

(b) Other Apparatus :

- (1) Special trolley for use in hospital.
- (2) Containers for hypochlorite solution of glass or vulcanite.
- (3) Thermometer.
- (4) Rubber tubing and clips (sterile).
- (5) Glass canula and vulcanite roses (sterile).
- (6) Higginson's syringe (sterile).
- (7) Waste container (bucket or bowl).
- (8) Silk sheeting.

Preparation of Sodium Hypochlorite

Electrolytic sodium hypochlorite can be made with a small electrolytic cell, as used in modern water purification. However, if this plant is not available, the simplest way to obtain as much sodium hypochlorite as required, in a standardised established solution was found to be to use "Milton" solution.

E. S. H. is the term for a 1 per cent. solution of E. S. H. and the following are percentages of this stock solution in water:—

Various concentrations of E. S. H. were employed for different purposes. It should be remembered that solutions of E. S. H. above 5 per cent. in water are hypertonic, those of 5 per cent. almost isotonic, and those below 5 per cent. hypotonic. The following guide to the concentration of E. S. H. for various purposes is given:—

First, when gross sepsis is present, or dead tissue such as sloughs, scabs, etc., has to be removed then E. S. H. in strengths up to 50 per cent. in water may be used. A concentration of 20 per cent. is a good average one. Hypertonic solutions assist the diminution of cedema.

Secondly, when the primary object of thorough cleansing has been attained and daily irrigation is instituted, to remove stale exudate and to control infection, this daily irrigation should be carried out with a 5 per cent. solution. If the skin is very sensitive, or if healing is progressing rapidly, then the concentration may be reduced to 2½ per cent. When there is no infection, or the infection is so slight as to be almost negligible, and stimulation of healing is the main objective, the 1 per cent. solution is adequate.

Temperature control is important. The solution should be kept at body heat. It should be made a rule that it is kept at 100°F., except that the initial irrigation done under analgesia or anaesthesia may be carried out at 110°F. Patients are extraordinarily sensitive to slight temperature variations, and great care should be exercised to ensure that the solution is at 100°F. exactly.—*From The London Hospital League of Nurses Review.*

(To be continued.)

The Diets in Cholera

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In an acute disease like cholera which used to terminate with death within a very short time of the onset, at least in a very large proportion of cases, the question of supplying proper and suitable diets and drinks was not regarded as of any very special importance in the past. But since the introduction of the recent and up-to-date methods of treatment which so often save, or prolong the lives of patients, by preventing death from collapse, this question has come to the forefront, for much depends on efficient and suitable diets and drinks. Any indiscretion, on the part of either the patient or his attendants in this respect, may lead to disastrous consequences by bringing about relapses or recrudescence of the disease, even during the period of convalescence. Hence it is the duty of the attending nurse, to see that there is no deviation from the path chalked out by the attending physician in respect of diets and drinks.

Those foods which are likely to cause irritation to the mucous membrane of the gastro intestinal tract, or to help the growth and development of Comma Bacilli in the lumen of the gut, should always be strictly forbidden, especially during the active stage

of the illness. The diet and drinks permissible during the course of the disease are given below :—

1. *Water*.—Plenty of this should be given unhesitatingly, ad. lib. to the patient, who invariably suffers from intense thirst as a result of the sudden rapid and excessive loss of fluid from the system. But unfortunately it is a common thing for untrained persons not to allow the patient to drink water, or as a matter of fact, any fluid, with a view to stopping the vomiting and purging, which are rightly or wrongly suspected to be aggravated by it. It must, however, always be borne in mind, that withholding water is not only inhumane, but it is the most unscientific treatment and therefore fluids are allowed in the best interest of the patient. Water in cholera acts more like a medicine than a simple drink or diet. For it alleviates more or less the suffering of the patient by quenching the intense thirst to some extent, and replenishing, when retained, at least partly if not wholly the lost fluid, by helping the de-hydrated tissues to recoup their loss. But if, on the other hand, it is rejected as a result of vomiting and purging, it undoubtedly eliminates the toxins and gets rid of the bacilli from the alimentary canal. Hence water should be given freely, and no restrictions should on any account be made, in respect of the amount of fluid given during the disease.

2. *Barley Water*.—Three or four pints of thin barley water with lime juice or sugar, or common salt according to the patient's liking, may be given daily with benefit, either in addition to, or as a substitute for water. It has the advantage that it serves the purpose of both food and drink and being a non-irritant, bland farinaceous food, it allays thirst and vomiting, by acting as a sedative to the mucous membrane of the stomach. It is also supposed to produce more or less diuresis, if taken in a fairly large quantity. As diet, the barley water is perhaps an ideal food in cholera and suits the patient best during the early stages of evacuation and collapse, though it should, if possible, be continued throughout the course of the disease, in addition to other varieties of diet, prescribed with the changes in the condition of the patient. If so desired, arrowroot or cornflour may be given as a substitute, or in addition to barley water, at the discretion of the medical attendant.

