NERVE-SECTION IN THE TREATMENT OF NEURALGIA.*

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THAT the division of nerves (neurotomy) and the removal of portions of nerves (neurectomy), as methods of treatment for neuralgia, have fallen into disfavour and neglect in this country, can, I apprehend, admit of no question. The subject is very cursorily mentioned in the more recent text-books of medicine and surgery, and seldom with much approval. The late Dr. Anstie thus speaks of it: "A few words must be given to the rather uninviting subject of the surgical treatment of inveterate neuralgia. The section of a neuralgic nerve, or rather the excision of a piece, is still, I suppose, to be reckoned among the measures which it may be occasionally justifiable to employ. Nothing, however, either in the two cases of its use which I have seen, or in the records of similar operations, would lead me to recommend it in any case. The relief given is nearly always very transient; and, indeed, the nearly infallible certainty with which the pain returns in the central end of the divided nerve is only what I should expect from the many considerations which point to the central origin of the nerve as the most peccant part. With such remedies in our hands as the subcutaneous injection of morphia, etc., I cannot see that we need be tempted to perform such an operation for the sake of a temporary alleviation."

My object now is to combat this sweeping condemnation, and to endeavour to replace the operation on the list of proper remedies for a most intractable disease. The objections alleged against it are, that it is unscientific, that the relief it affords is always very transient, and that the discovery of the hypodermic use of morphia has made it unnecessary.

In replying to these objections, let it be understood that I am dealing with only one form of neuralgia, that of the fifth nerve, and not even with the milder forms of that, such as brow-ague, migraine, clavus, etc.; but only with that confirmed, violent, and agonising variety known as *tic épileptiforme*, or *tic douloureux*; a variety which, so far as my reading and observation go, is, in the great majority of cases, wholly incurable, and not unfrequently is uncontrolled and unmitigated by any and every remedy.

To the objection that neurotomy is unscientific, I might reply, No matter, if it be useful; but it is held to be unscientific only on the theory, maintained by Anstie, that nearly all neuralgias, except those which are obviously due to mechanical causes, have their origin in atrophy or other defect of the sensory root and starting point of the nerve; and this being so, how can neurotomy of one or several branches control the central disease? Let me at once say that, even admitting, which I do not, that trigeminal neuralgia is always of central origin, it is certain that very frequently the exciting causes of the attacks of pain are causes which begin at and affect the periphery of the nerve; and, if the trunk of the nerve be divided, these peripheral stimuli cannot reach the central organ, and the pain is no longer excited. The centric theory, however, cannot be maintained; it is grounded chiefly on the hereditary nature of neuralgia, on the frequent accompaniment of debility in some form, and on the effect of exhausting habits, such as sexual and alcoholic excess. It must, however, be admitted that the theory rests on no pathological evidence, that it does not explain why the disease should be limited to any individual nerve, and does not account for those cases in which no heredity or exhausting habits can be discovered. It is, perhaps, nearer the truth to say that, with our present knowledge, or rather ignorance, of the true pathology and seat of neuralgia; and, while we admit that Anstie's theory may correctly apply to and explain many instances, it is conceivable and probable that, in many cases, there is some change in the nutritive or trophic condition of the nerve itself or of some of its component fibres, and that this change may exist near the periphery, in the course or at the central origin of the nerve. All this, however, is mere speculation; but I would maintain that, in the absence of definite knowledge on these points, it is not just to speak of neurotomy as an unscientific remedy.

It is said that neurotomy is at best very transient in its effects; but on this point I would ask, What remedy is otherwise than very transient? and further, is any other remedy comparable to it for lasting effects? These questions can, perhaps, best be answered if I state, as briefly as I can, the result of some of those cases in which I have practised neurotomy for *tic douloureux*. I will only mention four cases.

One or two others I can only speak of as having had immediate relief, but I know nothing of their subsequent history.

