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TREATMENT OF ANEURISM

BY

IODIDE OF POTASSIUM.

BY

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ON THE TREATMENT OF ANEURISM BY IODIDE OF POTASSIUM.

CASE I. *Aneurism of the Aorta*.¹—Peter Rice, a mason, aged 39, admitted into Ward III. on the 29th April 1867. Patient has never had rheumatic fever, but for the last five years he has been subject to rheumatic pains in his hip, leg, and back, which are generally severe, and are most apt to recur in the changeable weather of spring. He has been in the habit of drinking pretty freely. About twelve months before admission, he fancied that he was overwrought, and when he got home, he found that he could not take a deep inspiration freely; he also felt a sharp pain at a point about two inches to the right, and a little above the left nipple. This pain has continued ever since, and has latterly increased considerably. This pain is stationary at the part described, but when more severe than usual, it spreads upwards to the armpit and shoulder, and down the left arm to the wrist, occasionally extending downwards to the scrobiculus cordis, and sometimes striking sharply through to a corresponding point at his back. It is specially apt to be severe at night, preventing him from sleeping, and is very annoying when it affects his back, as he cannot lie in any other position than supine. He has occasional fits of dyspnœa, and it is always painful for him to take a full inspiration. He has also some difficulty of swallowing. He is much troubled with palpitation, and a distressing feeling of pulsation, and these sensations annoy him most when the pain is severe. At such times, he obtains some relief by relaxing the respiratory muscles, by stooping forwards and leaning against a wall or other support, with his hands and arms extended. About a week ago, his symptoms had increased so much that he was obliged to cease working altogether. His appetite is good; his bowels generally confined. On percussion, the heart seems of normal size; its pulsations are distinct, and in their ordinary situation; the first sound is normal, the second accentuated. The right radial pulse is fuller than the left. About three years ago, the patient had *muscæ volitantes*, lasting off and on for about

¹ This case was primarily under the care of Dr Warburton Begbie, acting for Professor Laycock, and was transferred to my care when the clinical wards were closed, at the end of the summer session of 1867. The case is partly condensed from the Report in the clinical records of Ward III.

two years, appearing only for a few seconds each time; and still at times, he cannot see things at a distance so well as he thinks he ought, the letters seeming to swim before him when reading. His left pupil is slightly dilated. Some time ago, he also had tinnitus aurium. His left cheek is often flushed, and at times he feels it warmer than the other. His lung-sounds are normal, but he has an imperfect, hard, clinking cough, without expectoration. He also frequently perspires without any apparent cause. There is a slight bulging of the walls of the chest, between the second and third ribs, at the left edge of the sternum, extending into the *manubrium sterni*, and gradually declining all round within an area covered by that of the mouth of a tumbler. Over this space, and for a corresponding distance downwards towards the heart, there is dulness on percussion, and a distinct sense of liquid pulsation. Within this region, the heart-sounds are also extremely distinct, but there is no bruit.

Twenty grains of iodide of potassium were ordered to be given three times a day, and a belladonna and opium plaster was applied over the tumour. About a month after, on the 23d of May, as the patient fancied he was not improving, the iodide was omitted, and a precisely similar dose of the bromide of potassium was substituted for it. At first, the patient fancied the change of remedy had done him good, for he had less pain, and got more sleep; but this improvement was apparently of short duration, even though the dose of the bromide was subsequently increased to thirty grains thrice a day, for on the 7th of June the iodide was again resorted to in doses of twenty grains thrice a day, with the addition of one-twelfth of a grain of iodine in each dose. On the 17th of June, it is stated that "there is more pain over the aneurism, and he feels his left hand benumbed. The swelling seems to have increased in size since the 15th inst." On the 7th of July, however, it is entered that he "states that the pain in his breast and down his arm are not nearly so bad as they used to be, so long as he is quiet in bed; but when he rises and walks about, they become even worse than before." The patient continued to wear the belladonna plaster, but on the 7th of July the iodide was omitted, probably on account of coryza, which, though not recorded, the patient has told us that he suffered from about this time; and on the 8th the following pills were prescribed:—

R Extr. aloës aquosi, gr. i.
 " colchici acetic, gr. i.
 Mass. pil. hydrarg. subchlor., gr. ij.
 Misce fiat pil. mitte tales xii.
 Sgr. one night and morning.

