The Blue Epidemic Cholera — Some Aspects of Treatment in the Mid 19th Century

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SUMMARY: Cholera was first recorded in the Indian sub-continent in 1817 from where pandemics reached Europe via trade and pilgrim routes. Notwithstanding the numerous therapeutic methods prescribed, the virulence of cholera remained unabated. This article describes some of the proposed treatment regimes in relation to the assumed pathophysiology.

On 19 August 1867, the First Battalion, the 14th (Buckinghamshire) Regiment of Foot, embarked at Queenstown for Malta. They arrived there ten days later, where six Companies disembarked from HMS "Himalaya" and marched to Pembrooke Camp at St George's Bay. The troops were in station for a mere three days before Pte John Riley, aged 22 years, went down with diarrhoea and succumbed to cholera on 2 September. As more troops, women, and children fell ill and died, the detachment was moved to Fort Chambray in Gozo, and placed under canvas. The barrack rooms were whitewashed in an attempt to halt the spread of the epidemic, and the troops returned to Pembrooke Camp on 27 October, in preparation for the start of the annual course of musketry on 1 November (1). During this outbreak which lasted from 5 July to 25 November the Malta garrison had 630 cases with 119 deaths (19% mortality), whereas among the civilian community there were 403 cases with 259 deaths (64% mortality) (Fig 1). The sick were transferred to the Forrest Hospital, in neighbouring St Julian's Bay. This was a spacious residence built in 1688, which had been converted to a General hospital in 1860, and named after the Principal Medical Officer of the garrison.

The ravages of cholera among a captive body of troops invariably generated a degree of panic. Those admitted to the regimental hospitals hardly ever returned to their units particularly as the regimental surgeon had no effective way of preventing or curing the disease. This was noted by the adjutant of the 44th Foot who, during the cholera epidemic in Malta of 1850, instituted a programme of athletic events in order to keep his men in good physical health and their minds free from sombre thoughts.

Nature and Aetiology of Cholera

Cholera was thought to be due to a poison, for only a toxin could in the space of a very short time reduce a healthy man to a skeleton of his former self. The identity of this toxin remained obscure until Robert Koch isolated the comma bacillus in 1883. John Snow had in 1854 established cholera as a waterborne disease, but the absence of an identifiable agent sustained the controversy between contagionists and non contagionists.
exhalent arteries of the stomach and bowels. These inhaled poison exerted its influence via the ramifications of the minute visceral arteries. A speculative account from the local press to advertise the sale, at one shilling and sixpence per box of "the celebrated German Pastilles such as were burned with so much success during the Crimean War. Notwithstanding, cholera belts were issued to troops during the Crimean War. On the outbreak of cholera in an overseas station, soldiers were authorised to draw two cholera belts each, and were fined a shilling for every belt damaged or lost.

Pathology of Cholera

The pathophysiological defect in cholera is the loss of large quantities of isotonic fluid. It was thought that the inhaled poison exerted its influence via the ramifications of the vagus nerve and abolished the retentive powers of the brain oversaw this harmonious control of the exhalent arteries, asserted William Parker in 1849. "The brain being the prime mover of every other organ, the healthy action of all others are subsequent to it being in a normal state" (5). W Parker surmised that the depletion of nitrogen from the body deprived the brain of its nourishment, and consequent to the brain being denied its food, it went into a state of languor and became incapable of exerting its retentive powers on the blood vessels. He therefore advocated the administration of ammonium salts to revitalize it, just as the inhalation of aromatic ammonia revives a patient from her faint.

Clinical Features and Modes of Treatment

The clinical picture in cholera is one of dehydration. Cholera presents with copious, painless, watery diarrhoea. Projectile vomiting follows, and the incessant vomiting and profuse diarrhoea lead to hypovolaemia. The circulation becomes sluggish and the radial pulse becomes barely perceptible. The body temperature drops, the skin becomes ice-cold and covered by clammy perspiration. The patient develops painful lower limb muscle cramps, which later become more severe as they spread to affect the whole body. In time cyanosis supervenes to the extent that the patient becomes literally quite black. The skin of the extremities becomes wrinkled, resembling the hands of a washerwoman. He becomes anuric. The eyes are sunken in their sockets. The tongue is retracted, and the breathing accelerated. The voice becomes restless and apathetic. His voice a mere whisper, which finally becomes inaudible. The patient becomes irritable, has the hiccups, and complains bitterly of a peculiar sensation of contraction and oppression in the pit of the stomach. The intellect remains unimpaired, until coma sets in, preceding death (7).