The first case of which I have notes occurred in the practice of Dr. Pearse of Botesdale; the patient was a robust, ruddy-faced, healthy-looking farmer, aged 74. The pain was of the spasmodic form, and affected chiefly the parts supplied by the infra-orbital nerve. It had existed about nine months, was of fearful intensity and utterly uncontrolled by any medical treatment, and only slightly mitigated by morphia used subcutaneously. Chloroform was administered, and I divided the infra-orbital branch of the fifth freely and fully. The bleeding was free, and a ligature was required; the wound was left open, but it fell into easy apposition, and readily healed in a few days. This was on November 28th, 1872. The relief was immediate and complete, and the immunity lasted for nearly a year. Then the pain recommenced, after exposure, and shortly became so severe that speaking and eating were almost impossible. He soon became importunate for a second operation, and, on November 25th, 1873, just a year after the former proceeding, I again divided the nerve. The effect was not so immediate; he had pain and spasms for a few days, then they ceased entirely, and he was well again. In November 1874, he called on me to say that he was quite a new man; could eat, drink, and sleep well; cold had no ill effect, and his face was not tender. In June 1875, the pain returned, and gradually increased to such fearful paroxysms, that he insisted on further operative treatment; and, on October 26th, 1875, nearly two years after the last operation, I again divided the same nerve. It was noticed that the cheek on the affected side was nearly as sensitive as on the other side, notwithstanding that the nerve had been twice cut. The relief on this occasion was not so marked or immediate; for a month, the pain continued severe, but was in some measure subdued by injections of morphia and atropine; then it ceased, and for some months he was free. He went to reside at Ipswich, and I have no further record of his case but this: he died about the end of 1880, and Dr. Pearse wrote to me very recently, saying, "I believe he had paroxysms of pain at intervals up to the time of his death, but in a modified form compared with the attacks at Burgate". The relief afforded by neurotomy in this instance may be measured by the urgent request of the patient for its repetition; to say the least, it afforded him several years of comfort.

The next case was one chiefly of frontal neuralgia, due to exposure to cold, followed by severe unilateral herpes, exactly corresponding to the distribution of the supra-orbital nerve. The patient, a lady, aged 38, was under the care of Mr. Joy of Northwold. When I first saw her, one whole side of the forehead up to the vertex was black, from nitrate of silver; when this came off, the skin was left altered in its nutrition, and showing patches of dead white appearance over the seat of pain. No treatment was of the least benefit. Steel, quinine, arsenic, cod-liver oil—everything failed. She saw two distinguished London physicians. The first prescribed belladonna and veratrum; the other gave cannabis Indica fully, but all to no purpose. The pain was of lightning-like intensity over the forehead, temple, and up to the top of the head. In despair, she came to Norwich, and I divided and cut out a piece of the supra-orbital nerve. Before the operation, she could not bear the touch of a ribbon or a breeze of wind; after it, the whole right side of the forehead was numb and painless, and she was unconscious of any sensation. Still there was pain in the temple corresponding to the superficial temporal branches of the first and third divisions of the fifth. She was very pleased with the result of the operation, but anxious that the temporal nerves should be divided. I thought it best, however, to wait for a month. This was in April 1868. The pain continued absent, and numbness complete, over the forehead, but in the temple and top of the head it persisted. On June 16th, she returned, and urged me to do something more, saying, "pray cut fully, anywhere and everywhere". I made a free incision along the zygoma, dividing the temporal artery, and with it the temporal branch of the auriculo-temporal nerve. I am sorry to say I cannot report the result of this case: my notes break off, and the patient left the country soon afterwards; and all I can say is, that she returned to Lynn well satisfied with the immediate effect of what had been done.

The third case was a gentleman, aged 46. He had suffered for twenty years from *tic douloureux*, affecting the right side of the face and head, of a spasmodic and paroxysmal character, of frightful severity, and for the last year so frequent, that he had scarcely a day or night of freedom. Five years previously, I had prescribed a very precise and rather spare diet; and for a year or two, while he observed these rules, he had far less pain; but, being irksome, the rules were relaxed, and the pain returned. The worst spots of pain—and we know how neuralgia is apt to concentrate its worst agony into painful points—were in the temple and over the eyebrow; but all three divisions of the nerve were more or less affected. Every possible remedy had been tried, and

* Read before a meeting of the East Anglian Branch.

failed. Morphia was used nightly for five or six weeks, at first with relief, but its effect wore off, and he ceased to care for it. As a last resource, in November 1873, I divided both the supra- and infra-orbital nerves. The operation did not have the usual immediate effect; but, in a week or two, he called on me, looking vastly improved; all the haggard and worn aspect had passed off, the pain had left him, and he was well. He was free from pain for nearly a year, then the nerve united, sensation returned, and with it the pain. I have recently heard from this patient to this effect: "I have not used morphia now for some years, and, although I have frequently suffered greatly, the pain has not been so unbearable as formerly."