There is no further record in the books of Ward III. as to the iodide being again resumed, and I am not aware whether it was or not; I believe, however, that it was. The last entry is on July 18th.—"Thinks himself easier to-day."

On the 1st of August, the patient was transferred to Ward VII., and placed under my care. He was at once placed upon thirty grain doses of the iodide of potassium three times a day, and these doses he has continued to take without intermission up to the present time (May 1868), with continually increasing benefit, and without the production at any time of the slightest unpleasant symptom. For several months, he also continued to wear a simple belladonna plaster over the tumour, but at last it blistered him, and produced so much eczematous eruption each time it was attempted to re-apply it, that it had to be discontinued. On coming under my charge, he was strictly confined to bed, and for long he lay entirely on his back, that being the only position in which he found always comparative and, latterly, perfect ease. He was only allowed to get up and move about for the first time about three weeks before his dismissal on the 2d of April. He was placed upon fish diet at first, —meat being subsequently given when he tired of the fish, but he was at all times carefully warned of the necessity for strict moderation both in eating and drinking; water, small quantities of tea, and milk for supper, being the fluids supplied. With all this care, and notwithstanding the large doses of the iodide administered, his progress at first was extremely slow, but it was steady; and in a clinical lecture given on his case on the 19th of November last, I find it stated “there is no longer any tumour visible, and it is only on careful examination that you will discover any pulsation; he is so far recovered, that he is a little inclined to be rash, and to move about quickly in bed, or even to turn upon his side; but upon this the pulsation instantly returns—a sufficient warning to him that he is not yet cured.” Indeed, it was not till the beginning of March, in this year, that he was able to move about freely, without discomfort or any return of the pain or pulsation. On the 1st of April, I had the honour of exhibiting this patient before this Society, just previous to his discharge from hospital, when you had the opportunity of observing the complete subsidence of the tumour described, pulsation being only to be obscurely felt in the situation where it formerly existed; you also heard the man’s statement that his pain, dyspnœa, and dysphagia, were gone; and you were able, from his healthy and energetic appearance, to form some idea of the importance and value of this mode of treatment. I may add, that I have repeatedly seen this patient since his discharge, and that he still continues to improve, while, from the active manner in which he marches through the streets, no one would suppose that but a year ago he was what might well be thought a hopeless invalid, afflicted with one of the most terrible and incurable of maladies. With all this improvement, however, Rice is not cured; it is doubtful, indeed, whether, under his circumstances, a poor man necessitated to do something for his daily bread, he ever can be cured. But he has obtained great and incalculable relief, and his case is an encouragement to us in the treatment of similar affections,

and full of hope for those who, placed in happier circumstances, may yet labour under a similar disease.

My second case, though more obscure in its diagnosis, was even more satisfactory in its results.

CASE II.—John Kerr, a seaman, aged 26, admitted into Ward VII. on 22d October 1867. He states that he has been ill for eighteen months, dating his illness from the privations to which he had been exposed when on an arctic voyage, and the strenuous exertions he was, while in an enfeebled condition, obliged to make in hauling the boats over the ice and frozen snow. While in America he has been somewhat roughly handled for various diseases with which he was supposed to be afflicted. At last the diagnosis culminated in that of aneurism of the abdominal aorta, and to get relief from this, he crossed the Atlantic, and presented himself at the surgical wards of the Royal Infirmary here, and from them he was transferred to my care. He complained of intense pain in the scrobiculus cordis extending through to the back, and passing round both sides. On examination, a tumour could be obscurely felt a little below the sternum, and just under the edge of the right ribs; this was more distinctly perceived, falling, as it were, into the hand on turning the patient over on his left side; and in the situation referred to, a loud bruit was to be heard with the stethoscope. Notwithstanding the obscurity of the diagnosis in this case, it was considered right to place this man under the influence of iodide of potassium, as a treatment likely to be useful, whether the tumour was solid, or was really an aneurism; accordingly, he got thirty grain doses of the iodide of potassium twice a day; he was placed on fish diet, a restricted amount of fluids, and confined to bed. The result was most encouraging; he got almost immediate relief from the agonizing pain, while the uneasy pulsation felt by the man himself was also at once considerably lessened, and the force and fulness of the radial pulsations, as observed by us, seemed to be also greatly diminished. He continued steadily to improve: in a few months the tumour and bruit had completely disappeared, and, on the 22d of January 1868, he was dismissed at his own request. He considered himself so well, that he engaged for a short voyage for the purpose of testing his re-acquired health before finally proceeding to sea. This case is one, the obscurity of which is patent to all, and I am not disposed to press the diagnosis of aneurism; nevertheless, the symptoms pointed strongly in that direction, while the success of the treatment, and the manner in which the relief was obtained, seemed also to confirm it.

