ON CHOLERA: ITS DIAGNOSIS AND TREATMENT,

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Weary though most people are of the very name of cholera, it appears a duty to take advantage of the comparatively new condition this country has enjoyed from that disease during the past year as a more favourable time for disseminating the information we possess respecting it, than either while it is present, or its advent apprehended.

I have devoted much leisure to the perusal of recent contributions to the literature of the subject, as well as of works considered by the profession as authorities, and truly a less satisfactory course of reading could hardly be pointed out. So varied are the views adopted by different authors, that, though it was at first my intention to try to elicit truth by a process of exclusion, reviewing opinions and rejecting what appeared untenable or illogical, I soon became satisfied that no man would consent to walk through such inconsequential lumbrication as this plan would have entailed upon the reader, or have the patience to inquire how conclusions the most opposite, arrived at by authors, according to the point of view from which their opportunities permitted them to survey the disease, were capable of being reconciled like the celebrated dispute of the two knights who each saw only one side of the shield. In many of these treatises, it might even be desirable to dispense with the whole page of such different opinion on the subject; but here it is impossible not by mistake take up a work on a totally different subject instead of one on cholera asphyxia, malaena, Asiatic, alga—such are the recognised epithets bestowed on the disease in question. Upon the whole, therefore, it appeared the preferable course, as being only one that would admit of the whole subject being brought within reasonable bounds, altogether to abstain from the citation of authorities, and to trust instead to the readers' knowledge of individual opinions when such are alluded to, and of the facts which I have made the basis of my argument. A careful examination of the literature of cholera has satisfied me that more than one disease is present, at least in different quarters, cause, course, and character, has been described under that name; and until this be fully admitted by the profession, we must despair of arriving at any settled conclusions with regard to its true nature and cause. Let us then, when all Europe was turning with alarm to the East to watch the progress of the coming pestilence, still remains undiminished—we mean, the want of a definition of cholera: nor is it even to be doubted that this disease is as yet not known as it may appear, there is not one single symptom, circumstance, or condition of the system, that all authors concur in describing as invariably present in an attack of this malady. It is a source of no small disappointment that no new light has been shed on this disease by the most recent work on the diseases of India (Clinical Researches on Disease in India, by Charles Morshend, M.D.: 1856); I had looked with eager expectation to its appearance, in the hope that the distinctions which I am about to attempt to draw from the reason there might have been established by practical authority.

The nearest approach which I can find in all the various descriptions of cholera is that of agronomic agreement in noticing any single symptom as characteristic, is a kind of generalization of the existence of a remarkable condition of the circulation and of the blood in bad cases. It signifies little to my purpose that various and different degrees of the condition of the circulation in cholera, as a symptom, and that very different opinions are entertained as to its cause. It is much to be able to fix upon even one fact admitted by the majority as constant in the disease.

A review of the whole subject would justify the conclusion that this peculiarity consists not in primary poisoning or alteration of the blood, but in a species of paralysis of the powers which circulate the blood, and such a change in the action of the capillaries as respects nutrition, secretion, and the evolution of animal heat, as can only be referred to disorder or cessation of the agency which the sympathetic system of nerves is acknowledged to exert over these functions in health; but were we to attempt to go into the proof of this before the subject has first been dismembered of those forms of disease which have been mistakenly described as cholera, we should only be plunging one into confusion and of darkness and confusion we are so anxious to struggle out of.

Let us, then, in the first place, attempt to distinguish in the different maladies described as cholera all such symptoms as do not essentially belong to that disease and which in our minds we regard as the type of the disease, and refer each of them to its true cause, in order that we may perfect our diagnosis, and clearly perceive the rationale of the treatment required in each several instance. Almost all climates, but especially the more tropical, are liable to epidemics of diarrhoea, which attack very suddenly. These very often commence as hepatic or (if the term be permitted) a copious pouring out of irritating bile. This in hot climates commonly induces inflammatory ulceration in the glands of the colon in a few hours, and the case becomes one of confirmed dysentery. In this climate a similar hepatic or vomiting, as suddenly, is what we call English cholera; but here, instead of inducing dysentery, it generally passes off without mischief after the bile has been evacuated by plentiful vomiting and purging.

