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MANAGEMENT OF A CHOLERA PATIENT DURING A RURAL OUTBREAK

by

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Procedures

The fate of a cholera patient depends on the skill and energy of the physician in charge and on the facilities at the physician's disposal. In rural areas far from a hospital, treatment poses a problem if transportation of the patient is impossible or too time-consuming. In such circumstances, the patient must be treated as early as possible while isolated in his home or camp. For this, many mobile and trained personnel are necessary.

All cases of acute "gastro-enteritis" should be reported to the nearest health centre, hospital or public health authority as suspected cholera cases. Acute profuse painless diarrhoea, usually preceding vomiting, with prostration and shock are symptoms of cholera, a medical emergency.

As soon as cholera is reported, a mobile medical team should move immediately to the site with their equipment. Arrangements should also be made for receiving regular supplies of rehydration fluids and for transporting stools collected, before giving antibiotics, in screw-capped bottles containing alkaline peptone water medium. At the site, the medical officer should select a suitable isolated place to begin treatment of the patient, who should not, however, be shifted until he has recovered from shock.

The physician should consider the possibility and necessity of getting the help of local medical officers after giving them the necessary training. The question of their financial remuneration may be easily solved by the administrative authorities.

If available, a camp cot or Khatiya, with a hole to be placed under the patient's buttocks, may serve as the cholera cot. If the patient must be on the mud floor, a large hole for measurement and proper disposal of stools must be dug under the patient's buttocks. The hole should be large enough to hold an earthen bowl of about 8-10" diameter with a capacity of two or more litres. The fluid bottle may be hung from a thatched roof, a mud wall, or an improvized stand. A torch or a kerosene lamp may be required even during the day to locate the patient's vein unless he is treated out of doors.

Therapy

The intravenous infusion should be started immediately and a bedside record made of all intake and output. Frequent checks of the balance between intake and output should be made. An adult patient in the state of collapse is first given two bottles of physiological normal saline followed by one bottle of isotonic alkaline solution, run rapidly and repeated till good pulse is restored with general clinical improvement. The needle is left in the vein in situ with small strips of sticking plaster. Intravenous fluid is given in the same order at a slower rate (about 25 ml/minute, or less, according to the volume of evacuations and quality of the pulse). The total requirement depends on the individual patient. In rural areas the amount of fluid required after initial recovery from shock has to be determined by the amount of evacuations, quality of pulse and, if possible, blood pressure. As soon as possible, a dose of tetracycline or chloramphenicol (500 mg) should be administered orally, repeated once after four hours, and then given every six hours for three days. Any dose vomited should be repeated; vomiting usually stops soon after rehydration and correction of acidosis. The patient should be watched carefully. The effect of the antibiotic will appear after about 12-18 hours with a reduction of the number and volume of stools accompanied by changes in their colour and consistency. If a sudden and copious evacuation occurs, the infusion rate should be increased to replace the lost fluid, which has been collected and measured as quickly as possible. After the initial rehydration, I.V. fluid is given to maintain the volume and tension of pulse and to equate the volume of stools passed plus the insensible loss. It is

discontinued when diarrhoea ceases for four hours and a flow of urine is established, while the pulse and blood pressure (if a sphygmomanometer is available) are maintained satisfactorily.

The patient may be given sips of water as soon as he can swallow it. Subsequently, he should be given water and drinks of young green cocoanut (dab) water (6 oz per litre of stool passed) to replenish potassium lost. In places where dab is not available, 10 ml of a mixture containing 100 g each of potassium citrate, bicarbonate and acetate mixed in a litre of water may be given orally three times a day, preferably with other drinks. Dab water is not suitable for I.V. administration because of its high potassium content. The day after diarrhoea ceases, the patient is allowed barley water and buttermilk. Next day, usually the third day, he is given soft rice and curd, and thereafter a convalescent diet.

The therapy is simple and effective; it can be carried out successfully without laboratory studies when they are not available. A cholera patient need not die if treatment is started before irreversible changes occur. Complications are uncommon except in pregnant women and children, who need special attention.

Exceptional cases

Cholera in pregnant women is dangerous. Acidosis is harmful to the foetus; dehydration may cause uterine contractions comparable to muscular cramps; and circulatory collapse reduces the placental blood flow. All these lead to intra-uterine death of the foetus; abortion or premature labour is very common. Cholera should be treated exclusively, and the placenta, if retained, left untreated at that time.

Fatal cholera is more common in children, who cannot survive dehydration so well as adults. The most effective method of treating paediatric cholera has not yet been worked out. The fluids are given in the same order - one bottle of saline followed by half a bottle of isotonic bicarbonate solution. The infusion should be started soon at a rapid rate in the external jugular, scalp or femoral vein, if it is not possible to enter an extremity vein. One may have to open the vein.