The third case is more unequivocal.

CASE III.—James Wilson, aged 44, a mason from Newcastle, admitted into Ward VII., on the 31st of August 1867. About nine months before admission, this patient began to have occasional

attacks of lightness in the head, accompanied with a flashing of light before his eyes. These attacks came on usually while he was at work, and obliged him to sit down for a little to recover himself. At first, they occurred once or twice a day, but they soon became more frequent, and he always felt much weaker after them. During these attacks, he suffered from profuse perspirations. About the same time, the patient began to suffer from "beatings" in his abdomen, in the left side of the chest, and on the right side of his neck. At the last-mentioned place, a swelling appeared, which gave him great uneasiness, and produced a choking sensation. He consulted various medical men without relief, and at last came to Edinburgh, as already stated, on the 31st of August last. On admission, it was found that he had no radial pulse in the left arm, but there was nothing to account for this, the "beatings" on the left side being apparently merely cardiac palpitation; on the other hand, those in the abdomen, and on the right side of the neck, had each an anormal and evident cause. About the lower part of the epigastric region, towards the left side, and lying close above the aorta, whose course could be distinctly traced, a small pulsating tumour, the size of a small orange, could be distinctly felt, pulsating itself, and not merely moved by the artery beneath it; over this tumour a loud bruit could be heard. On the right side of the neck, there was also an evident pulsating tumour, extending up into the neck from the sterno-clavicular articulation, and towards the mesian line. This tumour was somewhat larger and longer than that in the abdomen, resembling in shape and appearance a large kidney potato. Upon any excitement, and especially when the man was up and walking about, its size increased considerably. No distinct bruit was heard over it, nevertheless it was evidently an aneurism implicating the innominate, subclavian, and carotid arteries. He was at once placed upon thirty-grain doses of the iodide of potassium twice a day, which he has continued to take steadily, with occasional intermissions, up to the present time, and a diet and regimen similar to that already described, were prescribed for him; but as his symptoms were not so severe, strict recumbency was not insisted upon, and he was allowed to go to chapel every night. The intermissions in the use of the iodide were necessitated from the circumstance that it was not so well borne by him as by the other two patients; every now and then, pain in the stomach, or severe headache, giving warning that it was time to stop it. These symptoms, however, always abated after leaving off the medicine for a day or two. His appetite was always good, but his bowels required to be regulated by medicine. No immediate effects were observed from the remedy, but after the lapse of some months, the abdominal aneurism was found to be quite firm and solid to the feel, while the bruit had disappeared, and could only be reproduced by pressing somewhat strongly with the stethoscope; the tumour is now apparently gradually disappearing. After a time, and only

within the last two months, the aneurism in the neck ceased to swell out when he walked about; it also gradually became firmer, and though still quite evident, he no longer suffers any inconvenience from it. The coats of the arteries in this position seem to have undergone fusiform dilatation, and it is doubtful whether further treatment will be of any avail. His health has, however, much improved; he has no longer any disturbing pulsations; and though he occasionally suffers from lightness in the head, and dazzling flashes of light, his condition is unquestionably better than it was, and, considering his inveterate aneurismal diathesis, he has probably reaped as much benefit from the treatment as is possible under the circumstances.

Such, then, has been my experience of the treatment of aneurism by means of the iodide of potassium; and when we consider the inveterate aneurismal diathesis displayed in one of these patients (Case III.), the serious character of the disease in all of them, and its ordinary intractability under every kind of treatment—an intractability so great, that the most hazardous remedies, such as stuffing the sac with fine iron-wire introduced through a canula, and galvano-puncture—have been not only adopted, but, notwithstanding their primary want of success, considered worthy of being recommended for further trial,—I think that the relief attained in these cases has been sufficiently well marked to justify me in recommending this method of treatment as one which, to say the least of it, is capable of relieving the sufferings of such patients without discomfort and without danger.

