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ACUTE DIARRHOEAL DISEASES

by

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ACUTE DIARRHOEAL DISEASES

Diarrhoea of the young are common to man and animals. The clinical syndrome includes a variety of infectious diseases characterized by diarrhoea and fever. Two types are recognized. Some are of specific aetiology but many are undifferentiated. Specific diseases cannot be distinguished clinically from each other nor from those referred to as undifferentiated diarrhoeal diseases. Epidemiologically they have common attributes such as reservoir, source of infection, communicability and mode of transmission. These common aspects as well as others such as repeated attacks, universality, involvement of all age groups resemble the diseases of the upper respiratory tract which are referred to as the common cold.

The condition described heretoafter is that described in children as acute diarrhoea of the newborn which is similar to that of newborn animals. In the latter the disease is described as scours which frequently leads to pneumonia and septicaemia. The disease in children is most often seen among infants in hospitals, nurseries and those recently returned home. In some instances, in under-developed areas with poor environmental sanitation, it is a disease of recently weaned children who are being fed inadequately, and often with contaminated food. The same experience is often encountered among young animals, especially calves. The aetiology is not always known but coliform organisms (Escherichia coli), Shigella and Salmonella are frequently the cause in man and likewise in animals except for the Shigella agents.

The acute diarrhoeal disease of young children and infants are characterized by severe diarrhoea with watery faeces containing little or no mucus or blood. Dehydration and acidosis are important symptoms and signs which indicate the severity of the disease. Signs other than that of the enteric infection are lacking except in those complicated by pneumonia and septicaemia. In nurseries or children's institutions these disorders spread rapidly. The mortality varies greatly according to the causal agent, health status of the children and therapeutic resources.

The aetiology varies considerably and may include bacteria such as mentioned, parasitic agents and even viruses. Post-mortem examinations reveal few changes and none of pathognomic importance.

The occurrence of these disorders are world-wide, with the highest incidence being noted in the countries with good public health organization where disease is diagnosed and reported. The disease is primarily that of newborn infants regardless if they are in hospitals, nurseries or institutions as well as homes. No seasonal distribution has been noted although a few decades ago summer diarrhoea of the newborn was a common entity with a high case fatality rate.

The causal agents may be many but those most often considered in the United States are the E. coli serotypes, Shigella and Salmonella species. Entero viruses are now considered as important causes of these diseases. Some of the bacterial agents such as E. coli and Salmonella are found in animals but man is usually considered the reservoir of these diseases. The specific types of E. coli appear to be present only among patients and those in attendance or other close contacts. Nurses, nurse aids, other attendants, food handlers and physicians sometimes serve as healthy carriers. The same is apparently true for Shigella and no doubt most probable for Salmonella, that man is the principal reservoir and source, although animals and their products can be a source. The source of infection in man is the secretions or excretions of infected persons or articles of food they contaminate.

The mode of transmission is usually faecal contamination where the various organisms are found in the greatest number, sometimes nearly all the same organism. The reason for transmission is usually poor personal toilet habits on the part of the staff, failure to wash hands following each diaper change and before feeding infants and young children. Other violations of hygiene include bathing of infants in common basins and handling on the same table, weighing on scales without sterile pads for each infant, handling and refrigeration of formula and food, saving of formula or food for later feeding, changing bottle caps and nipples as well as other practices that allow the spread of any bacteria agents that may be present. In hospital and institution epidemics studied, agents such as E. coli and Salmonella can be demonstrated in the whole environment including bed linen, dust and any surfaces sampled and cultured.

The incubation period in institutional outbreaks is unknown but varies from a few days to several weeks but most frequently 2 to 4 days. Susceptibility and resistance appear to be a factor of age. Premature infants are most susceptible and have the highest case fatality rate. Next are those less than two weeks of age followed by those who are older. The older the child the greater the resistance.

Preventive measures are well known by public health officers, nurses, physicians and hospital administrators. The recommendations of the American Public Health Association state

1. No nursery unit should handle more than 12 infants. Each unit should have mechanically controlled hot and cold water for hand washing and at least 25 square feet of floor space per infant. Infants with any illness should be placed in isolation or moved to the paediatric service. Because of the ease of spread of infection the practice of keeping each baby with its mother should be encouraged and recommended.

2. Individual equipment should be provided each infant. Common dressing tables and bassinets should not be allowed.

3. No nurse should have more than 12 infants under her care.

4. Feeding formulas should be prepared aseptically, placed in clean bottles with clean nipples attached and covered with a cap. The entire product should be sterilized under heat and then refrigerated until feeding time. Periodic bacteriological sampling of the end product should be made. Coliform organisms should be absent and the total plate count should not exceed 10 bacteria per ml.

5. Newborn infants should not be kept in the same nursery with sick or older children. Infants brought into the hospital should not be placed in the nursery but in isolation until the cause of their illness is established. Those attending them should have no other contacts with well infants.

6. Stool samples should be examined and recorded. The attending nurse and physician should be made aware of these examinations.

Therapy is difficult in all these cases. The maintenance of fluids and electrolyte balance is fundamental. If a bacterial agent is isolated its susceptibility to antibiotics or combinations of antibiotics is the best index to what therapeutic course to follow.

The acute diarrhoeal diseases of young animals are quite similar to those of human infants. It is probably the commonest clinical condition in young animals. The most frequent cause is bacteria agents e.g. E. coli, Salmonella spp. and Clostridium groups. E. coli are the most frequent cause. In the acute cases severe diarrhoea and dehydration with depression are the most common signs. The most severe cases are those where the E. coli enters the blood stream and causes pneumonia and septicemia. Death occurs in these cases in 12 to 16 hours. Susceptibility is increased by failure to receive colostrum which contains high levels of antibodies and vitamin A, but variations in the severity of outbreaks are probably due to the pathogenecity of the serotypes involved. Over-feeding, such as overabundance of mares' milk, poor quality of milk as with sows, unhygienic environment as can be expected on many farms - all are contributing causes. The increased use of clean pathogen free farrowing houses for animals reflects the successful experience in handling newborn animals as hygienically as possible. They remain disease free and grow much more rapidly - providing a greater profit for the producer. Young animals all need a clean disease free environment and sufficient nutritious food.