

SOME ACCOUNT OF A CASE
OF
OBSTINATE VOMITING,
IN WHICH
AN ATTEMPT WAS MADE
TO PROLONG LIFE,
BY THE
INJECTION OF BLOOD INTO THE VEINS.

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IN a former Paper, which was read before the Medical Chirurgical Society in the Spring of the present year, (1818) I ventured, on the authority of the experiments there related, to recommend, in cases of desperate inanition, the injection of blood by the syringe. Since these experiments were published, the operation has been already once performed; and as a narration of the circumstances may, perhaps, be of service to some, who, at this moment, may stand in need of the remedy, I hasten to lay them before the Society.

A poor fellow*, of the name of Brazier, between thirty and forty years of age, lately a patient in Guy's Hospital, was attacked with disease about the stomach, which, as subsequent dissection proved, depended upon a scirrhusity of the pylorus. It would be impertinent to my present purpose to enter into a detailed account of the various symptoms of his long illness; it may be remarked, however, that for the last few weeks, his bowels were seldom open without the use of injections, and that during the last three or four months, he had vomited the greater part of his food. The region of the stomach was frequently examined, but though he was emaciated in a high degree, neither tenderness, nor enlargement, nor hardness could be distinguished; he had no pain there, and there was nothing in the appearance of the matter vomited, which indicated ulceration: so that on the whole there was some little ground for hoping that the symptoms might, perhaps, not arise from a scirrhusity of the pylorus.

When I saw this man at the request of Dr.

* Should this history appear prolix, the Society will have the goodness to remember, that in our total ignorance of the operation, every fact becomes important.

————— *Audi!*

Nulla unquam de vitâ hominum cunctatio longa est.

Human life is at stake; and surely the infirm may, under such circumstances, reasonably exact from the profession, those minute investigations for their safety, which the sternest of the satirists has vindicated to a slave.

Cholmely, under whose care he was, the defect of sanguification had so completely exhausted him, that his dissolution was hourly expected. The veins of the limbs, I mean their trunks, were evidently shrunk; the pulse was small, and feeble, and very compressible, and so indistinct, that it could not be numbered without some difficulty; the vascular system seemed nearly empty. With these marks of inanition, the other symptoms corresponded. The temperature of the limbs was falling, and the mind sinking into a state of insensibility; the muscles were become so feeble that he spoke in whispers, and found a difficulty even in stirring his limbs; and his whole person, the limbs and face especially, was so excessively emaciated, that when he lay in the bed, so that only the face and arms were exposed, he really reminded one of an animated human skeleton, covered merely by the skin. I am aware that this figure may appear a little too fanciful, but it certainly conveys no exaggerated idea of the appearance which it is designed to illustrate. To these remarks I may add, that the complexion was slightly jaundiced, and that the skin, on various parts of the limbs especially, was discoloured, with mottled patches of a livid blue tint, which seemed rather to arise from a gathering of blood in the minuter veins, than from actual extravasation.

When it was first proposed to me by Dr. Cholmely, that the injection of blood should be

tried in this instance, as the "only and doubtful" remedy, I felt considerable hesitation. The case was every way unfavourable, at least to the splendid success of the operation; and I could not but think it unwise, by an adventurous attempt to prolong the life of a solitary individual, to risk the character of a remedy, which, if adopted into practice, would hereafter, in all probability, preserve the lives of numbers. On seeing the patient, however, my reluctance presently gave way; his truly helpless and hopeless appearance was such as might have moved compassion, even in those who are most familiar with disease. He was evidently at the point of death. Transfusion alone could give him a chance of life. He was himself willing that the attempt should be made. Even if the operation should fail, it would probably disclose facts which might be of advantage to others. These were weighty considerations, and we determined to operate*.

For this purpose, about an inch of the right cephalic vein was laid bare, a little above the elbow, (for the vessels were too much contracted to admit of the operation below it,) and a longitudinal incision, about a line in length, was made with the lancet. Some gentlemen present,

* Dr. Cholmely, Dr. Back, Dr. Wright, Mr. James South, Mr. Callaway, Mr. John South, Mr. Thomas Cox, Mr. Pollard, and several other gentlemen, were present at the operation.

undertaking to supply a few ounces of blood, about an ounce and a half was taken up by the syringe, and immediately infused into the vein in a gradual stream. This operation was repeated ten times, so that between twelve and fourteen ounces of blood were introduced, in this manner, in the course of thirty or forty minutes.