As has been so often the case in medicine, the adoption of this mode of treatment has not been the result of any speculative ideas as to the nature of the particular disease, or the actions of the special remedy, but has been entirely based upon empirical observations—observations so opposed to all our preconceived ideas on both of these points, that it is as yet impossible to give any intelligible explanation of them. The late Dr Graves of Dublin, *facile princeps* of all our clinical writers, was the first to direct attention to the beneficial action of large doses of iodide of potassium in painful rheumatic affections of the fasciæ and nerves; and it is now many years since Dr Craig, late of Ratho, informed me that a patient of his, while being treated with that remedy in doses of seven grains, thrice a day, for concomitant rheumatism, had obtained complete relief from the neuralgic pains arising from a large aortic aneurism. It struck me at the time that the unexpected relief was perhaps not accidental, and that the treatment was worthy of further trial. No opportunity, however, occurred to me of putting this treatment to the test. Meanwhile, about ten years ago, a Pole presented himself to M. Nelaton,¹ with a tumour in the lower part of the neck,

¹ These cases are referred to in Dr Roberts' paper, presently to be quoted; they are detailed in the *Clinique Européenne* for July and August 1859. M. Bouillaud's cases are also quoted by the *Union Médicale* of March 8th, 1859, as having been contained in a clinical lecture published in the *Gazette des Hôpitaux* of the same year.

which had been recognised by MM. Bouillaud, Andral, and Beau as an aneurism of the innominate implicating the aorta. He stated that while in Warsaw, his sufferings had been much relieved by the use of the iodide of potassium. M. Nelaton took the hint, and continued the remedy, the result being—to his great surprise—a notable amelioration of all the symptoms, with almost complete disappearance of the tumour, so that the Pole returned home in a satisfactory state of health. M. Bouillaud was the next to follow out this plan of treatment in four cases which he has related: one was a female with an aneurism of the carotid, the size of a pigeon's egg; she had fifteen grains of the iodide of potassium for several days, and afterwards thirty grains a day for two months; at the end of this period, the tumour had diminished so much that it might be considered to have completely disappeared. The second case was an aneurism of the brachio-cephalic trunk and aorta in a male, which, under the same treatment, underwent considerable displacement and well-marked diminutions in size. He was still under treatment when these cases were published. The third case was that of a large aneurism at the point of origin of the carotid and subclavian in a male, which was considerably diminished in size in a few weeks; and the fourth was a carotid aneurism in a male, which had also almost completely disappeared in a few weeks, under the same treatment.

It is somewhat singular that, while this problem was thus being experimentally worked out in our Western hemisphere, in the Eastern one an independent observer, having had his attention casually directed to this peculiar action of iodide of potassium in aneurism, was also empirically investigating the subject with no less remarkable results. On commencing hospital duty in August 1860, Dr Chuckerbutty¹ of Calcutta found in the wards an Irishman, aged 50, afflicted with a harassing cough, accompanied by profuse expectoration, which remained unrelieved by any treatment until a solution of iodide of potassium, in decoction of cinchona, was employed. Coincident with the relief to the cough thus obtained, Dr Chuckerbutty was astonished to find that an aneurism of the innominate, from which this man also suffered, became gradually solidified. This aneurism projected above the sternal notch, and was at first the size of a walnut, with thin walls, and readily emptied; it grew steadily upwards into the neck, passing beyond the median line, till it attained the size of an orange, subsequently becoming hard and consolidated under the use of the remedy referred to. Some months afterwards, the man died of an attack of bronchitis, and the aneurismal sac was found to be as large as a pear, filled with dense coagula, which left merely a narrow channel on its outer aspect, through which the right carotid and subclavian communicated with the aorta. Suspecting that there might be some causal connexion between the remedy employed and the curative result

¹ British Medical Journal, 19th and 26th July 1862.