The last case I will describe occurred last year, in a lady, aged 78, who had suffered acutely for seventeen or eighteen years with the spasmodic form of tic, chiefly affecting the supra- and infra-orbital branches. No other drug than morphia had given the slightest relief, and this used hypodermically had lately lost its early good effect. On July 6th, 1881, I gave ether, and divided both branches of the nerve. The relief was complete so far as the frontal pain was concerned, but the pain continued along the course of the infra-orbital, so much so, that I began to doubt whether I had really cut the main branch; the ether required care in a person of her age, and the double operation made me rather hurried. A fortnight afterwards, I again divided the infra-orbital, this time cutting far and wide, and clipping out a small piece. The relief was complete, and most satisfactory to the patient. The wound healed in a few days, and gave no trouble. She is a patient of Dr. Wilcox of North Walsham, and he has informed me within the last few weeks that there had not been a vestige of pain since the operation, ten months ago; eating is easy, whereas it used to provoke violent paroxysms; and some sensation has returned in the parts supplied by the cut nerves. I have no doubt that this lady, bordering though she is on the age of eighty, will, if the pain should recur, peremptorily call for a repetition of the little operation which has already afforded her nearly a year of happy freedom from all suffering.

The fair comment on these and similar cases, I think, should be, that neurotomy, in properly selected cases of inveterate facial neuralgia, is an operation so easy, simple, and painless, so capable, in almost all cases, of conferring prolonged relief, and so absolutely free from all risk, that it is not only justifiable, but it is our bounden duty to offer and recommend it when all other measures have failed.

On the continent, operations of various kinds are, it would seem, more frequently resorted to for the relief of facial neuralgia than in this country. Continental surgeons not only practise neurotomy and neurectomy, but, in order to reach the nerve at points nearer its origin, they have resected the upper and lower jaws. Wagner has reported 135 cases of operation, chiefly neurotomy, of which 9 wholly failed, 6 died, in 1 the pain returned after a few days, in 32 after the lapse of some months, in 20 after two to three years, in 18 in which a relapse took place, and did not recur from some months, in 25 for some years, and in 24 cases the result is not given. Considering that these were all intractable, severe, and obstinate cases, you will probably not disagree with Wagner's conclusion, "that neurotomy stands on a scientific basis, and is of high practical value" (*vide Ziemssen's Cyclopaedia*, vol. xi, p. 128).

I have mentioned properly selected cases, by which I mean those in which the pain is chiefly confined to the parts supplied by the supra- and infra-orbital and mental branches; these nerves are easily reached, and divided or resected; other branches may be got at, and I have once divided the auriculo-temporal, but these other branches are smaller and less definitely placed than the three I have mentioned. I have recently seen a very severe case with reference to nerve-section; the pain was trifling in the region supplied by the supra- and infra-orbital branches, but chiefly in the temporal and superior dental branches, which cannot be reached by any ordinary or simple operation. I naturally hesitated to divide the nerves which were not directly concerned in the pain, and leave those intact which were, and I advised delay. There would, however, have been fair ground for operating, since, if it be true—and it is true—that facial neuralgia is sometimes caused by irritation in remote nerves, as in gastric and intestinal disorders, so it is possible that section of a nerve near to but not immediately the seat of pain, may yet produce such a change as to lead to improvement; and, in corroboration of this view, I may remind you that, in two at least of the cases now reported, the patients were able, after the operation, to eat without pain, although I had only divided the supra- and infra-orbital nerves, and had not touched the dental branches. Properly selected cases would also, of course, include those in which the neuralgia was due to peripheral rather than to central causes; but, even in the latter, and perhaps more numerous class of cases, neurotomy, as has been already said, by preventing the conduction of all external morbid stimuli, may and does constitute a very