Of this nature, too, is a large proportion of the cases of diarrhoea which occur every autumn, and which in general attract very little attention; but if cholera of the true congestive type occur at the same season, all such attacks are then termed cases of premonitory diarrhea, and it becomes necessary, and in all cases, precedes cholera, but because a tendency to bowel complaint of any kind becomes in times when that disease breaks out epidemically, a prodigious cause of great power to induce an attack of dysentery.

The fact is well known, that even slight attacks, such as at other times would be thought too trivial to require attention, are liable, if neglected, to be followed by symptoms of fatal collapse when cholera is epidemic; whereas, in the premonitory diarrhoea, and so guard the patient from becoming the subject of that epidemic influence, is quite a different matter from curing cholera. Too many people's ideas are governed by the title of premonitory diarrhoea, given by authority to such affections, is considered by many to denote that such diarrhoea is an actual stage of cholera; and the practitioner who uses the term in that sense naturally concludes that in curing the purging with a little chalk, or lead and opium, he has cured a case of cholera. This is one of the greatest sources of error and confusion; and in the great majority of cases called "premonitory," the dysentery is in some way or other connected with whatever true cholera. The most ordinary means will arrest it; but this must be done at once, for if allowed to proceed, the disturbance of the circulation by excessive intestinal secretion, as well as that existing between the faeces and the whole system, will very soon ensue invalidate vital resistance to the epidemic influence, that algid cholera is superinduced.

It is necessary here to observe, that cholera is not the only disease capable of being treated along these lines; it is indeed true that in this country we can hardly conceive the devastation suddenly spread over a whole district by the invasion of epidemic dysentery, to which the slightest disturbance of the bowels will give rise-and we read of epidemics per continuitum having been similarly epidemical, and its scales connected with
intestinal derangement: but further illustration is unnecessary, for there are probably few medical men who have had extensive dispensary practice, or much to do with the poor in their own dwellings, who have not seen English cholera become dysenteric and fatal; a disease that devours, in foul and filthy houses, highly contagious and endemic, in combination with putrid or typhoid fever. In these cases, there appears reason to believe that the disease is communicated almost entirely by means of the contamination of putrid particles in a state of great criminal activity, in water, milk, the saliva, or other fluid exposed to the effluvia of the exuviae; and that these particles, when imbued, have a powerful irritant and poisonous action on the mucous of the stomach and bowels, and of converting it into an irritant poison, producing effects like those of croton oil, and continually reproducing itself. This is a fact which the observers of the Snow and his followers seem fully to have established. They have brought a vast amount of evidence together to show what a pregnant source of choleraic diarrhoea is, when among other impurities it contains the smallest quantity of faecal matter; or, more accurately, of intestinal mucus in a state of active decomposition. It would also appear probable from the same evidence that, where the choleraic atmosphere exists, such mucus is prone to assume an activity of putrefaction not common at other times, or else that the emollient mucus of the bowels is then more than usually pre-disposed to be acted upon by a putrefactive excitant imbibed. Be that as it may, however, there can be no doubt of the contamination of putrid form of diarrhoea from the sick to the healthy, of which the following is an instance.

A woman, living in a cellar in Manchester, into which an open grid communed with the drain, was attacked with diarrhoea. Her daughter, who had been suffering with a putrid diarrhoea, was sent into hospital; she too died, but introduced a most virulent diarrhoea into the ward, of which one of the women who lay in the bed next her died, and the other neighbour escaped only with life. The father at the same time, being crippled with rheumatism, was removed to the workhouse, where he died, and there also infected many with this putrid diarrhoea. In none of these cases was there the slightest symptom of an algid diarrhoea. In the kinds of diarrhoea prevalent last year. It had been otherwise, probably every one attacked, as well those who recovered as those who died, would have sunk into fatal collapse, and would have presented all the usual symptoms of the worst cases of cholera. The cases I have given, though of a more than usually virulent character, are by no means rare; and there is probably no filthy neighbourhood in the populous part of a large town but can furnish similar instances of contagious diarrhoea every autumn.