3. *Green Cocoonut water*.—(Elaeagnus) This is undoubtedly a pleasant and soothing drink and may therefore be allowed to some extent, if it agrees with the patient. It should not, however, be given to patients who complain of acidity after drinking it. On account of the sedative action on the gastric mucous membrane it is sometimes found to allay thirst and vomiting. The most important thing about it, is its power to check the troublesome and distressing complication of hiccough, which though not permanently cured, is very often found to stop at least temporarily, even when all other means fail.

4. *Alcohol*.—It is not at all necessary to prescribe alcohol in any form, either as a food or as a stimulant in cholera, especially in the early stages of the disease, in which it is positively contra-indicated. It is not the want of food, but lack of fluid that is mainly responsible for deaths from collapse in this disease. Hence the administration of a little alcohol is of no avail to a patient, who drifts into the condition of collapse not from cardiac weakness, but from the excessive loss of fluid from the circulation. Instead of doing good, alcohol is likely to do positive harm to the patient and should therefore be carefully avoided in all cases, especially in the early stages.

5. *Whey*.—This is usually prepared by breaking the boiling milk with fresh lime juice, or a few crystals of citric acid, if the former is unobtainable, and carefully straining the curds (casein). When properly made, the greenish translucent fluid thus obtained, may safely be given to the patient when the colour of his stools is found to have changed to greenish or yellowish; even though the consistency still remains watery. If it is improperly made, whey containing more or less casein in it, is indicated by the whitish colour of the fluid, it must on no account be given to the patient in the early stages of the disease. By helping the growth of the germs, it may bring about a relapse, at the slightest indication of which the patient must be made to revert to the original diet of farinaceous foods, such as thin arrowroot, conjee, cornflour or barley water.

6. *Sherry Whey*.—In spite of less nutritive value, lime whey, or that made with citric acid is always preferable to sherry-whey (prepared by adding sherry to boiling

milk.) The presence of citric or any other acid in the food may be beneficial to the patient, on account of the inhibitory action on the growth of the Comma Bacilli in the alimentary canal. When absorbed the citric acid also increases alkalinity of the blood and is likely to start diuresis to some extent, whereas the presence of alcohol in sherry-whey (though in a small quantity) may be detrimental to the patient for the same reasons as described under alcohol, and is therefore contra-indicated.

7. *Fruit Juice*.—If it agrees with the patient, fruit juice of pomegranates, or better still that of oranges, may be permitted throughout the course of the disease, as an accessory diet almost from the very beginning. Leaving out the question of the vitamin in it, the presence of sugar and the organic acids (mainly the citric) is undoubtedly beneficial to the patient for the same reason described under whey. However insignificant it may be, the nutritive value of the fruit juice is also a matter for consideration. The addition of sugar and orange juice in sufficient quantities, unquestionably improves the flavour of the barley water and makes it more palatable, so that even an unwilling patient may sometimes be induced to drink it in fairly large quantities.

8. *Milk*.—Though an ideal food with high nutritive value for the sick, milk is not a suitable diet for a cholera patient, especially in the earlier stages of the disease, for it serves as a very good medium, for the growth and development of the Comma Bacilli in the alimentary canal. Besides this, the big curds formed in the stomach may aggravate to some extent the vomiting and purging, by acting as an irritant to the mucous membrane of the gastro-intestinal tract.

As has already been stated above, lime-whey instead of whole milk is at first given to the patient as soon as the colour of the stools changes to a yellowish or greenish tint. If the patient is found to tolerate it without any outward sign or symptom, milk mixed with barley water in the proportion of 1 to 4 may, to begin with, be permitted with the gradual improvement in the character of the stools. This proportion may, however, be gradually and continuously increased until undiluted milk is given, when the stools become loose, yellow or formed. It is always better in the beginning to citrate the milk by adding 2 grains of sodium citrate to each ounce of warm milk 10 to 15 minutes before ingestion. This process of citration is likely to help the digestion of the milk by preventing the formation of big and hard lumps of curd in the stomach, which is already weakened, as a result of the disease. On the slightest indication of relapse, milk should be stopped at once and the patient made to revert to the above mentioned diets.

9. *Solid foods*.—A little care and caution must be taken at first, in prescribing and selecting suitable foods as diet for a cholera patient. As a rule, when the milk is found to be well borne and the general condition of the patient much improved, with normal healthy motions, or as is very often the case, constipation of the bowels following as a natural sequence to the previous diarrhoea, the patient may safely be permitted to have a little solid food in the form of "typhoid bread and milk". This is made by soaking or steeping the crumbs of a loaf of bread, tied in a piece of clean cloth, in boiling water for about ten minutes and then mixing this with milk after squeezing out the water carefully and completely therefrom. If the patient so desires, well boiled soft rice and milk or fresh fish soup, according to his taste, may be substituted for the above, care being taken to see that the rice given is at least two or three years old, if not more, for raw rice is always hard to digest.

WANTED—Nursing Sister—fully trained (general and midwifery) with teaching experience and knowledge of Hindi or Bengali as Sister Tutor. Starting pay Rs. 250 to Rs. 300 according to qualifications and experience. Uniform Rs. 100 p. a. Board and quarters provided. Apply Superintendent, Dufferin Hospital, Calcutta.