important palliative remedy. But it is said that the hypodermic use of morphia has made neurotomy unnecessary. Now we are all, I presume, ready to admit that morphia thus used for inveterate facial neuralgia has a far higher value than any or all other medicinal remedies or specifics, and it may equally be admitted that, so long as morphia succeeds in subduing pain, nerve-section need not and should not be contemplated; but we know also that, in some persons, morphia cannot be borne; that it produces evils which lead patients to consider the remedy to be as bad as the disease; and especially—and this constitutes its greatest drawback—the system under its use generally acquires such a tolerance of the drug, as to necessitate larger and larger doses to procure relief, until it becomes either toxic or almost ineffectual. The extent to which this tolerance may reach will be illustrated by a very remarkable case, which I have recently seen with Dr. Vores of Yarmouth. I had hoped that Dr. Vores would make the case the subject of a special communication; but, failing that, I will now give a brief notice of it. The patient is a strong, healthy-looking man, aged 59. He has been subject to facial neuralgia for about seven years, during which time the pain has steadily increased in frequency and in intensity. At first, it was controlled by injecting four drops of the solution of morphia (one grain to twelve minims), but this dose produced such giddiness and heaviness, that he was obliged to sit or lie down after it. By degrees, the dose was increased in frequency and in quantity until, at the end of 1880, he often used from 30 to 80 minims in the twenty-four hours. In August 1881, he had a period of fearful agony; and when Dr. Vores was called in on the 8th, he found that, on each of the two preceding days, he had used 130 minims, or nearly 11 grains. There being not the slightest symptom of narcotism, the morphia was increased to 10 minims every hour. Still no hypnotic effect was produced. A solution of double strength was now prepared, viz., 1 grain in 6 minims; and, on the 12th, he injected, during four hours, 120 minims, or 20 grains of morphia. Then croton-chloral was substituted in 20-grain doses, at short intervals. After the second dose, the patient refused to take any more, as it in no way relieved his suffering. He returned to the morphia, and, in the next twenty-four hours, he injected one ounce of the stronger solution, that is, 80 grains of morphia. There was not, however, the slightest symptom of narcotism. At no time did he sleep more than ten minutes; the bowels became relaxed; the urine ammoniacal, as it had done on former occasions; and the paroxysms gradually diminished. During this attack, there was no headache; his intellect was perfectly clear, except that on two days there was at intervals slight delirium, probably due to want of sleep; and he took nourishment freely at intervals after an injection. In a few days, he had reduced the morphia to 20 grains daily, and gradually, the paroxysms becoming less severe, the quantity was still further diminished to what he calls his usual habit, 3 to 5 grains daily. Dr. Vores, in his report of the case, asks, very naturally, was he justified in resorting to these heroic doses? And he replies, and I think we shall admit the validity of his reply, that he knew not what better to do; and also that he was supported in his treatment by no less an authority than Trousseau, who, in a similar case, had given or used 60 grains of sulphate of morphia daily, without producing narcotism. This, however, is a trifling amount compared to that in a case described by Billroth, in which 18 grains of morphia were injected twelve times a day—that is, 216 grains daily—by a syringe made to hold 2 drachms. Billroth adds: "By this means, he had intervals when the pain was endurable, and could get sleep for an hour or two. Finally, he became reduced to a skeleton, and died of exhaustion."

Before concluding, I desire to say a few words in favour of the dietetic plan of treatment, a plan which I have found of very signal value even in aggravated cases; and this is not remarkable, when we remember how beneficial this treatment by regimen generally is in many chronic incurable diseases, such as asthma, epilepsy, etc.; and when we remember, too, that in facial neuralgia the patients are frequently of advanced age, when teeth are going or gone; how often extraction of teeth has been practised in the vain hope of relief; and how impossible it is for the sufferers to use artificial teeth. Under these circumstances, and knowing that mastication and deglutition are apt to produce intense pain, patients are prone either to deprive themselves of proper food, or to bolt it in a state only too likely to disarrange the digestion. By dietetic treatment, I mean solid vegetable and animal food so intimately blended into a *purée*, and mixed with clear soup or beef-tea, as to form a thick fluid, which contains all the food-elements necessary for health, which can be so easily swallowed as to be very welcome to these patients, and which should be administered in sufficient but exact quantity day by day and year by year. Did time permit, I could demonstrate by cases the remarkable success of this mode of treatment, but I must forbear; and I will only further say that, when this method and the hypodermic injection of morphia have failed, as in too many cases they are sure to

