Modern Trends in the Treatment of Infantile Gastro-Enteritis

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Recent work on the aetiology of infantile gastro-enteritis tends to incriminate various strains of B.coli classified under two types: B.coli alpha and B.coli beta. The former is also known as B.coli neapolitanum. There are however many variants and sub-types of both alpha and beta B.coli so that the position at present is very fluid and uncertain; besides it is hardly likely that one single cause can explain adequately the different manifestations of infantile diarrhoea. It is to be remarked that, whatever the initial agent responsible, progressive and often irreversible metabolic changes are produced that, like a chain reaction, cause still further metabolic disturbances until life may be impossible. For instance, the toxins present in the gut produce an increased permeability of the vascular bed, probably through the presence of histamine and allied bodies. This leads to a great loss of fluid and minerals especially bases, which in turn gives rise to dehydration and acidosis.

This leads us to consider certain basic principles in the treatment of infantile gastro-enteritis. The elimination of the causative agent should be our first aim. Since so far there is no certainty as to the nature of this, our treatment in this respect is largely empirical. Good reports (and also some adverse ones) have been published on the results of administering sulpha drugs, penicillin and streptomycin. Recently chloromycetin and aureomycin have been recommended. My own experience with the sulpha drugs has on the whole been favourable and I was unable to find any difference in action between the freely diffusible sulpha drugs such as sulphadiazine and sulphamezathine. and the non-diffusible ones such as phthalylsulphathiazole and succinylsulphathiazole. Recently, when the response to a sulpha drug has not been satisfactory, I have used in a few cases chloromycetin and aureomycin with gratifying results.

As dehydration is such an important symptom in enteritis, it must be promptly and adequately treated. Since there is evidence that the profuse loss of fluid depends on the presence of histamine and allied bodies in the tissues of the gut, I think it reasonable to administer an antihistaminic such as benadryl or anthisan in cases of enteritis. I give one milligram every four hours for every month of age of the patient. Manzina in the "Gazzetta Sanitaria" June-July 1950 recommends Neobetramine as the most suitable antihistaminic, as it can be given in relatively larger doses than benadryl without causing unpleasant side effects such as sleepiness.

If the dehydration has progressed to the point of producing toxic symptoms then the loss must be made good by oral or parenteral administration of fluids. The former method may be used in mild cases without vomiting. The latter must be adopted in those serious cases where either profuse vomiting is present or the infant is in a condition of stupor and is unable to drink. In diarrhoea owing to the loss of basic ions in the stools the pH value of the blood is shifted towards the acid side; thus in addition to dehydration, acidosis sets in with deterioration of the patient's condition. Further, the dehydration, because of the decreased blood volume, will lead to increased viscosity of the blood

and this results in an insufficientcy of the circulation of acid metabolites.

If vomiting is present, loss of chlorine ions leads to alkalosis. If both vomiting and diarrhoea are present sodium and chlorine ions are lost simultaneously, the former through the stools and the latter from the vomit; the acidosis balances the alkalosis until renal failure supervenes through the dehydration.

The administration of isotonic saline solution is not to be recommended. Since in any particular case it is not easy without laboratory assistance to determine the degree of acidosis or alkalosis, it is recommended that a buffered isotonic solution such as Hartmann's, which is a solution of sodium lactate in Ringer's fluid be used. To increase the calorific value, a 5% solution of glucose is sometimes administered. The fluid may be given by slow intravenous drip which presents technical difficulties in dehydrated infants or it may be given subcutaneously. In this case the absorption of the fluid may be very slow owing to the circulatory asthenia often met with in cases of enteritis. The addition of Hyaluronidase will speed up the absorption very considerably by increasing the permeability of the subcutaneous tissues. Hyaluronidase is a ferment obtained from bull's testes which has the property of disintegrating hyaluronic acid present in the "tissue cement" of connecting tissues.

Besides treating dehydration in enteritis, it is important to supply an adequate amount of nourishment. After the initial and customary starvation period of from 12 to 24 hours, it is advisable in most cases to administer some form of milk and perhaps the most suitable is buttermilk (Eledon or Beurlac) which is poor in fat and contains a certain percentage of lactic acid; the latter is useful in compensating for the loss of acid ions in gastric juice through combination with bases (mineral) and proteins in the milk. The buttermilk is given in gradually increasing doses and then after a suitable time replaced by a half-cream milk preparation. Finally a full cream variety of milk is given when thought proper.

It has been proposed to feed an infant entirely by parenteral means; the protein requirements can be fulfilled by injecting one of the various amino acid complexes now on the market. The carbohydrate requirements can be easily covered by administering glucose and for a short time fats need not be given. It is as yet difficult to assess the value of such methods and time will show whether it is practical.

In a review such as this, many details have been omitted and only general principles have been described, showing in which direction modern trends are leading in the hope that more and more lives may be saved by means within the reach of every practitioner.