

It appears, therefore, that the hot saline injection into the veins, and the operation of venesection, when it rapidly relieves, as it often has done, the symptoms of collapse, have this effect in common, that they facilitate the passage of the blood through the lungs, and thus lessen that embarrassment of the pulmonary circulation which is the essential cause of choleraic collapse. But, whereas the hot injections act by removing the impediment which results from spasmodic contraction of the arteries, venesection acts by relieving over-distension of the right cavities of the heart, and thus increasing the contractile power of their walls.

In concluding this communication, I would implore those pathologists who have hitherto thought that the temporary benefit following injections into the veins affords conclusive evidence that collapse results from loss of water, to consider whether the explanation here offered is not at least as probable, as complete, and as consistent with all the known facts of the problem, as that which is commonly received.

[To be continued.]

Original Communications.

HOT MUSTARD BATHS IN THE COLLAPSE STAGE OF BRITISH CHOLERA.

By JOHN BARCLAY, M.D., C.M., Banff, N.B.

IN the BRITISH MEDICAL JOURNAL for October 21, I observe a paper by Dr. Joseph Bullar of Southampton, on the excellent effects attending the employment of hot mustard baths in the collapse stage of cholera; and it might not be uninteresting to relate the effects of substantially the same treatment in a class of cases, the severity of which was nearly equal to that of the true Asiatic cholera. The only difference between his mode of employing the mustard bath and that followed here was, that instead of the actual mustard and water bath, I preferred the "hot blanket mustard bath," as employed and recommended by Dr. Newington in the *Lancet* for June 10th, 1865, in the treatment of insanity and other diseases.

In and around Banff for the past three months—August, September, and October—we have had a very severe epidemic of what is commonly demonstrated British cholera. On reference to our case-book, I find that we have entries of no fewer than 116 cases, of all degrees of severity, during that time. Of the whole number, 32 were children of and under two years of age; 14 were above four and under fifteen years, and the rest were from sixteen to sixty.

First, as regards the infants attacked. The epidemic commenced on August 5th, during which month there were 8 cases; then during September there were 16 cases, and during October up to the 20th, there were 8 cases. The whole of these were quite different from the ordinary forms of infantile diarrhoea; the child seemed to be seized suddenly, or as some of the mothers observed, "just in a second." Purging of dirty water was first noticed, followed immediately by paleness and coldness of the whole surface, the lips being especially pale; the eyes very much sunk, and half open; a marked blue circle around the eyelids; the tongue shrunk, dry, glazed, and of a pale colour, but not furred; breathing almost imperceptible, and the pulse very weak; in some

cases intermittent, and in the very bad ones almost imperceptible. In a few there was vomiting; but in the children this was not such a marked symptom as in the adults, nor one which there was much difficulty in combating. The skin was cold, moist, and clammy, in some more, and in others less so. In the milder cases, the little patients seemed to suffer some pain, or, at all events, uneasiness, though none of them seemed to suffer severe pain in any part; but in the severe cases, the child lay as if in a dead faint, neither crying, moaning, nor betraying any sign of uneasiness whatever.

In one, a child of seven months, all the above symptoms were seen in their aggravated form. The case occurred in the middle of September when there was the greatest number of adult cases. The infant seemed deprived of all consciousness; indeed, I imagined it to be moribund. When applied to the breast, it made no attempt to seize the nipple, and when nourishment was put into its mouth, it made no attempt to swallow. The pulse was imperceptible at the wrist; and I could barely perceive the chest heave in breathing, noticing only a periodic tremulous movement of the intercostal muscles. I ordered enemata of strong beef-tea with milk, brandy, and a minim of tincture of opium immediately, and to be repeated every two hours, leaving out the laudanum afterwards; the infant to be put in a mustard blanket bath from neck to heels, with hot bottles to each side when laid in its crib; also whenever it made an attempt to swallow, to put it to the breast. Next day the report was that heat and colour were restored to the surface by the bath, that the enemata had been retained, but that the child would neither suck nor swallow what was put into its mouth. The collapse was still very great, and unconsciousness not much less, but yet there was some improvement. I ordered the bath to be repeated, and the enemata to be persisted in without the laudanum, unless they should be passed off as soon as given. On the fourth day, the child had so far recovered as to look up and seize the nipple; no more enemata were required, and the subsequent recovery was rapid.

In a second case, almost exactly parallel, the same means were ordered, but unfortunately none of them were available till after several hours had elapsed, and though the child seemed to rally somewhat after the bath and first enema, it gradually sank and died convulsed. Another unfavourable circumstance connected with this case, was that the child had been some twelve or fourteen hours ill before assistance was sought for.

A third bad case, of which that of the first is nearly as exact a description, was likewise lost on account of the ignorance of the nurse (not the mother) of the child, who preferred, as she said, "to allow the child to die in peace without tormenting it." The second and third cases did not look a bit worse than did the first, and had the means employed in the first been as early begun and as energetically persisted in in them, I think both might have been saved.

The other twenty-nine cases of children were milder than the above, and all recovered with only a partial application of the bath, to the legs in some, and as far as the belly and chest in others. Grey powder, with Dover's powder and chalk, seemed the best remedies where there was no vomiting, and the following mixture where that symptom was present:—

℞ Pilulæ hydrargyri gr. xvi; tincturæ opii ꝑ iv-vj-viiij-xvj; syrapi zingiberis ʒv; mucilaginis acaciæ ad ʒii. Misce: signaque—A teaspoonful every four hours.

Of the remaining 84 cases, 14 were above four and under 15 years of age, and of these 14 cases, that of a girl ten years of age was probably the most severe.