No very obvious changes, either morbid, or of a salutary nature, made their appearance during the operation. The brain, nerves, and muscles, remained undisturbed; the respiration continued unaltered; the temperature of the body scarcely rose; and even the pulse, with the exception of a slight increase in its size, and a dubious variation of three or four beats in the minute, underwent no obvious change. It should be observed, however, that the livid discolouration of the hands, already described, gave way to a more healthy complexion; the same change, though unattended to, probably taking place on other parts of the skin. In reply to repeated inquiries, the patient himself declared, that he perceived no unusual sensation whatever; and at the close of the operation, when speaking doubtfully of his improvement, he expressed himself in a more audible whisper than he had made use of before.

In performing the injections, some little niceties were attended to, which it may not be improper to notice. The different portions of blood were

not injected in immediate succession, but at irregular intervals of five or six minutes, so as to give time for each portion to be distributed over the vascular system, before a fresh supply was poured in. In one instance, however, two measures, in another three were thrown in, at intervals of a few seconds only, in such a manner, that from three to five ounces of blood were infused, in the course of two or three minutes, yet without occasioning any obvious derangement.

To facilitate the operation, the vein was laid bare, and a probe was passed beneath it at the under extremity. As this was a first attempt, it was expected that various embarrassing circumstances might occur; and it was therefore deemed a prudent, though perhaps not altogether a necessary precaution, to obviate those, at least, which might arise from the concealment of the vein.

The little pipe, easily introduced, was secured in the vessel, without the assistance of a ligaturé, merely by the pressure of the finger; and in order to expel the air, it was, previously to its insertion, filled with water; retained there, on familiar principles, by placing the tip of the finger over the superior orifice*.

The syringe and the tubule formed together the

* This piece of sleight was suggested by Mr. Henry Cline, and answered so well, on repeated trials, that I think it worth notice. The exclusion of air from the apparatus is important.

whole of the apparatus; and the nozzle of the syringe, sliding readily over the smooth extremity of the tube, they could be separated or united without any difficulty. This greatly simplified the operation; for the blood was taken up from the cup, and poured into the vein, with as much ease and much in the same manner too, as the anatomist infuses his injection. Two minutes scarcely elapsed during this transfer of the blood from one arm to the other.

It is scarcely necessary to add, that the syringe was made warm;* that the apparatus was air-tight; and that the greatest care was taken, that none of the air should make its way into the veins by finding a lodgment in the syringe or pipe.

The performance of the whole operation was materially assisted by Mr. Henry Cline; and though I am conscious, that his talents are too well appreciated by the profession, to require any eulogy from me, I cannot forbear expressing the pleasure which I feel on this occasion, in associating my name with his. To his instructions I stand indebted for some of my earliest surgical information, and in him I view with respect, the union of an extensive knowledge of established surgery, with that chastened and well balanced spirit of caution

* Is not the blood animated? And if so, would not a cool apparatus be preferable, as tending less to exhaust the vital principle? Blood in a cup coagulates more speedily at a higher than at a low temperature. Experiment must decide this question.

and enterprise which is of all others the best fitted to improve it. I could enlarge, but I forbear; the language of panegyric would be here misplaced. What I have said he will pardon, as the well-earned tribute of unfeigned esteem, as far removed from the selfishness, as it is from the satire of adulatory commendation.

Although the operation, which was performed two or three hours after mid-day, produced very little effect at the time; in the course of the evening, the patient experienced a very salutary change from it. His body became warmer; his respiration remained regular; and his pulse, which by this time had acquired nearly double its former size, beat with great regularity about eighty-eight times in a minute. This was its number before the operation was performed. While I was making these observations, I was very well pleased to hear one of the hospital attendants pointing out a reddening of the extremity of the nose, and the increasing ruddiness of the lips, (pallid and bloodless before,) as well as the greater alacrity which our patient manifested, when he attempted to stir his limbs. When asked respecting his feelings, the poor fellow himself replied, "I am better," "much better;" "less fainty;" and these words were certainly pronounced with a firmer utterance, and in a louder whisper, than I had heard him use before.