fail, I think it is our clear duty to resort to nerve-section. In the words of Billroth, "Are we, by discarding operations for the division of nerves, to throw on one side a remedy which is not in itself attended by any serious risk? Are we to renounce a remedy which can give these most unfortunate of all sufferers a prospect of recovering, if only to some slight extent, some general feeling of health for the time which they have still to live? Let us, as surgeons, imagine ourselves confronted by a patient for whom this treatment is absolutely the only resource. Can we avert our eyes from the sufferer's glance when he begs, if only for "some relief, some easement, some hope"? There can be no doubt as to the answer we should return to such an entreaty. There can be no doubt as to what our course of action should be.

CASE OF STRUMOUS DISEASE OF THE KIDNEY, CONSIDERED IN RELATION TO NEPHRECTOMY.*

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E. B., aged 17, a nursemaid, was admitted into hospital on November 7th, 1879. She was said to have been always of spare habit of body, but of fairly good health until eighteen months previously, when her strength began to fail. Six months later, her appetite failed, and for now about nine months she had been gradually losing flesh. She had had a tendency to incontinence of urine since the age of 13. Pus and blood had been detected in her urine by a medical man who had seen her from time to time, as well as noticed casually, as sediment, by her friends, for the preceding six months; and she had had, occasionally, pain in micturition. Lately her bowels had been much relaxed, and she had felt some pain in the right knee on walking. She had never been troubled much with pain in the loin; she had had no swelling of the feet; she had never menstruated.

On admission, she was greatly emaciated, weighing only sixty-two pounds; and she showed no signs of puberty. She was somewhat pale; her temperature in axilla at midday was 100° (at 9 P.M., 103°); her pulse was 136, and her respirations were 32 in the minute. The mucous membrane of her mouth and throat was red, and her tongue was preternaturally clean. Elastic resistance was perceptible in the right lumbar region, with corresponding dullness on percussion and tenderness on pressure. Examination elsewhere elicited only negative results.

November 9th. She had slept well. Her appetite was fair; her temperature was 100° (morning and evening); pulse 108; her bowels had not been opened since admission. She had passed 28 ounces of urine during the preceding twenty-four hours, of specific gravity 1010, acid when voided, but soon becoming alkaline, coagulating with heat and nitric acid to one-sixth in the tube, and showing numerous pus-corpuscles under the microscope.

November 10th. The bowels had acted twice; there was no pus with the fecal matters. She was ordered to take three grains of sulphate of quinine thrice daily.

November 14th. On account of some tendency to diarrhoea, fifteen grains of compound kino powder were given the preceding evening, since which the bowels had been quieter. Her nights had been good; her temperature was now 98.6° in the morning and 98.8° in the evening; her pulse was 132. She passed 24 ounces of urine in the twenty-four hours, of specific gravity 1010, with one-sixth of albumen, and showing microscopically about the same quantity of pus-corpuscles as before, some red blood-discs, and crystals of lithic acid.

November 17th. There had been some return of diarrhoea, requiring the kino-powder to be repeated. Her weight was the same as on admission. Her urine had much the same characters. A smooth roundish elastic tumour could be distinctly felt in the right loin, and impulse communicated to the same in front was transmitted to the hand applied behind.

There was a slight recurrence of hectic during the next few days, and the quantity of purulent matter in the urine seemed to vary a good deal.

November 29th. Though still pretty free from pain, she began now to have bad nights, and sickness with anorexia became a not unfrequent trouble. Occasionally, too, there was the tendency to diarrhoea.

December 6th. With an aspirator, some blood-stained urinous fluid was drawn off from the pelvis of the right kidney, containing abundance of pus-corpuscles. She was now passing upwards of 20 ounces of urine in the twenty-four hours, of specific gravity 1020, and coagulating to only one-sixth in the tube.

December 8th. She began to have nocturnal enuresis.

December 11th. Again 20 ounces of urine were collected, of specific gravity 1020, and coagulating only to one-twelfth.