She was a thin and delicate child, constantly taking coughs and colds, and very dyspeptic. On August 15th, she went to bed in her usual health, but in the middle of the night awoke intensely sick, cramped all over, and vomiting and purging dirty water, there being little difference between the liquid vomited and that purged. She was quite conscious, and complained of the cramps and pain in the stomach and bowels. I ordered a sinapism to the stomach, hot brandy and water, and a pill containing two grains of calomel and half-a grain of opium, the pill to be repeated if the first was vomited; or if kept, and the patient unrelieved, in four hours. At 10 A.M. on the 16th, she was completely prostrated, eyes sunk, pulse imperceptible, breathing almost imperceptible also, skin of a pale bluish colour, cold, and damp; had refused to take the pill or the brandy, but drank cold water, which was instantly rejected. The cramp had now left altogether; the eyes were half open, with a dark blue ring around them; she paid no attention when spoken to, but lay as if dead. No urine had been passed, and the suprapubic region was tympanitic. I ordered a complete hot mustard blanket bath with hot bottles around her to keep up the heat, enemata of strong warm beef-tea and brandy, with five minims of laudanum in the first, every two hours. It was with great difficulty that the parents could be got to adopt the above measures, nor would they have adopted them had I not procured a nurse, who energetically went about the performance of them, so hopeless did they think the case. Before noon, however, reaction was fairly established; she could speak, though still in a very hollow tone, and was persuaded to swallow one of the pills, and afterwards some ice and strong beef-tea. She made a good recovery.

The other cases in this division were much less severe; they had obstinate vomiting and purging, some of dirty water, others of biliary matter; all with more or less collapse, and all followed by intense weakness. In all who applied during the beginning of the attack, calomel and opium were given with effervescent draughts, ice, and sinapisms to the chest, stomach, and bowels. None of them required a whole bath. Where the vomiting had disappeared or never been present to a great extent, fuming nitrous acid with tincture of opium were given, which in most cases effectually relieved the purging. The greater number had cramps more or less.

The remaining 70 cases were all adults, the age varying from sixteen to sixty, but in only four cases was the collapse so alarming as to call for the application of the whole bath. In them, however, the effect was striking and most gratifying. In a few minutes the cramps disappeared, the skin became warm and red, the vomiting became less urgent, and a tendency to sleep induced. All four recovered. Two of the cases were above fifty years of age, and both were very severe cases and made slow recoveries.

With regard to the other treatment of these adult cases, the combination of calomel and opium was found to answer admirably, both in relieving the sickness and vomiting, and the pain and purging. We soon found that one grain of opium was of little use given as a single dose to an adult; but that a grain and a-half, when combined with three grains of calomel, and administered on the cessation of a wave of sickness (for it was always observed to come as if in waves), almost invariably remained on the stomach, relieving all the symptoms. Effervescent draughts were given for the intense thirst. When the calomel and opium failed to stay on the stomach, ice swallowed in small pieces invariably afforded relief. The remainder of the adult cases varied very much in severity, from what

in the absence of an epidemic would be called severe bilious attacks, to what is usually denominated British cholera. The calomel and opium, ice and sinapism treatment was adopted in all, with all the success that could be desired. When diarrhoea persisted after the attack was over, nothing did so well as the fuming nitrous acid with laudanum every four hours. In one case, drachm-doses of carbonate of soda were given, with the effect of aggravating all the symptoms; it was therefore in that case discontinued, and not again tried.

So satisfied were Dr. Manson (a member of the British Medical Association) and myself of the admirable effects of the mustard bath in this class of cases (and he was equally pleased with it in the cases in which he ordered it), that we determined, if unfortunately at any time we should be visited with an epidemic of real Asiatic cholera, to give the treatment a fair trial in it also. It was with much pleasure, and great interest, therefore, that I read Dr. Bullar's paper in the JOURNAL recommending the same line of treatment, and I hope others will give it a fair trial too. As regards the form of the bath, I think the blanket bath should be preferred, as being in most cases more readily and more quickly available, and also more easily applied in very bad cases.

Transactions of Branches.

EAST ANGLIAN BRANCH.

ON AMPUTATION IN GANGRENE.

By WILLIAM CADGE, Esq., Norwich.

[Read July 14th, 1865.]

Two years ago, at our annual meeting at Yarmouth, I had the honour of reading a paper on the subject of amputation for traumatic gangrene. My object was, in that communication, to oppose the common practice of *immediate* amputation in all cases of traumatic gangrene of a limb; and I endeavoured to support my views by the narration of cases of great interest bearing directly on the question. I return to the subject now, in order to enforce the practice I then advocated; to add a few fresh cases, and still further to ventilate the matter by eliciting the opinions of the members now present.

The rule of practice, as at present taught in schools and in almost all modern surgical works, is this:

1. In senile gangrene, or gangrene from any spontaneous cause, such as arteritis, embolus, etc., amputation is not to be thought of until the mortification has ceased and a line of separation has formed.

2. In traumatic gangrene, whether from fracture, laceration, gunshot wound, or wound or ligature of arteries, amputation should be done *immediately* the gangrene has manifested itself, and before the line of separation has formed.

The reasons assigned for these opposite modes of treatment are clear and simple. In gangrene from internal causes, we are to wait for a line of separation, because we cannot tell how far the mortification will spread; and, if we operate, we may operate in parts already doomed, and the disease will reappear in the stump. On the other hand, in traumatic gangrene, we are not to wait for its cessation, lest the disease should spread rapidly to the trunk, and life will be lost.

Now, with all submission, I would take exception both to the practice and to the reasons by which the practice is supported. In both these classes of gangrene, I think that the bare fact of the cessation or spread of the gangrene should not be the only or