All these favourable symptoms continued during

the night, and the greater part of the next (the second,) day; indeed at eight in the morning, he thought himself stronger than on the evening preceding. At this time his limbs, as well as the trunk, were remarkably, though perhaps not preternaturally, warm; he passed a stool without an injection, and felt a degree of appetite, which he had not experienced for two or three weeks before; for he pressed his attendants to supply him with a little food, and drank, at intervals, about half a pint of porter. On the whole, the symptoms seemed to indicate a slight degree of excitement. Probably this excitement was analogous to that, which arises from taking food after long-continued fasting; the blood irritating the empty vessels, on much the same principle, as the aliment does the famished stomach.

It was not till the evening of this day, (the 27th of September,) that he began to droop; but he sank so rapidly in the course of the night, that, on the following morning, he seemed reduced to as low an ebb as before the operation. As the day (the third) went forward, he passed an involuntary stool, and suffered a recurrence of his retchings. At nine in the evening, his extremities were become cool; his pulse was disposed to intermit, and his mind (perhaps) to waver; and these symptoms gradually increasing upon him, he died at eleven o'clock, about fifty-six hours after the injection, apparently exhausted from inanition.

It deserves particular remark, that although all the marks of exhaustion, which had preceded the operation, recurred on this day; not a single additional symptom made its appearance with the exception of a sort of white exudation, observed on the skin of the face, and giving it the appearance of having been dusted with a few grains of coarse powder. This efflorescence, seemingly emitted with the perspiration, was in all probability of a saline nature; but owing to some misunderstanding on the part of the attendants, none of it was preserved for chemical examination.

On the morning after death, the body was examined by Mr. Callaway. From this inspection, it appeared that the *pylorus* was really scirrhus, together with the upper part of the duodenum, and that this indurated mass made a slight pressure upon the gall-ducts. Here too the passage for the food was contracted, and its inner surface irregular, though it did not appear that even the internal membrane itself had been destroyed by ulceration.

The vein on which the operation had been performed, was of course examined with peculiar care, to ascertain whether inflammation of it had been excited. The only unusual appearance observed, however, was a darkish red discolouration of the inner membrane, for about half an inch above, and a line or two below the wound. This

was seated beneath the surface of the vessel, and, at first glance, looked like the stain of a coagulum which had formed in this part of it. There was no thickening of the coats of the vein, no effusion of adhesive matter, no appearance whatever of a widely spreading inflammation; above and below the spot, the vessel appeared perfectly healthy, as it still does in the preparation of it now before me. If there had been any genuine inflammation at all, it certainly had been slight, and was confined to the vicinity of the wound.

Remarks.

There are various reflections which suggest themselves on considering this case, some of which I may be permitted to notice.

1. It will be observed, in the first place, that this poor fellow fell a victim to exhaustion, notwithstanding the supply of blood which he had received, about fifty-six hours before. When we are considering this fact, however, it must not be forgotten, that the quantity of the injection was very small in comparison with the high degree of inanition. It is wonderful what large quantities of blood may be lost, without immediate danger to life, provided the blood-vessels have time to accommodate themselves to the evacuation. Repeated venesections afford us a familiar instance of this, as well as bleedings from the womb.

I am indebted to Mr. Lewis Hensley, formerly a student at the united hospitals, for an authentic and extremely intelligent account of two cases of copious blood-letting, which it may be proper to notice here. The patients were two robust countrymen, of the middle size, and laboured under thoracic inflammation. From each of these men, Mr. Hensley *himself*, drew off by venesection, more than a gallon and a half of blood, (he weighed it *carefully*,) in the course of five days; and during the whole of this time they took little aliment besides barley-water; yet both eventually recovered, without any alarming symptoms of inanition. Brazier was a man but little below the middle size. In his case the waste of the blood had been very gradual; and at the time when we operated it had been carried to the highest pitch compatible with the remains of life. Under these circumstances, I believe a gallon and a half to be the lowest estimate of the deficiency. Indeed, when the extreme emaciation of the patient, and the contraction of the vascular system are considered, together with the gradual manner in which the blood had been wasted away, we shall not, perhaps, appear guilty of exaggeration in rating it much higher; possibly it more nearly amounted to two gallons than one and a half. But even if we take the lowest estimate, twelve or fourteen ounces will appear a very inadequate supply; nor is it to be wondered at, that, after a great part even of this

small pittance had been consumed for nutrition, in the course of the next twenty-four hours, the patient should relapse into that state of inanition from which the operation had so imperfectly liberated him.