Intraperitoneal infusion may be possible in infants. Chloramphenicol or tetracycline is given orally to infants in syrup of glucose. Other measures include taking precautions against overhydration, indicated by engorged neck veins, slow pulse, and congestion of the lungs. Hypernatremia can be avoided by regulation of sodium intake. I.V. calcium gluconate for tetany, potassium for hypokalaemia, and glucose for hypoglycaemia should be administered as deemed necessary.

Additional duties

Besides caring for the patient(s), the staff should (1) disinfect the houses of the patients, (2) dispose of excreta (also dead bodies and clothes) and (3) care for the community by mass vaccination, by ensuring a safe and sufficient water supply, and by providing health education regarding the spread of cholera and the basic rules of sanitation.

A doctor may attend five or more adult patients at a time if they are close by. But in a big outbreak, more properly equipped teams will be required, or emergency treatment centres may have to be opened in the affected area, with suitable arrangements for accommodation of the staff and co-operation of the villagers. Trained paramedical personnel can do a lot in carrying out the treatment; even unskilled persons can render effective assistance under guidance.

REQUIREMENTS OF THE MOBILE TEAM FOR MANAGEMENT OF CHOLERA IN RURAL AREA

A. Personnel

1 Medical Officer

2 Health assistants

3 Medicine carriers

B. Equipment (in one or two packages)

(i) Fluids - (a) Normal saline

(b) Isotonic sodium bicarbonate solution or a single solution (vide D)

(ii) Saline apparatus, etc.

(iii) Syringes

(iv) Needles

(v) Tetracycline or chloramphenicol

(vi) Rectal swabs

(vii) Peptone water bottles

(viii) Bleaching powder

(ix) Cholera vaccine

(x) Camp equipment (a stretcher may be used as a cholera cot)

(xi) Miscellaneous - bandages, dressings, sticking plaster, rubber tubing, 70 per cent. alcohol, lysol, soap and towels

(xii) A red warning flag to be posted near the patient care centre

C. Functions

1. Care of the patient

(i) Place patient on cholera cot or a device with provision for collecting all stools. Measure and record the fluid intake and output.

(ii) Start I.V. isotonic saline: isotonic bicarbonate in 2 : 1 proportion at a rapid rate till strong pulse is restored. Subsequently administer more slowly in volume equal to that of stools passed.

(iii) Administer tetracycline or chloramphenicol (500 mg stat, after four hours and then every six hours) for three days.

(iv) Give water and green cocoanut water (6 oz per litre of stool) by mouth. If latter is not available, give potassium mixture t.d.s.

(v) Terminate infusion therapy after diarrhoea has ceased for four hours.

(vi) Give special attention to children and pregnant women.

2. Procedures at an infected house

(i) No visitors

(ii) Disinfection of water sources, viz tank and well, drains and utensils

(iii) Disposal of refuse and excreta (mix with lime and bury at a safe distance)

(iv) Attention to food, drink and soiled clothing

3. Care of the members of the household

(i) Vaccination

(ii) Observation for the appearance of symptoms

(iii) Restricted movement

(iv) Chemoprophylaxis

(v) Disposal of deceased patients: plug orifices, wrap body with a sheet soaked in 5 per cent. lysol and dispose of it properly. Bodies are not to be thrown in rivers or canals.

4. Care of the community

(i) Formation of local cholera control committee with community leaders
(ii) Vaccination
(iii) Water supply
(iv) Disposal of excreta and refuse
(v) Antifly measures
(vi) Health education
(vii) Propaganda

D. Rehydration fluids (isotonic)

	Present	Gm/litre	Gm/540 ml
Separate solutions			
(a) Sodium chloride	0.9	9	4.86
(b) Sodium bicarbonate	1.4	14	7.56
or Single solution			
Sodium chloride	-	6.0	3.25
Sodium bicarbonate	-	4.60	2.50

NB: Water for injection should be clear, sterile and pyrogen free. The chemicals should be of analytical reagent quality.

The clear solution of sodium chloride and sodium bicarbonate should be filtered and autoclaved. If the autoclaving is done in air-tight containers, so that any carbon dioxide evolved does not escape, the evolved gas will be reabsorbed in the aqueous solution during the cooling stage with reformation of sodium bicarbonate.

Special attention should be given to maintaining supplies of rehydration fluid prepared preferably as a single solution in disposable plastic bags with sterile I.V. sets and needles. These may be supplied to the mobile units from a central source.