December 12th. The patient having been put under bichloride of methylene, an incision was made by my colleague, Mr. Fowler, at the outer border of the right quadratus lumborum muscle; and, the finger introduced feeling the pelvis of the kidney, a trocar of the aspirator was thrust into it, and half an ounce of blood-stained urinous fluid, similar to that previously obtained, was withdrawn. No calculus could be detected. A drainage-tube was inserted into the pelvis of the organ, and retained there; the wound being dressed and the whole operation conducted with strict antiseptic precautions. To procure sleep, hypodermic injections of morphia were now occasionally found necessary.

December 14th. On removing the dressings, there was a free discharge of pus from the drainage-tube.

December 16th. There was much healthy-looking pus on the dressings; but sickness just now was frequent.

December 21st. The discharges on the dressings were offensive, and the temperature rose to 102°. The patient was very weak, and her mouth was apthous.

The feverishness subsided; but, with increasing failure of sleep and appetite, and at last sickness after everything, she gradually sank, and died on December 30th. The latest note respecting the drainage was on the 26th: "A good deal of discharge on the dressings."

NECROPSY, thirty hours after death.—Emaciation was extreme. The intestines and abdominal viscera were very pale, and the omentum was reduced to the finest web. Upon removal of these organs, the right kidney was found to be converted into an elongated fluctuating tumour extending from about the twelfth dorsal vertebra to near the brim of the pelvis. There were no morbid appearances external to it, nor was there any sign of inflammation around the spot where the opening was made during life. On puncturing the pelvis of this kidney, a considerable quantity of apparently healthy pus escaped. The capsule, which was thickened, was stripped off with difficulty. This being done, two yellow nodules, containing soft caseous matter, were discovered on the surface of the cortex at the posterior part, the smaller one being of the size of a pea, and the larger that of a walnut. On section, the cortical and medullary portions were found to have been extensively destroyed by caseating and suppurating processes, and what remained was studded with caseous and puriform deposits; while the pelvis and calyces were so dilated that an almost sacculated appearance was imparted to the organ. The mucous lining of the same was a good deal thickened; that of the ureter likewise; but there was no obstruction of this tube. No milary tubercle was detected anywhere. The right kidney weighed five ounces. The left one was enlarged, as also its ureter; its capsule was non-adherent. On removing it, a small nodule, of the size of a pea, containing cheesy matter, was observed at one spot; otherwise, both cortical and medullary structures appeared to be quite healthy. The urinary bladder was contracted and empty. The liver weighed fifty-two ounces; on roughly testing with the iodine-solution, no amyloid change was detected. The spleen weighed five ounces, and was rather soft. There was no enlargement of the abdominal glands. In the thorax, there was no effusion in either pleura; but there were some old adhesions of the lower lobe of the left lung. Both lungs otherwise collapsed fairly, and they were free from tuberculous or other deposits in their parenchyma. There was about an ounce of straw-coloured serum in the pericardium, and the heart weighed six ounces and a half. The head was not examined.

REMARKS.—At the time when this case occurred, the subject of nephrectomy had hardly come to engage the attention of the profession to the extent that it has done since. Certainly the question of this operation as applicable to it was never entertained. The object contemplated, and for which I sought the aid of my surgical colleague, was to provide, by artificial opening and drainage (nephrotomy), a more free exit from the kidney of the pus and other products of disease than appeared to be quite possible by the natural passage. Gravitation, it was thought also, might be made to assist and facilitate the discharge. It must be confessed, however, that the undertaking was attended with but little success. Perhaps earlier operation and a larger opening into the pelvis of the kidney might have yielded better results. The drainage-tube doubtless slipped out of its place during the last two or three days of life, when the patient was almost too weak to allow of regular dressing, and the wound closed. It is noteworthy that there was no perinephric inflammation or trace of mischief external to the kidney. But, assuming nephrectomy to be established as a recognised surgical procedure, it becomes an interesting question whether such a case as I have related be not a suitable one for its performance. We had here a completely disorganised kidney, a source of ruin to the health and of exhaustion to the strength of the patient; the fellow-

* Read at a meeting of the Bath and Bristol Branch.