

## AN OUTLINE OF TREATMENT OF TYPHOID FEVER.

BY A. W. HERR, M. D.

(From the Therapeutic Review).

(Continued from page 39).

DURING the first few days or week the diet should be fruit juice only, *nothing else*. Later a malted or dextrinized cereal may be added as browned rice. To prepare the latter, place in an oven and heat to a light brown and then cook in a double boiler and serve with fruit juice, *not milk or cream*. Oriental or Bulgarian sour milk, prepared by using some of the numerous ferments now on the market, might be allowable, and I imagine the results would approximate those from the use of fruit acids; as here we have only the lactic acid producing germ. It should be given a trial.

Without entering much into detail, what are the chief indications for treatment?

First: *Reduction of the fever*. The patient should have free access to air, night and day. See that there is absolute mental and physical rest taken in bed and with only the nurse in attendance. Also an employment of proper hydrotherapeutic measures to which we will refer later.

Second: *Elimination of the toxins* produced by the specific microbe. To meet this indication, give water internally, both by drink and by enema, in this way emptying the alimentary canal of germs and germ-breeding material. The portal circulation is flooded. The action of the skin, liver and kidneys promoted and the fever-producing toxins diluted and eliminated. The typho-toxine is chiefly eliminated through the kidneys. Water drinking and the enema both stimulate the action of the liver and rinse the poisons through the kidneys, thus relieving the system of their pernicious influence. And, to prevent further introductions of bacteria into the system, water for drinking purposes should be boiled before using unless employing distilled water, or water taken from sources *known* to be free from bacterial contamination.

Whether thirsty or not offer the patient two to four ounces of water every half hour. The water will aid in regulating the temperature by abstracting heat from the body to warm the water. The patient does not drink to quench thirst, but to cleanse the blood stream from the poisons produced by the disease. Diluted fruit juices will take the place of water.

At the beginning and twice daily throughout the course of the disease, empty the bowels by means of a colocylyster. For this purpose use one to three quarts of sterile water at a temperature of 75° to 80° F., given with patient in right or Sim's position.

The cold enema at 60° to 80° F. may also be employed in addition to the cleansing enema, as a means of lowering the temperature. In the aged and in children, employ at a temperature 10 degrees higher. If patient is inclined to chill place hot water bag to the spine or pit of the stomach. Cold must never be applied in such a manner as to produce prolonged chilling. The surface must be kept warm. This rule is imperative.

To obtain a readjustment of the circulatory equilibrium a surface massage is indicated. By superficial kneading bring the blood into the surface capillaries and then by cold applications dissipate the heat. Thus produce a reaction from a cyanotic state and a fall of body temperature, and by thus equalizing the circulation the elimination of toxic material is greatly increased.

The methods of applying water treatment have various advocates. The Brand ice water baths are familiarly met with in hospital practice,—a heroic treatment but a powerful tonic to the nervous and vascular system when skillfully applied.

Others employ a gradually cooling bath until the patient is thoroughly chilled. The Bouchard bath has the advantage of not shocking the nervous system and with less vascular agitation, and can be employed with feeble patients. The bath is begun  $3\frac{1}{2}$  degrees below the temperature of the body, and the water cooled two degrees every ten minutes till a temperature of 86° F. is reached. Applied 4 to 6 times a day. The lowering of the temperature is more desirable and the elevation much less. Any cold bath is much more effective when the patient is fasting, or placed upon a restricted diet.

In our practice we have rarely resorted to any full cold bath. Local measures seem to have met the indications with less disturbance to patient and labor for the attendant. In addition to the water drinking and cool enema we regulate the fever by applications to the trunk. When the skin is hot and dry we apply cold to the skin, but when the skin is cold, the lips cyanotic, we find it better to precede the cold application by a hot one, or resort to the cool enema.

In patients of low vitality, with feeble reactionary powers, hot sponging of the body, the hot blanket pack, hot bag to the spine or hot enema will enable the employment of some form of cold treatment, as the wet with friction, cold towel rubbing, cooling wet sheet pack or shower pack.

In applying the cooling wet sheet pack for example: When the temperature rises above 101° F., place the trunk or the entire body of the patient in a sheet wrung out of water at 60° F. Then

wrap in a blanket. When warmed, replace with another cool sheet. By the longer time required to warm up the sheet one can gauge the length of time to continue the treatment. But when patient begins to shiver, remove at once from the sheet, rub until warm, then wrap in a dry blanket. Prolonged applications of the icebag over the precordial region tend to reduce the fever in typhoid, besides energizing the heart and circulation. Wet the hair and keep a cool compress to head, renewed frequently. By use of the hot bag and rubbing, keep the limbs warm. Capillary circulation in the skin will be kept up by sponging occasionally with cold water and skin frictions applied to the entire body except the abdomen. A towel wrung out of ice water and applied around the neck will keep the head cool and relieve headache. In fact, every indication that may arise, whether delirium or collapse can be met by those familiar with the technic of hydrotherapeutic treatment, and weeks of high temperature, rapid pulse, tense abdomen, with uncontrollable bowel movements will not make a picture unattractive to look upon, with a mortality of ten to twenty per cent. Under such a regimen of water treatment, in conjunction with the fruit diet, all the above symptoms are greatly modified and shortened and some of them, as delirium, practically eliminated.

The third and last *indication for treatment* is to limit and suppress germ development. This is accomplished, first, by withholding solid foods and foods rich in nitrogen. As mentioned, beef and beef extracts are fever producing because they contain toxic substances. The products of tissue katabolism are purely nitrogenous in character, and most fertile soil for the development of the typhoid bacilli and its poisons. Eggs and the firm curds of milk serve also as excellent culture media. Therefore, administer an aseptic dietary as previously outlined.

Further, resort to the icebag, or cool abdominal compress, changed every 10 to 20 minutes. It should be kept in place throughout the entire course of the disease. At each change the skin should be rubbed until red. Occasionally, apply a fomentation to insure the integrity of the skin. This measure will lessen the activity of the organisms preying upon the lymphoid tissues.

Frequently, other infections accompany the typhoid infection as, for example, the diplococci, streptococci, staphylococci. The underlying cause of these infections is the same as in typhoid, that is a prepared soil by a weakening of the forces of the body through depressing conditions brought on by infraction of simple hygienic laws.