It may seem unnecessary here to repeat that neither this putrid diarrhoea, nor some other kinds, however fatally they may proceed to collapse wherever it appears, those children cholerae has appeared to be true cholera; for they occur alike where cholerae; and where it is not, and multitudes recover or die without ever having exhibited a single symptom of that paralysed state of the nervous system, which is known as algin, and is pathognomonic of algid cholerae. These facts, however, only render it the more incumbent on us to study with care the source and ratio medendi of any prevailing tendency to diarrhoea whatever, that may exist where cholerae declares itself, in order that by warding off this powerful source of debility from the syphilitic state, we may preserve sufficient nervous energy to resist the influence of the epidemic to which continued purging would otherwise so powerfully predispose it to succumb. Thus a practitioner in the tropics, who has mostly to deal with bilious diarrhoea, trusts to calomel and opium as his sheet anchor, and with it, he conceives, he cures the cholerae; the same treatment and in this country will as well as elsewhere. The autumnal stocks; still even its champions allow that mercury has appeared in some instances to have brought on, rather than to have warded off, algid symptoms; and that, however successful it is in general in its action which it does no good, and where in spite of its fullest exhibition the mildest attacks have ended fatally. Some have confidence only in sugar of lead and opium, but the same complaint and as of calomel. This is not an instance in which there is no purging (that is to say, in the purely con-

* The effects of putrefactive excitants on the secretions of various mem-
branches, converting them into irritants and sources of inflammation of the
mucous membrane of the conjunctiva, nasous, mouth, intestines, the
play of the organs, and of the muscles of the veins—which is among
the true sources of what Hunter calls continuous sympoty, requires
invaluable assistance from the guides of medicine "the
latter part of Dr. Bell's "Address in Medicine,"—Prov. Med. and Surg.
Tran.,1850, vol. xvil.,
lier, and never to be forgotten. The purging is an incessant symptom. If it be excessive, most frightful. If, in these cases, quinine and iron be given, and the disgust expressed will attest the nature of the attack. The other diagnostic signs are, that there is always some fur on the tongue, the pulse is generally perceptible, and the heart's action very rapid and feeble; not convulsively struggling and churning as in congestive cholera. Add to this that some urine is generally secreted, the extremities are not so cold as in the congestive disease, nor does the same amount of warmth return to the part when death takes place. The previous history of the attack is, that the patient has been purged perhaps a dozen times within a few hours; at first the tongue was red and much furred, the mouth hot, the skin clammy, the pulse above a hundred and sharp; then sickness came on and cramps, the skin grow cold and damp, and, exhausted by continued purging, he has fallen into the state of collapse.

It is, in the first place, of importance here to remark, that there is nothing of that oppression of the heart's action by excess of blood on the right side, and deficiency of it on the left, with which to relieve is to cure, in the congestive form of cholera.

The continued purging, which is here a secretion, not an exudation, prevents the overdistension of the great venous trunks of the cava and portal system taking place, which obstructs secretion. In short, it is not venous congestion and paralysis of action in the capillaries that we have to contend with here, but a draining away of the life by the quantity of fluid poured into the bowels under the influence of the putrid irritation of the whole of the intestines, which has been converted. It is in vain that we here attack the algalie symptoms, for even were we successful in restoring animal heat, etc., the cause remains; and as long as mucus continues to be secreted into the bowels, the purging will continue unless the putractive action be arrested.

It seems probable that large draughts of finely powdered pest charcoal in water will ultimately be found the best cure for this malady. Dr. Johnson uses castor oil, which answers very well if repeated sufficiently perseveringly to evacuate the decomposing mucus as quickly as it is formed. Tartar emetic in combination with calomel answers very well, or calomel alone in repeated doses when it acts both directly as an antispetic and in the same purgative way as castor oil. Dilute sulphureous acid drink is purely antispetic in its operations; so is salt; and cases are mentioned where an immense draught of spirits has cured. If by any of these means the putractive action is arrested and the purging stopped, warmth gradually returns to the surface, and the algalie symptoms disappear.

It may be observed, that correct diagnosis alone can direct the cure here, for to attempt this by the means which afford the greatest relief to patients suffering from the congestive or true form of the disease only aggravates; and indeed the expression of disgust and horror exhibited by patients in the algalie state of cholera induced by putrid diarrhoea is such that a second dose of solution of quinine and iron, is in perfect contrast to the thankfulness with which a similar dose is swallowed by one in the congestive stage of true cholera.