In alluding to the causes of this exhaustion, I have said little, it will be observed, of the excitement which occurred the day after the operation, because, although this was so inconsiderable as to be in a manner dubious, its effects in contributing to wear out the little remains of the patient's strength, are too obvious to require a comment.

2. The foregoing reflections naturally lead us to inquire, whether the life of our patient would not have been further prolonged if a larger quantity of blood had been infused at first, or if the injection had been early repeated, for instance, on the second day? Upon this point there may now be room for a difference of opinion; but it must, I conceive, be admitted, that with the information which we possessed at the time of the injection, the method of operating adopted was upon the whole the most prudent.

It is hardly necessary to remark, that it would have been very unwise to have thrown a large quantity of blood (for example two or three pints of it) into the veins at once. The patient was

exhausted; the heart and vessels were feeble; their capacity was become contracted; we had no former experience of the effects of the operation; unexpected and fatal symptoms might, perhaps, have been occasioned by it.

Nor can we deny, that it would have been scarcely less imprudent to have repeated the operation upon the second day. In the memoir already alluded to, I have taken occasion to shew that dogs, resuscitated by transfusion, may, under certain circumstances, die a day or two afterwards*. With this fact before us, it seemed a necessary precaution that we should defer the second injection till the third day at least. It was thus only that we could ascertain whether any symptoms prohibiting a second trial of the operation would ultimately arise from the first.

But the history of this operation has a further claim on our attention, as it elucidates some important points connected with the injection of blood.

1. In the first place it shews that the operation is very easy. A little tube and a syringe were the only novel instruments required; and although this injection was a first attempt, not a single difficulty occurred.

* When the human blood, or that of the sheep has been substituted in large quantities for their own.

2. It further proves, at least with all the force of a solitary fact, that the infusion of human blood by the syringe is unattended with danger provided the blood be not suffered to lie at *least* above a minute in the cup. No unfavourable change was produced by the operation at the time, nor was there I think a single morbid symptom observed during the next fifty or sixty hours which could be fairly attributed to it.

3. To this I may add, that the case gives additional strength to the opinion that human blood, although transmitted through the syringe, may still retain a positive fitness for the animal purposes. In this instance it will be observed, that the strength was recruited by it; that the pulse became larger and the temperature of the body warmer. The man himself felt that he was revived; and I think the spontaneous evacuations from the bowels, and the returns of appetite especially, as they seem to have arisen from an improvement of the alimentary secretions, are further proofs of the little injury which the blood had sustained from passing the syringe. Whether, blood injected in this manner, so as to supply the vessels directly, remains so far unimpaired in its qualities that it will supersede the necessity of a supply by sanguification, the case did not enable us to ascertain, but the doctrine is plausible; there is nothing in it obviously at variance with sound reasoning, and the general tenor of the facts

related certainly gives some little countenance to it. Observation, however, and experiment, the sole basis of a solid physiology, can alone solve this problem; nor can any labour, I conceive, be ill laid out which is employed in investigating a point of such importance. And are there not at this moment many patients in our hospitals sinking under inanition, who, if the experiment were explained to them, would be grateful that it should be tried? And would not this experimental remedy secure to some of them at least the only remaining chance for life? And is there a principle in the physiology of nutrition which it is of more importance to establish? Who can tell the various diseases in the management of which it might perhaps be applied? Half the labour, laid out by Spallanzani, on a single dissertation, would probably establish the affirmative; and I had almost added, that the naturalist who fairly succeeds in proving it, whether by observations on the human subject, or experiments on the brute, will be found, perhaps, hereafter, when his discovery has been matured, and applied to all the medical purposes to which it is adapted, to have conferred no inconsiderable benefit on mankind. This consideration offers a noble incentive to exertion, and cannot want its due influence over an elevated and truly benevolent mind.

St. Saviour's, Southwark,

Oct. 1st, 1818.