

allowed it to collapse, its evacuation would probably have only rendered it the seat of an exhausting suppuration that such a patient could hardly have borne up against. In short, we should but have exchanged a cyst for an abscess. Hence I determined to forego attempting a permanent cure.\*

Limited to a palliative treatment, my chief efforts were directed to checking the bronchitis and dyspepsia, and supporting the general health. Alkalies, aperients, and expectorants, with occasional dry cuppings, and subsequently tonics and a generous diet, tolerably answered these indications; and the patient was discharged from the hospital, after a few weeks, very much relieved of all her more distressing symptoms.

For some months I saw her occasionally as an out-patient, her appearance and bulk being little altered.

On the 19th of October she was re-admitted. She had had diarrhoea for some days, but not very severely, and latterly it had nearly ceased. As soon as I saw her it became evident to me that she would scarcely survive the attack. Without any remarkable pain, with a tolerable pulse, and an intellect quite unaffected, her face had a peculiar look of depression and anxiety, such as suggested the gravest apprehension. On examining the belly, I found it in exactly the same state as when I had last seen her, save that there was rather more tenderness in the region of the tumour itself. She also complained of dull but constant pain here. The next day the soreness in the neighbourhood of the tumour increased, and slight vomiting came on. In about twenty-four hours more I found that the belly had undergone a remarkable change in appearance,—the tumour having disappeared, and the flaccid abdomen containing fluid in greatly increased quantity. Some tenderness could now be detected everywhere; but its amount was nothing like what is ordinarily seen in the peritonitis produced by the bursting of a cyst, nor were there any marked general symptoms of inflammation. In short, all other symptoms seemed to have merged in that of prostration, by the rapid increase of which the patient was carried off in about sixty hours from the rupture of the cyst.

The treatment had so little effect in controlling the progress of the attack, that I need only allude to it incidentally. The patient was from the first placed on a moderate allowance of brandy in very small quantities, together with opium, aromatic confection, sal volatile, and rhubarb. Latterly morphia, ammonia, and ether, were substituted for these drugs, and hot fomentations were frequently applied to the belly.

The examination of the body verified the diagnosis which had been arrived at during life. The atrophied liver was involved in the under surface of a large cyst, the fibrous outer tunic of which had ruptured at its most anterior part, and thus effused a large quantity of fluid into the cavity of the belly, together with a little blood. The intestines were healthy; the peritoneum, though less shining and smooth than natural, exhibited scarce a trace of inflammation on either its visceral or peritoneal surface. Here and there a minute shred of lymph was seen adhering to it, and one or two similar but rather larger flakes were found in the fluid occupying its cavity. The fibrous coat of the cyst was much thinned in the neighbourhood of the rupture, and its tissue contained small masses of coagulated blood. On laying open this fibrous coat, the collapsed and ruptured proper gelatinous cyst was found lying in contact with its interior surface. It had contracted greatly, so as to appear disproportionately small, and its elasticity had also thrown its surface into numerous wavy convolutions. Two or three smaller cysts occupied pouches split from the laminae of its outer surface. But neither these nor the larger cyst contained any Echinococci.

The earlier features of the patient's last illness seem sufficiently explained by the diarrhoea, and by her previous debility. The rupture appears to have been preceded by a very active absorption, which was accompanied by hæmorrhage, and was apparently somewhat akin to ulceration. What share the diarrhoea had in inducing it must remain doubtful. The slight reaction of the system against the rupture and effusion is very remarkable, and can hardly be doubted to have been a

\* I need scarcely say that such an operation would be very rarely indicated. A similar case, in an earlier stage, and a healthier subject, might certainly be devoid of some of the objections which contra-indicated its performance in this particular instance. But I suspect that in such a favourable condition a secure diagnosis would often fail us. For even in the above patient it required very careful manipulation, and a delicate sense of touch, to verify the fluctuation which formed one main element of the diagnosis. And hence, while I did not hesitate to compromise myself by a definite opinion, I could not help feeling gratified that I was not called upon to make it the basis of a dangerous operation.

result of the extreme weakness of the sufferer. And however unsatisfactory the termination of this case, I think its history suffices to indicate, that a careful observation and interpretation of symptoms might often enable us to recognise this class of abdominal tumours, not only during the life of the patient, but at a comparatively early date of the existence of such cysts, when, if ever, the question of their obliteration could be entertained.

Brook-street, Grosvenor-square, Jan. 1854.

THE CHOLERA AT NEWCASTLE-ON-TYNE.