so unexpectedly attained, Dr Chuckerbutty proceeded to treat several other cases of aneurism in the same manner, and of these he has related three. In the first of them, a man, aged 47, with an immense aneurism of the aorta, great temporary relief was obtained from the use of four grains of the iodide of potassium thrice a day. This treatment was continued from December 7th to January 12th, when death occurred from rupture. Three hours after death, the sac was found filled with dense solid coagula. In the second case, also a large aortic aneurism in a male, though under treatment for less than three weeks, there was so great a temporary amendment, that the man thought himself cured, and insisted on leaving the hospital to spend Christmas with his friends. He did not return till after the lapse of more than three months, and then his symptoms were all intensely aggravated, and he died in three days. The third case was that of a man with an aortic aneurism, projecting as a dome-shaped tumour, two inches in diameter, through the sternum. Various remedies had been previously ineffectually employed in this case, but, under the use of iodide of potassium internally, along with the application of tincture of iodine externally over the tumour, the patient steadily improved, the thoracic pain disappeared, the swelling diminished, the hæmoptysis ceased, and the patient ate and slept like any other man. He was still under treatment when the paper was sent home for publication. Dr Chuckerbutty points out that the consolidation of the contents of the aneurismal sac is the important fact in the histories of these cases, and contends that this probably depends upon some hitherto unsuspected action on the blood of the iodide of potassium; and this opinion seems also to be shared by Dr Roberts of Manchester, to whose interesting paper I shall now refer. About the beginning of 1863, Dr Roberts was consulted by Mr T. Windsor in regard to a case of aneurism, and his attention for the first time directed to the important remedial action of iodide of potassium in that disease. The case was that of a lady, aged 29, who had an aneurism of the aorta, implicating the origin of the innominate; there was excessive pulsation at the lower part of the neck, on the right side, repeated slight attacks of hæmoptysis, occasional loss of voice, dysphagia, constant troublesome cough, with scanty expectoration, and recurring paroxysms of pain and dyspnœa so severe as to compel her to get up and walk about. Under a regulated diet and strict confinement to the recumbent posture, her condition steadily aggravated; she became so weak and emaciated as to be unable to leave her room, and the right clavicle began to project half an inch beyond its natural level, while the pulsation was much increased. In April 1863, she was put upon iodide of potassium, with the view of relieving the severity of the pain, and this object having been attained, the remedy was discontinued, after having been employed for only one week. At last, in July 1863, when she was so much worse that death seemed not far off, Mr Windsor put her upon five

grains of the iodide of potassium thrice a day, subsequently increased to ten grains, and again reduced to five on account of the occurrence of violent salivation. This latter dose agreed, and the patient continued taking it up to the time of the publication of the case,¹ the result of the treatment being a rapid subsidence of all the general symptoms, complete cessation of the cough, pain, dysphagia, and hæmoptysis, while the patient gained flesh and strength, and, in a few months, was able to walk six miles, the clavicle having subsided to its normal position. Dr Roberts² subsequently treated in the Manchester Royal Infirmary a male patient, aged 39, in whom the first bone of the sternum and its vicinity were the seat of heaving pulsations, while in the second left intercostal space there existed a conical, soft, pulsating elevation, projecting about a quarter of an inch, and with a base the size of a shilling. Over the bulging parts, there was an area of dulness, measuring transversely four inches and a half, and vertically three inches and a half. There was pain in the left side of the head and shoulder, dyspnœa, dysphagia, and some cough. The patient was put upon a restricted allowance of fluids, and had five grains of iodide of potassium given him thrice a day; in three days, the dose was raised to seven and a half grains thrice a day; and in six days the patient expressed himself as much better, his pain gone, and the cough and difficulty of breathing less troublesome. The dose of the iodide was then raised to ten grains thrice a day, and after seventeen days' treatment, the pain, dysphagia, and dyspnœa were quite gone; the soft pulsating tumour had entirely subsided; he was allowed to get up, and his restrictions were relaxed. The dose was now increased to fifteen grains, and after twenty-five days' treatment, to twenty grains thrice a day; but after this dose had been continued for about fifty days, it had again to be reduced to five grains, on account of the supervention of diarrhœa. The bulging was decidedly less, the area of dulness reduced to three inches and a half transversely, by two inches and a half vertically; the elevated tumour had quite disappeared, and the general pulsation was almost gone, but the enlarged superficial veins, and the stridulous voice, still remained to show that the cure was not complete. In this case decided emaciation was the concomitant, if not the result, of the treatment. Dr Roberts³ also relates a case which occurred under the care of his colleague, Dr Wilkinson, of a large thoracic aneurism in a male, projecting in the neck as a tumour the size of a child's head, extending from the left clavicle to the angle of the jaw, and apparently about to burst. Fifteen grains of the iodide of potassium were administered thrice a day, the pain was lessened, and the growth seemed stayed, but the patient died in seventeen days from gangrene of the lung, the effect of pressure upon the left pneumogastric nerve. The sac was found lined with coagula, and a large firm blanched clot attached by a broad pedicle to its upper part floated free within it.