Of the bilious form of diarrhoea after algalie symptoms have been superseded, I find innumerable cases cited by Indian authorities, for example, Twining, Parkes, and others. In the first stage the attack is identical with that which, were cholera absent, would turn to dysentery; and of the present cases exhibit dysenteric symptoms, if the algalie stage be recovered from, along with remittent or so-called consecutive fever. Here there is no very leading symptom, unless it be the presence of a dryness on the tongue, which is never seen in pure congestive cholera, and the absence of putrid odour on throwing down the bedclothes. The purging is very considerable in quantity, generally colourless and without smell, save what occasionally it contains bile. The treatment here is strictly that applicable to acute dysentery: calomel and opium, ipecacuanha, sugar of lead and opium, etc. Mere antispetics, like dilute sulphuric acid, do no good; and the draught of quinine and iron, though not producing the intensity of disgust that it does in cases of putrid diarrhoea, is disagreeable to the patient, and is attended with none of the sensations of comfort and relief afforded by its exhibition in purely congestive cholera.

In these cases all the adjuncts of treatment by hot air baths, stimulants, etc., may be found of value which in true congestive cholera are exactly the reverse: perhaps where the distinction is exercised of the toleration of warm applications in one case, and their extreme intolerance in the other, might serve as a test.

This is all that it has appeared necessary to premise respecting the diseases, which, though distinct from cholera in their essence, most frightful. If they may perhaps be deemed of even greater importance than the unmixed congestive or primary disease, as being numerically more fatal.

[To be continued.]

ON A POSSIBLE CAUSE OF THE FIRST SOUND OF THE HEART.

By John Cockle, A.M., M.D.

I have frequently meditated upon the assertion of Bartholini, made in his Anatomy, published in 1673, page 379, that the ligation of the vena cave arrested the action of the heart. He writes: “Unico experimento fidem assummeo facio, si vinculo intercipiantur vasa cordis aderentia motus cordis desinit, reliquae eut undulans tantum motus et palpitatio, soluta lignata motum recipiit. Receptores curiosi novo experimento nos confirmant.”

Haller (Observation sur la Cause du Mouvement du Cœur, 1751), in repeating this experiment, found, that unless the cave were opened, and the right auricle emptied, the motion of the heart was not always arrested, but that with the precaution indicated the experiment was always successful.

These experiments then, in warm-blooded animals, fully demonstrate the presence of blood in the auricle to be the sign and source of the peculiar rhythmical and diastolic motion. Dr. Halford has more recently shown, by well devised experiment, that if the cave are compressed, although the heart's action continues vigorous, yet upon the application of the stethoscope the sound which was heard.

I venture to suggest, therefore, taking these experiments as a basis, supported by others of my own, which I shall make the subject of a future paper, that the first sound may be principally produced in the following manner. During, at least, part of the time of the ventricular systole, the auriculo-ventricular valves are closed by the pressure of the column of blood impelled against them; but by the time the valves are brought to the plane of closure, the dilating auricles have allowed the blood streaming from the cave and pulmonary veins to form a layer upon the upper surface of the valves; and it is, I conceive, by the reaction of the lower column of blood upon the superimposed layer, the valve intervening, that the special character of the first sound is produced. The modifications of the sound, in part, depending upon the varying quantity of blood entering the cavity of the auricles.

60, Brook Street, Grosvenor Square, January 24th, 1857.

Interventions and Appliances RELATIVE TO MEDICINE AND SURGERY.

BOURJEAUD'S ELASTIC APPARATUS.

The difficulty of applying pressure, when required, to any part of the body, in such a way that it shall fully effect the object desired, without either positively or negatively doing mischief either to the parts under treatment or to those in their vicinity, has long been a source of annoyance to surgeons. Hence systematic writers on surgery are accustomed to lay down precise instructions as to the mode of bandaging a limb, and, in medical schools, a special course of instruction on this important branch of surgical practice is sometimes given.

In recent years, surgeons and mechanicians have endeavoured to make application of the elastic property of certain substances in this direction, and especially of caoutchouc or India rubber. Of those who have devoted their attention to this subject, Mr. Bourjeaud holds the most prominent position, and has contrived a number of elastic appliances which, although they may, on further experience, be found capable of improvement in some of their details, yet far surpass in efficiency and safety the means formerly in use. It is right here to state, that Mr. Bourjeaud has the advantage of not being a mere amateur mechanician; he is, in fact, a member of the