaker.* In the second case which Dr. R. details, there

* It is a fact of great interest, and one which materially complicates the difficulty in assigning the pain in sciatica to any one part, that severe cold which produces facial neuralgia in some will pro-

was, in addition to other symptoms, a partial palsy of the right leg—great sensitiveness to cold; and Dr. R. remarks "the only ailment he complains of is *neuralgia of the right sciatic nerve*, which now and then torments him." It is true that other cases of palsy are given in which sciatica did not occur; but this is no more than we should expect; for the palsy, Dr. R. tells us, often runs its course without any pain. It must be noted, however, as a fact of considerable importance that the effect of galvanism greatly varies; in some patients, says Dr. Roberts, it produces such severe suffering that they cannot endure it; in others it produces scarcely any pain. This distinctly proves that while some partially withered muscles contract painlessly, others cannot contract without producing intense suffering.

We next refer to Dr. Copland (*Neuralgia of Muscular and Membranous Structures*, vol. ii, p. 881). We find "in true neuralgia of the muscles, the pain is much more acute than in rheumatism, and it recurs in frequent exacerbations. . . . . *In all the cases I have seen the remissions were attended by weakness or partial palsy of the muscles affected.*" "In two cases where the muscular parts were most acute in the thighs, and were attended by occasional cramps, irregular action, etc., *amounting to partial paralysis*, extensive organic change was found in the cord." Here, again, we see that semi-paralysed muscles are occasionally the seats of severe pain.

We now turn our attention to the condition of the muscles in the gouty diathesis, and we find in it that there is a great tendency to irregular muscular contraction, attended with more or less pain. Painful palpitation and the pain of gout in the stomach are, perhaps, the best evidences of this. There is one form of this disease often spoken of as poor gout, in which the muscles are flabby, weak, and withered; and it is in this state that sciatica is generally found as a symptom. It comes on very suddenly, is very intense while it lasts, and speedily goes off. Such an attack may, however, be independent of gout altogether.

Of the rheumatic diathesis, I will only say that an immense number of cases put down under the name of rheumatism are simply myalgic, the effect of over-exertion in weak muscles; consequently, there can be no surprise if, with myalgia elsewhere, it exist in the gluteal region too.

Of rheumatic gout I cannot say much; it certainly is attended with very great irritability of the muscles in the neighbourhood of the affected parts, and their contraction is eminently and acutely painful; yet I doubt whether this fact can be made available for the explanation of the pain of sciatica, when there is no reliable proof of the presence of this rheumatic or gouty affection. Of the probability of sciatica being a pure neuralgia, having its seat in the nerves themselves, or being dependent on some form of pure nervous disease, I will not express an opinion; nor will I say anything of the likelihood of its being a sympathetic pain, excepting to express a doubt whether we have any instance in which such pains are brought on by motion of the part itself, without any appreciable alteration of the condition of the distant organ in sympathetic connexion with it.

The conclusion we have arrived is, then, simply this—that there is good reason to believe that sciatica may be, and very frequently is, dependent upon muscular contraction (when speaking of the muscles, I consider that their fibrous portions are included) in enfeebled, unusually irritable, or imperfectly palsied muscles, and that the pain often is in direct proportion to the weakness of the muscular fibre.

This being so, theory would dictate what experience confirms; namely, that the most appropriate treatment is rest from motion, warmth, anodynes locally, strapping to give support and encourage heat, and tonics to improve the constitutional vigour.

The influence of these considerations upon treatment is, therefore, small—the effect they must have upon our prognosis is far greater. If it be true that the pain may be the first symptom of muscular decay, we can scarcely hope for a speedy and complete cure. If, on the other hand, the muscular decay be a legitimate and certain result of the pain, our prognosis will be guided by the duration and severity of the suffering. In any case, however, of severe and enduring sciatica, especially in delicate or aged individuals, we must be prepared for the probability that it may eventuate in some withering of the muscles of the buttock or the thigh.

duce facial palsy in others; that in one it will give rise to sciatica, in another to paraplegia, in a few to tetanus, and in many to muscular and nervous phenomena combined. Thus, Dr. Roberts says: "in sixteen cases (of wasting palsy) the atrophy arose from cold." A case is recorded where hand and forearm is wasted by plunging the member when perspiring into snow; others are referred to; and then he adds: "Cases arising from cold are subject to neuralgia and rheumatic pains in the affected parts (the muscles?), either at the onset of the atrophy, and ceasing when this has fairly set in, or continuing throughout its progress." As might have been expected, in more than one instance the disease, wasting palsy, is alleged to have risen from "*cold combined with fatigue*." This last is very frequently indeed the cause of an attack of sciatica.

ON THE CARBUNCULAR TYPE OF DISEASE: ITS SEPTIC CAUSES, AND ANTI-SEPTIC TREATMENT.

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It is not my intention, in the presence of the members of this society, men of learning, daily engaged in the practical exercise of their profession, to enter upon any elementary description, or history of the class of disorders now brought under consideration. I neither mean to give a lengthened statement of symptoms, nor a review of the various remedies that have been employed by divers persons from time to time; for with these matters our fellow members must be familiar. I only desire, in the present paper, to draw special attention to the general principle which has forced itself on my notice during a protracted observation of these painful eruptions, and to the therapeutic deductions consequent upon the acceptance of such principle. The principle is this; that all these forms of morbid action are referrible to a septic source, and, therefore, that all treatment, to be demonstrably successful, must be of an antiseptic character.

In order to evolve clearer illustrations of such a view, it is necessary to fall back upon the old doctrines of humoral pathology—doctrines which have resumed so refreshened a vitality in these latter days; not, let us rejoice, by the mere fluctuations of what may be called medical fashion, but by the more solid and enduring acquisitions of chemistry and the other allied sciences of the art of healing.

So generally, or rather universally received, indeed, are those doctrines at the present time, that I do not feel myself called upon to prove their truth; but only to adduce certain illustrations of the pathological processes upon which they are founded; so that, by analogical reasoning, the similarity of action may be recognised between the onset and progress of boils and carbuncles, and the onset and progress of those other morbid changes, where the operation of the laws of blood-poisoning are almost as obvious to the eye of the mind as the application of the spark and the explosion of the gunpowder are obvious to the eye of the body.

Thus, to begin with the instance of a common cold, as