¹ *Vide* British Medical Journal for January 24, 1863. ² *Loc. cit.* ³ *Loc. cit.*

Thus, of these fifteen cases of aneurism which, so far as I know, comprise all the cases of this disease already published, in which the treatment by iodide of potassium has been persistently carried out, there has been in all save one—and that a perfectly hopeless case—a marked relief to the suffering; in twelve there has been undoubted diminution in the size of the sac, while in a few, the number of which a longer continuance of the treatment has ere now probably increased, there has been so complete a subsidence of the tumour and relief of all the symptoms as to amount to an apparently perfect cure. These results are extremely encouraging; and when we reflect upon the entire absence of any risk to the patient from the treatment, and the almost absolute certainty of relief to his sufferings being at least attained, I think we are warranted in saying that no treatment for aneurism, and especially for internal aneurism hitherto devised, holds out anything like an equal prospect of relief, if not of cure, with that by the iodide of potassium.

To attain these objects fully, several circumstances must be carefully attended to, and the first of these is the dose of the remedy to be administered. In the cases related, the dose has varied from five grains to thirty, three times a day. In one case, ten grains thrice a day produced violent salivation, which ceased on a reduction of the dose to five grains; in another, twenty grains thrice a day seemed to produce violent diarrhœa, which also ceased on a reduction of the dose to five grains. In one of my own cases, considerable coryza was produced at first, while the patient was taking only twenty grains thrice a day; but this rapidly ceased upon intermitting the remedy, and did not subsequently recur, though the dose was afterwards increased to thirty grains thrice a day, and continued many months. In my other two cases, thirty grains twice a day were administered, without any ill effects from the first; in one of them, however, pain in the stomach or head occasionally supervened, but was at once relieved by intermitting the remedy for a few days. Now, whether the action of this remedy consists in altering chemically the constituents of the blood, or in influencing in some unknown manner the vitality of the blood, or of the organs in which it circulates, it seems probable that it is in some measure proportionate to the quantity ingested, because the relief of pain, which is one of the earliest symptoms of amendment, is not produced till a certain efficient dose has been given. It seems therefore of consequence to attain that efficient dose as rapidly as possible, and whether it be that a large dose more readily establishes a tolerance of this remedy or not, there is certainly no evidence as yet before us to prove that this drug can be more safely administered by beginning with small doses, and gradually increasing them, than by commencing with full doses, as of thirty grains at once, intermitting them occasionally for a day or two on the occurrence of any symptoms which seem to call for this. In attempting to produce the specific action of iodide of potassium, saturation of the blood

seems to be imperatively required by the rapidity with which the secreting organs, and especially the kidneys, remove it from the system—twenty-four to seventy-two¹ hours' abstinence from the drug having always sufficed to cause the disappearance of every trace of its presence from the urine. While the continuous administration of large doses may possibly in time succeed in saturating not only the blood, but even the tissues, at all events some such effect seemed to have been produced in Case I., in whom, in the latter months of his treatment, the application of a belladonna plaster was always followed by vesication and an eczematous eruption, although he had previously worn such plasters for many months without any ill effects, and it was only after this thorough saturation was attained that this patient's improvement progressed with any rapidity. From the apparent importance of this element of saturation, and the safety with which it can be produced in most cases, its attainment being evidently not necessarily connected with the development of any unpleasant symptoms, which occasionally then cease to appear, though they have been present at an earlier stage of the treatment, the proper procedure in all cases in which unpleasant symptoms arise, would seem to be not diminution of the dose, but temporary intermission of the drug,² and possibly, in some instances, its combination with some counteracting agent, such as opium. And I make this suggestion the more readily because, though large doses of this drug have unquestionably a greater tendency to irritate the gastro-intestinal mucous membrane—an irritation which may be checked by intermitting the drug, or altering its mode of administration—other unpleasant symptoms, such as coryza, etc., do not seem to be necessarily connected with largeness of the dose, but seem referrible more to idiosyncrasy than to poisonous action. The only severe case of coryza which I have seen produced in this manner has been apparently due to the trifling amount of the iodide contained as an impurity in a few drachms of the bromide of potassium—the bromide itself, I believe, producing no such effect.