THE STATISTICS OF CASES OF EPIDEMIC CHOLERA, 1853,

Received at the Newcastle Dispensary;

TOGETHER WITH ACCOUNTS OF THE CHEMICAL AND MICROSCOPICAL EXAMINATIONS OF THE EXCRETIONS,

AND

OBSERVATIONS UPON THE PATHOLOGY AND TREATMENT.

By J. S. PEARSE, ESQ., AND JEFFERY A. MARSTON, ESQ., Newcastle Dispensary.

It may not be uninteresting to the profession that we should lay before them the statistics of the Newcastle Dispensary relative to the late epidemic, with the treatment pursued, the results, and some pathological deductions which have been made.

TABLE of Choleraic Disease, from September 5, 1853, to October 31, 1853, inclusive.

DATE.	CHOLERA.		DIARRHŒA.		TOTAL.	
	Admitted.	Dead.	Admitted.	Dead.	Admitted.	Dead.
Previous to } September 11 }	5	2	15	...	20	2
September 11	2	2	1	...	3	2
" 12	5	4	13	...	18	4
" 13	3	3	36	...	39	3
" 14	14	5	120	...	134	5
" 15	22	11	229	...	251	11
" 16	14	7	182	...	196	7
" 17	21	9	158	...	179	9
" 18	16	10	121	...	137	10
" 19	28	10	149	1	177	11
" 20	11	3	133	...	144	3
" 21	25	14	101	...	126	14
" 22	16	8	74	...	90	8
" 23	14	4	73	...	87	4
" 24	13	5	67	...	80	5
" 25	8	4	45	...	53	4
" 26	13	5	73	...	86	5
" 27	10	5	64	...	74	5
" 28	15	4	77	...	92	4
" 29	5	3	61	...	66	3
" 30	1	...	46	...	47	...
October 1	5	2	39	...	44	2
" 2	2	1	21	...	23	1
" 3	6	2	48	...	54	2
" 4	2	1	48	...	50	1
" 5	1	...	15	...	16	...
" 6	...	...	14	...	14	...
" 7	1	...	11	...	12	...
" 8	...	...	6	...	6	...
" 10	1	...	9	1	10	1
" 11	...	...	2	...	2	...
" 24	1	1	...	...	1	1
" 25	1	...	...	...	1	...
" 31	1	...	...	...	1	...
Total ... ..	282	125	2051	2	2333	127

Note.—The cases under the head "Cholera" were cases of collapsed cholera. Under the head "Diarrhœa" is included, simple diarrhœa, dysenteric diarrhœa, and rice-water purging.

The number dying of consecutive fever, after recovery from collapse, was twenty-two.

Unfortunately, during so severe an epidemic as that with which this town has been recently visited, the medical officers had not a sufficient time at their disposal for watching and examining cases under their charge so minutely as might otherwise be done; nor have we had any time whatever for ascertaining fully the opinions of authorities upon the subject. Should, therefore, many of the facts not be original, we must only claim for them the weight of concurrent testimony to the truth of those already published.

As a fundamental statement, we may assert our belief that cholera is a disease resulting from the action of a specific virus upon the blood, and that the consecutive and concurrent symptoms are the effects of abnormal forces in the system, possibly the efforts of Nature toward the elimination of such virus; particularly evidenced upon the gastro-enteric mucous membrane, and possibly upon the sympathetic system of nerves. Whether, however, this arises from an alteration in the constituents of the atmosphere, either from a specific material, or from relative quantitative or qualitative changes in it, induced by primary local ones, we have not been able to gain any tangible facts. Yet we apprehend that it will in effect be the same; and although many may doubt this theory, yet, in the absence of others more strongly advocated by facts, we know of none so capable of explaining the phases, effects, and location of the disorder; while, at the same time, it affords an agreeable and essential basis, upon which the mind rests, as it were.

From a careful and industrious inquiry, we have come to the conclusion that cholera is not *contagious*; which opinion coincides with that of the most eminent French pathologists and surgeons, as Petit, Husson, Magendie, Dupuytren, &c., who carefully examined the phases of the disease in March, 1832, in the Hôtel Dieu; and with them the officers of La Pitié and St. Louis concurred; since which time the fact has been frequently discussed; and from the published opinions of the greater portion of the medical profession regarding the epidemic of 1849, we gain the same conclusion; while, from Dr. G. Budd's able paper upon this point, in the Library of Practical Medicine, we gather the same opinion. After careful inquiry as to the seizures and mortality among those attending cholera, we could not determine that the amount was in any degree proportionally larger than among a similar given number who had never seen a case at all. After all, we can only vaguely conclude that there is located in a certain district a poison which tends, when once received into the frame, to produce specific effects—in short, cholera; whether existing in the air or not, arising from causes primarily local, of which we know nothing—suspended, as it were, as a cloud over the town, attacking all predisposed to it—the laws of its action and the predispositions we cannot determine.