Although this classic description of gross dehydration was well recognised, the established treatment of cholera aimed at checking diarrhoea as promptly as possible rather than replenishing circulatory fluids. Diarrhoea was brought under control as promptly as possible by counterirritation to the pneumogastric or vagus nerve in its course between the mastoid process and the angle of the lower jaw. This "acted like magic — the patient sleeping after its use and awakening well" (7).

To stop vomiting, a saline draught containing potassium chloride, sodium chloride, and sodium bicarbonate made to effervesce with fresh lemon juice was given every half hour in some iced water mixed with cognac. Cramps were eased by the subcutaneous injection of morphine and the placement of flannels soaked in hot water and vinegar.

As most deaths occurred during the period of coldness attempts were made to excite the circulation by heat and stimulants. To warm up the body a large mustard poultice was placed on the abdomen, coupled with the...
subcutaneous injection of sulphuric or chloric ether, or small doses of morphine. Hot bottles and bricks were placed next to the patient and the limbs were rubbed with equal parts of ammonia, spirits of camphor, and hot oil of cumin seeds. The hitherto described therapeutic methods were effective in treating mild diarrhoea, but medical assistance was powerless against the full on-slaughter of the disease. If cholera was due to a toxin, then it may have been possible to reverse the deleterious effects of this poison. Would oxygenating the black stagnant blood of cholera restore its arterial properties and terminate the sequelae of exhaustion and impeded secretions by which the fatal event is induced, enquired William O'Shaughnessy in 1831 (8). Nitrates or chlorates of potash were considered by O'Shaughnessy to possess the greatest quantity of oxygen and to be most suitable in oxidising venous blood. Accordingly, he proposed the injection of these salts into the external jugular vein, preferring this to the inhalation of oxygen gas, which he considered to be of little benefit. However, twenty years later, the Indian Times of 1850 reported that a Dr Macrae, civil surgeon at Howrah, had successfully administered oxygen to fifteen European seamen who had been carried to the Howrah hospital in the last stages of the disease and the patients had in every instance recovered (9).

O'Shaughnessy's experimental work on the blood from cholera patients revealed a deficiency of salts and water, and he recommended their replacement to enable the blood to carry out its functions (10). In 1832 Thomas Latta of Leith took the audacious step of putting O'Shaughnessy's theory to the test. He correctly surmised that the loss of the vital body fluids led to death and injecting saline into the vein was "one of the most powerful and one of the safest remedies yet used in the second stage of cholera" (11). As he injected a solution containing three drachms of muriate of soda, with two scruples of the subcarbonate of soda in six pints of water, his patients underwent an unbelievable and truly miraculous transformation. "Like the effects of magic, instead of the pallid aspect of one whom death had sealed as his own, the vital tide was restored, and life and vivacity returned" reported Dr T Latta (11). A Read's patent syringe, having a small silver tube attached to the extremity of the flexible injecting tube was used to administer the large volumes of liquid. In one female patient, 330 ounces were infused in twelve hours.

The Lancet was quick in its praise. It expected the treatment to be beneficial in "the desperate cases which have baffled the ordinary methods of treatment, and which would otherwise be abandoned to inevitable death" (12). Miraculous as it was, this form of experimental treatment was not widely accepted. Calomel had sway, and intravenous rehydration was not to reappear until the turn of this century.

Conclusion
Of the above regimes, few could be said to have been of benefit to the common soldier. The Regimen Surgeon had neither the latest knowledge nor the required logistics to offer an effective cure as proposed by Dr Thomas Latta in the 1830s. Until rehydration became an acceptable form of treatment thousands of soldiers and their families were carried off to their graves by the cholera epidemics in the countries they served.

REFERENCES
1. Digest of Service 1/14 Foot.
3. WEEDEN COOKE T. A few words on diarrhoea and malignant cholera in a letter to a country patient. London 1848.
4. Impure air — prevention against cholera. Malta Times 1850; 424.
8. COOKE T. A few words on diarrhoea and malignant cholera in a letter to a country patient. London 1848.