As to the length of time during which this treatment ought to be continued, we have as yet no means of judging. Many of the cases I have quoted seem to point to a few weeks as sufficient to establish a curative result, but this has not been my experience. A certain amount of relief may no doubt be rapidly attained, but any considerable amendment has only been procured after keeping the patient for many months persistently saturated with the drug; and

¹ The amount was always much lessened after twenty-four hours' abstinence; after forty-eight hours, there was a mere trace, and this had quite disappeared after seventy-two hours.

² Rosenthal, *Wien. Med. Halle*, vol. iii. No. 20, 1862, and *New Syd. Soc. Year Book* for 1862, p. 433, states that free dilution aids in removing the iodide from the system, and I can confirm his statement that, even when it has been given continuously for months, from twenty to seventy-two hours is sufficient to remove all trace of it from the urine.

I should not consider that this treatment had a fair trial, unless it had been carefully carried out for at least twelve months, while it is probable that the full benefit is not to be derived, in many cases at least, except by a steady persistence in its use for several years. But this treatment is of too recent introduction to say anything positive on this head.

In regard to the adjuvant treatment, there are one or two remarks to make which seem to me of considerable importance, and these may be comprised under the two heads of position and diet. Whatever is capable of lessening the frequency of the heart's action, without impairing the strength of the patient, or vitiating the quality of his blood, cannot be an unimportant adjuvant in the treatment of aneurism. The enforcement of the recumbent position, therefore, which is so influential in this respect, has seemed to me a matter of paramount necessity, and has been strictly carried out in all of my three cases; indeed, in the most serious one (Case I.), the patient was laid upon his back for fully seven of the eight months he was in my ward, not being permitted even to turn upon his side—any attempt to do so being always attended by a recurrence to some extent of the pain, along with an uncomfortable sensation of pulsation. I have no doubt that the success attained in his case is very considerably due to the long-continued perfect rest in the recumbent position; and in the treatment of so serious a disease as internal aneurism, I should consider it most unwise to neglect the employment of this simple but efficient mode of aiding the cure. No doubt the enforcement of this portion of the treatment is irksome and impossible of attainment without the intelligent acquiescence of the patient, but I have not had any difficulty in obtaining this, on explaining my reasons, and the object I had in view; and I may make the same remark as to diet. Aware of the evils of starvation on the one hand, and of plethora on the other, my patients were put upon a somewhat restricted mixed diet—fish being given for dinner, at first at all events, as being the least nutritious form of animal food, while they were told voluntarily to restrain their appetite as much as possible, and to make use of no more than what they felt to be sufficient to maintain themselves. In regard to fluids, water, tea, or milk alone were allowed; and though they were not doled out in a measured quantity, yet similar directions were given in regard to them as in regard to solid food; explanations were given in regard to the result desired, and the evils to be avoided, and careful inquiries were daily made as to the mode in which these advices were being complied with, so as to impress their necessity and importance upon the patients. I have had no reason to be dissatisfied with the result of this reciprocal confidence between patient and physician, and I believe it to be more conducive to the wellbeing and the comfort of the former, than any more precise definition of amounts by weights and measures. The principles of the treatment were intelligibly laid down, and intelligently acted upon, and the effects daily noted,

and the result has been that all of my patients have, without becoming plethoric, yet preserved a healthy and well-nourished appearance throughout the whole of their tedious treatment.