In support of this conclusion, it may be stated that but very few persons living in Newcastle passed through the period of the epidemic without exhibiting some symptoms referrible to the gastro-enteric mucous membrane; in some, diarrhoea; in others, constipation; in others, indescribable sensations of uneasiness in the bowels: beside which, it has been remarked that many cases of dysentery which had been attended long prior to the outbreak of the epidemic, and having perfectly recovered from the disease, had a return of the symptoms, and often died of dysentery or cholera, when no cause whatever could be assigned for the return of the affection; and how far it is a coincidence we cannot say, but the fact of persons coming into Newcastle from a distance in perfect health, (not having any communication with affected individuals,) being suddenly seized with the premonitory symptoms, and speedily passing into collapse, tends to prove that it was the result of atmospheric infection.

Previous to the outbreak of cholera here in September, the Dispensary return shows a very large number of cases of diarrhoea infantum for the month of August, and the early part of September. Whether or not it was the foreshadowing of the epidemic, it was difficult to say, for diarrhoea infantum is so frequent a disease, and the result of so many causes, tending, too, to a speedy result, (owing to the susceptibility of the nervous system at that period to any depressing action or irritation,) that it is difficult to state what relation (if any at all) existed between it and the then forthcoming epidemic. Yet by far the greater number of cases could not be traced to the irritation of concurrent dentition, or irritant ingesta received into the frame.

Assuming that a virus be received into the blood, what is its mode of action? Can we say that it gives rise to a series of catalytic changes in that fluid—of a fermentative kind, which, like febrile poisons, acts primarily by depressing the nervous

system, which re-acts for its elimination. Some would adopt Liebig's views *in toto* of the action of all poisons being of a fermentative kind; but for our own part we coincide with Simon, when he contends that this is untrue, and inadequate to explain the matter, regarding it as at best but a very rough analogy between a chemical process of which we know something and a vital process of which we know nothing. Whether again its primary action be upon the nervous system we cannot regard as settled; because (as a general rule) the intensity of the vital depression was in direct proportion to the amount of the exosmotic current, and some one or two cases in which collapse ensued without any vomiting or purging, may be met by the fact, that numerous such cases, dying collapsed, have been examined, and the bowels found gorged with rice-water. Although it appears true, judging from symptoms, that the primary action of some poisons is mainly evidenced upon the nervous system, yet to the healthy function of all parts, healthy nutrition is necessary, and if a virus exists in the blood, it exerts its influence on all parts, by causing some morbid alteration, or change in the elemental constituents of the tissues. Upon the whole it would appear that we are in mystery as to the primary action of the poison; but the disease may be regarded in effect as a hæmorrhage, not of blood, but serum, giving rise to a state of collapse analogous to syncope; but differing widely from the latter, inasmuch as it is the result of a specific *materies morbi* in the blood, in addition to an abnormally small quantity, not so much of the whole fluid, but of particular ingredients of it.

Before proceeding to any cases and their treatment, we will advert to the different chemical and microscopical examinations which have been made of the matters excreted.

The amount of water existing in choleraic purges has been long a matter of observation, and there is little doubt but that the paucity of this ingredient in the blood explains many of the symptoms referrible to the impaired fluidity and consequent imperfect movement of the circulating fluid. Thus, during collapse, it is highly probable that the shrunken, cold, and blue state of the skin—the collapsed, blanched countenance—and the shrivelled deadened appearance of the eyes and corneæ, &c., may be referred to this: and in great part the tarry, inspissated condition of the blood found in post-mortems; while the shrunken ill-developed state of the blood corpuscles, their stagnation in the Malpighian tufts, and the contracted state of the spleen noticed by Rokitansky, may be explained by the excessive exosmotic current of their contents through their cell walls.

Lecann found the water of the blood always considerably diminished—in one case to less than half the total weight of the blood examined. Thus his table,—

	Case 1.	Case 2.	Case 3.	Case 4.
Solid constituents...	251	330	340	520
Water ... ..	749	670	660	480

Dr. O'Shaughnessy found the solid constituents in his analysis of the serum above 17 per cent. instead of 9—10 per cent.

