The Spread and Control of Diphtheria Epidemics.

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Dr. Louis Parkes recommended the use of antiseptics in the case of children's hospitals, finding this means particularly suitable in the Chelsea Hospital for Children. Here he advised strict precautions against the introduction of infective material from the out-patient department to the wards, disinfection of the excreta, and sterilisation of all cups, spoons, &c. At first 1 per cent. formalin was used for this purpose, but, as this was found to injure the hands, 1 in 40 carbolic was substituted. With these precautions only a few isolated cases appeared in two years; but when 1 in 80 carbolic was tried for three months four cases appeared close together. Before these ideas were adopted, in three years there had been sixty-five cases among the patients and nine among the staff. In connection with such uses of antiseptics, the experiments carried out by Dr. Slater some years ago are of interest. He was able to show that several species of organisms were destroyed by as small a percentage of formalin as 0·1 per cent.; it is likely that the diphtheria bacillus would share the same fate as the Staphylococcus aureus.

Of course, in schools such strict precautions cannot be taken as in the case of hospitals, but means should be adopted whereby each child has its own pencil, slate, &c., in order to minimise the risk of spread of diphtheria by sucking or licking what has probably been in contact with another child's mouth. It would be advantageous, too, if such articles could be sterilised frequently.

When diphtheria is in progress, domestic animals, especially cats, should be kept away from the patient, and, if they show any signs of disease of the respiratory passages, should be destroyed.

Prophylactically, it has been shown that 500 units of antitoxin given hypodermically will protect from the disease for three weeks, but little longer. For a child under two years of age 300 units is enough.

Despite the many statements which from time to time have appeared, it is now held that the administration of antitoxin by the mouth is of no avail. It is probably converted into peptone in the stomach, and in any case could not be absorbed by the intestine on account of its large molecular size. It has been suggested by Chantemesse that antitoxin is absorbed if given by the rectum, but Hewlett emphatically denies the possibility.

When diphtheria antitoxin is given hypodermically, serum rashes appear less frequently in recent days than a few years ago. This is because more concentrated sera are on the market, and a smaller volume in consequence injected than when only dilute ones are available. Hence this argument against the prophylactic use of the serum falls to the ground.

Several recent epidemics have been checked by the prophylactic use of antitoxin, that in the rural districts of Chelmsford and Maldon being a very good example. Here there were twenty-four families in which cases of diphtheria had occurred. The remaining unaffected members of these families comprised 144 individuals, and to 136 of these prophylactic injections of antitoxin were given, and among them a single doubtful case of diphtheria occurred. Of the eight uninjected individuals three subsequently developed the disease.

An interesting outbreak of diphtheria was that at Colchester, where the most striking results were obtained in checking the progress of the disease in schools. Here cases of diphtheria were of constant occurrence, almost without intermission from the autumn of 1900 to the end of 1901, the outbreak reaching its height in the summer of 1901, when Dr. Cobbet was called in. Up to this time the Medical Officer of Health had been unwilling to make sufficient use of antitoxin, being content with antiseptic mouth washes. Dr. Cobbet suggested that the disease was being spread by personal contact, and advised the bacteriological examination of all contacts, the prophylactic use of antitoxin, together with the isolation of contacts, and also the co-operation of the medical profession with the Public Health Committee. He also recommended the systematic disinfection of all pens, pencils, and slates at the schools, each child having its own, confined to its own use. The water supply was also cut off from public drinking fountains to prevent the children drinking from the spouts after the cups had been removed. On re-opening the schools after the completion of the precautionary measures no case of diphtheria was notified amongst the scholars, save in three out of the nineteen schools. In the first of these three schools, eight weeks elapsed, and then three cases were notified. In the second, two cases occurred after four weeks; but in the third there was a small outbreak extending over four weeks. All the scholars, 112 in number, in the infected portion of this school were examined, and five harbouring diphtheria bacilli were found and excluded. No further cases were notified. In this outbreak the administration of antitoxin without bacteriological examination was not encouraged, as persons thus rendered immune carry the organisms in their mouths for long periods, and may act as unknown centres of infection.

At Cambridge, too, the use of antitoxin was encouraged amongst contacts with very beneficial results. The main rules on which this anti-diphtheritic campaign was conducted were:—

1. As far as possible all notified cases were examined and isolated until three negative examinations showed them to be free from the diphtheria bacillus.

2. As far as possible all cases of sore throat

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