In regard to the mode of action of the iodide of potassium, I have already mentioned that Dr Chuckerbutty supposes it to increase the coagulability of the blood, and that Dr Roberts seems to consider this a probable theory. The correctness of this idea is, however, doubtful; it might explain the coagulation of the blood in the aneurismal sac, but it could not explain the great relief to the pain, which is the almost immediate result of the ingestion of an efficient dose. Moreover, large doses of iodide of potassium relieve the pain of many cases of rheumatism, and the distressing spasm of asthma; in the latter disease, indeed, far larger doses have been given than that I have recommended—Dr Aubrée having successfully treated several cases with doses of forty-five grains three times a day;¹ these are diseases in which increased coagulability of the blood is not likely to be beneficial, yet the relief to suffering in all of these cases is very marked, and, at all events, as regards rheumatism and aneurism, very similar in character. So far as I know, no one has hitherto attributed to the iodide of potassium sedative properties similar to those known to be possessed by the bromide; yet it is possible that it may act as a sedative to the nervous system, modifying its action in some unknown manner, and it is probable that its curative action in all these cases is due to this peculiar modification of nervous action—the coagulation of the blood in the aneurismal sac being the result of secondary causes. In Case II., this treatment produced an immediate and remarkable effect in lessening the fulness and force of the pulsations, not only in the tumour, but throughout the whole arterial system, and this not to our observation alone, but also as perceived by the man himself. This sedative action, which must have been exerted primarily on the nervous system, must no doubt favour greatly the coagulation of blood in an aneurismal sac; though not observed, it may have existed in the other cases, and it gives the only rational explanation of the peculiar effects of the iodide according to our present knowledge. I regret that in none of my cases was the sphygmograph employed to record the force of the arterial pulsations; and thus to detect any deviations produced by treatment; in any subsequent cases that may come under my care, I shall endeavour to do this so as to settle this matter.

I need hardly say that, notwithstanding the great and manifest relief obtained in almost all cases of aneurism by this treatment, positive cures can only be exceptional, of comparatively rare occurrence, and the result of long-continued and careful treatment. An aneurism may prove fatal in so many various ways besides rupture, that the mere coagulation of the blood within the sac is a comparatively small step towards a complete cure, though by no means an unimportant one. The relief obtained can only be regarded as

¹ Trousseau's Clinical Medicine, New Syd. Soc. Ed., vol. i. p. 656.

unequivocally tending towards a cure, when, from the symptoms, it is apparent that the aneurism is not only becoming more solid, but also shrinking in all its dimensions; and even then incautious exertion may rupture the sac at some point where fluid blood may still communicate with the arterial canal, and death may thus ensue while the patient is flattering himself that he is being cured. Compression of important organs by the solidified sac may also induce dangerous and even fatal complications. And even under the most favourable circumstances, the occurrence of aneurism of a large and important artery proves the existence of such a diseased condition of the arterial coats as will render the patient's life ever after a precarious one.

Notwithstanding the great relief to the symptoms in almost every case, it is obvious that anything beyond this—anything at all approaching to a cure—can only be expected in sacculated aneurisms, and chiefly in comparatively young individuals, and in cases more or less of a traumatic character, that is, produced by unusual exertion, as evincing a possibly less seriously diseased condition of the arterial coats than where the aneurism has occurred more gradually, and, as it were, spontaneously. On the other hand, when the aneurism has been of slow and spontaneous growth, these very circumstances, evincing as they do the existence of a greatly diseased condition of the arterial coats, would form unfavourable elements in estimating the probability or completeness of a cure; and the presence of more than one aneurism in the same person would seem likely to reduce still further the chances of anything beyond mere temporary improvement; but as the history of Case III. shows, even in such cases this improvement may be so great as to be well worth all the trouble expended in attaining it.

In conclusion, I may state that being fully aware of the fallacious character of the argument from *post* to *propter*, which has been unavoidably employed in regard to the method of treatment now recommended, in a disease which, like aneurism, occasionally undergoes spontaneous abatement, I am by no means desirous of placing an undue value on the cases related or the results obtained, which as yet are too few and too unsatisfactory to enable us to assign any very high or definite curative value to the treatment of aneurism by iodide of potassium. I have been simply desirous of pointing out that, in the hands of different observers, not all even of the same nation, whole series of cases have obtained a relief so great and well marked, as fully to entitle this method of treatment to a more extended trial by which its true value may be more correctly ascertained.