Dulk found that the rice-water purging had an alkaline reaction—contained albumen.

Henmann found they had an acid reaction—resembled the vomited matter. Simon remarks that the ordinary reaction of the stools is alkaline, however.

From Vogel's, Whittstock's, and Simon's analyses, it appears that the rice-water formed a turbid colourless fluid, of a strong alkaline reaction, effervescing on the addition of acids, giving off CO<sub>2</sub> and SH— that the sediment after standing was composed of mucus corpuscles, with crystals of ammoniaco-magnesian phosphates, albumen was detected by nitric acid, and the fluid withal became rose-red coloured by this acid, which was induced more rapidly by gentle warmth, and the colour disappearing entirely by strong heat. Simon's analysis in 1000 parts was,—

Water ... ..	980·00
Solid constituents ... ..	20·
Fat ... ..	·08
Extractive matter ... ..	4·80
Albumen and mucus ... ..	0·52
Salts ... ..	14·

It will be observed that this analysis bears out the result of the investigation of the blood.

*The Stools.*—There existed great differences among different patients, not only as to the duration of the rice-water purging, but as to the period at which it came on. Thus some cases were but once or twice relieved of a fæculent stool, and this was succeeded by the characteristic rice-water stools. In many cases the quantity passed at a stool was one pint to three or

more, and it appeared as a general rule that the amount passed bore direct relation to the intensity and fatality of the consecutive collapse. The average specific gravity of the stools was 1.020—1.025 generally neutral to test paper but sometimes alkaline. In all the cases examined by the microscope of the first excretions there were found large quantities of epithelium in various stages of development, and which was identical with that of the enteric mucous membrane; but the stools which were examined during the later premonitory or collapsed stage, contained, as might be expected, but little or no epithelium. The amount of shreds of coagulated fibrin was very variable, but in all cases, and during all stages, the fluid passed by stool was albuminous, coagulating copiously by heat and nitric acid, the clear fluid remaining after the coagulation of the albumen was evaporated very carefully, and then heated with cold nitric acid and set aside; some of this being placed upon glass was examined by the microscope, and presented a few beautiful and well-marked crystals of the nitrate of urea; this effect was produced in very numerous bases in which the rice-water was examined.

To another portion similarly treated hydrochloric acid was added, and the lozenge-shaped crystals of lithic acid detected; but these, although sometimes detected, were not always so.

To another portion, after similar evaporation, liquor of ammonia was added, and large stellate crystals of the triple phosphate were detected by the microscope.

Some of the evaporated fluid being placed upon cold glass was examined, and many delicate cross crystals of chloride of sodium detected.

These results are what might have been anticipated, for urea has been detected in the watery evacuations produced by elaterium, and the absence of death by coma in this disease, as Dr. Watson remarks, points to the same fact.

It was noticed that while evaporating some rice-water, purging, and cholera vomits, the gaseous products had a somewhat ammoniacal odour, and some reddened litmus being held in the fumes, its colour was restored—in all probability due to the presence of volatilized ammonia existing in the fluid as a carbonate—for it appears from Simon's observations, and the experiments of Bernard—viz., extirpation of the kidneys of a dog,—in which carbonate of ammonia was detected in the excretion from the gastric mucous membrane, that part of the urea in cholera is discharged by the enteric membrane in this form from a re-arrangement of its elements.

We fancied that during the addition of an acid to the rice-water first passed, there was slight effervescence, but this was certainly the exception, nor did we in any case detect the red colour, produced by nitric acid, spoken of by Simon and Vogel.

Unfortunately it was impossible to make quantitative analyses of the excretions, but we should decidedly state that the quantity of albumen present was much greater than the number affixed by Simon would indicate.

*Vomits.*—In all cases in which the vomits were examined, they presented nearly similar physical characters, and specific gravities were generally neutral, though sometimes alkaline to test-paper, and by similar processes albumen and the phosphates were detected. In one case urea was obtained.

In the case of a girl, aged seventeen, who had passed through the collapsed stage, there occurred excessive vomiting of a dark, green coloured fluid, resembling a solution of sulphate of iron. The green vomit is no indication of a peculiar morbid change, yet as the analysis differs from those given of it by Heller and Simon, and illustrates the fact, that muriatic acid is the acid of the gastric juice, we shall refer to it. It had the appearance of a turbid fluid, with what proved to be flocculi of coagulated fibrin or albumen floating in it. The quantity ejected was very large. Its specific gravity was about 1.020; it reddened litmus strongly; was rendered colourless by the addition of liquor potassia or liquor ammonia, and gave first a blue tinge, then a crimson colour with nitric acid. Nitrate of silver being added, a copious flocculent precipitate of the chloride followed, and its composition was proved by its instant solubility in liquor ammonia. Upon examination of this fluid with the microscope, crystals of cholesterine were discovered in it, hence it would appear to have been a mixture of bilious matter, and gastric juice, with a kind of serous fluid, its green colour being doubtless due to the biliverdin.

Heller describes it as a brilliant green, turbid fluid, throwing down a sediment of a yellowish tint, which consisted of epithelium and mucus corpuscles; of an arid reaction, but neither acetic nor muriatic acids were detected in it; of the specific gravity, 1.006; becoming first blue and then carmined with nitric acid. In 1000 parts there were—

Water ... ..	990.50
Solid constituents ... ..	9.50
Fat ... ..	.24
Water extract ... ..	1.30
Biliverdin and biliphœin ... ..	5.38
Fixed Salts ... ..	3.75

It appears that Nysten and Banuel examined vomits containing the elements of urine, and a case of a similar kind is reported by Dr. Halliday Douglas, in the *London and Edinburgh Monthly Journal of Medical Science*; these were not, however, cholera cases.

*Urine.*—Great difficulty was found in collecting the first urine passed after collapse; but in some cases it was secured, and in many the urine was carefully examined daily. Of course, only an estimate of the aggregate condition can be given, but particulars will be related in the cases. The amount of urine first passed was exceedingly small, about one ounce to two ounces, sometimes even less. The average specific gravity of the urine first passed was always exceedingly low, in some cases 1.005 to 1.008, often very pale, sometimes high coloured, and generally but feebly acid to litmus. In all the cases which were examined the following facts were ascertained:—1. That the urine was albuminous, coagulating by heat and nitric acid, and that the quantity of albumen was inversely to the specific gravity of the urine. 2. That in most cases the first urine passed gave no crystals of urea or lithic acid, and a very small quantity, sometimes, indeed, hardly a trace, of salines, although the urine was carefully evaporated, tested, and examined; that as the specific gravity increased so did the solids appear, and the amount of albumen become less; and invariably the cerebral symptoms with which the consecutive fever of cholera was particularly marked bore direct relation to the amount of solids in the urine; and that invariably the most fatal cases of consecutive fever were marked by urine having a remarkably low specific gravity, and being albuminous and very small in quantity.

Simon examined the urine of a cholera patient, in which an ounce and a half was passed, of spec. grav. 1.011, and he found—

Water ... ..	975.
Solid constituents ... ..	24.10
Urea ... ..	7.10

He states that it was very high coloured, a fact not universally observed by us.

Heller examined one ounce of urine passed after collapse. It was highly acid, but deposited earthy phosphates. In 1000 parts it contained—

Water ... ..	955.67
Solid constituents ... ..	44.
Urea ... ..	10.50
Extractive matter, and salts ... ..	33.73

Henmann and Whittstock also examined some urine, and found its specific gravity 1.006, 1.008.

Vogel examined some of specific gravity 1.008, strongly acid, in which the salts of lime and magnesia were entirely absent, while the sulphates were found in very large quantity. Bile, pigment, and albumen, were detected by all these observers.

*Respiration.*—Unfortunately the observations upon the functions of respiration were confined to one case, and it was with the view of detecting the amount of carbonic acid excreted during the collapsed stage. The patient (an intelligent young man) expired for some period into a glass containing lime-water; no turbidity whatever was produced; but upon the attendant breathing eight or twelve times into the same vessel it immediately became so.

In one case of collapsed cholera a large bladder of oxygen was inhaled by the patient by means of a stopcock, and the symptoms before and after carefully marked. Our notes are the following:—

“C. R.—, aged thirty-seven, Oct. 1st. Duration of the disease nine hours; when first seen was collapsed; pulse nearly imperceptible; surface cold, blue, and constricted; vision somewhat dull; respiration, thoracic, 40; has had cramps, excessive rice-water purging and vomiting, but these somewhat abated; passed no urine. Oxygen administered. Pulse exactly the same; respiration 38; countenance perhaps a little less blanched (but a few teaspoonfuls of brandy were given); surface equally cold, and presents not one iota of difference or improvement. Died about three hours and a half after.”

We learn that oxygen was inhaled by some patients in the epidemic of 1849 with as little success.

This gives a rough outline of the few experiments we were able to make during the spare moments left to us.

(To be concluded.)