

The most fatal form—laryngeal diphtheria—causes death either from stenosis, broncho-pneumonia, or sepsis, none of which will develop if a large dose of antitoxin is administered on the first day of the disease.

Children with enlarged tonsils and adenoids are in especial danger and require a specially large dose.

The same is true of nasal involvement. Intubation as a rule is not done early enough.

For the ordinary case of pharyngeal diphtheria without nasal or laryngeal involvement, I find a single dose of 1000 units, if given early, quite sufficient.

Dr. Louis Cairns published a most interesting paper in the *Lancet* of December 20th, 1902, on the intravenous injection of antitoxin. There are, he says, a certain number of malignant cases which show no improvement after the subcutaneous injection of even large doses (20,000 to 30,000 units) of antitoxin. He suggests two causes for its failure.

1. A selective influence on the part of the glands in filtering out the active constituents of antitoxin.

2. There is a definite chemical relation between toxin and antitoxin, and neutralization of the toxin goes on more quickly in concentrated solutions than in dilute ones.

He recommends an initial dose of from 20,000 to 30,000 units injected into the median-basilic vein, and the indications he gives for its employment in this way are:

1. Special malignancy of the disease.
2. Involvement of the lungs, especially if this complicates laryngeal involvement.
3. A moribund condition when first seen.
4. Marked toxic symptoms.

He reports fifty consecutive cases in the Belvidere Hospital, Glasgow. Of these he considered twenty severe enough to warrant intravenous injections. Of the fifty but three died. Thirty-one of the fifty cases showed laryngeal and seven nasal involvement. Fifteen were complicated with broncho-pneumonia. In seventeen cases it was found necessary to perform tracheotomy, and of these but one died.

The first case in which intravenous injection was tried was of special interest. A girl two years old was admitted pulseless, with cyanosed lips and cold extremities—the heart beating 185 to the minute, respirations 60, laryngeal obstruction almost complete. Tracheotomy was performed, but the lividity continued and was found to be due to broncho-pneumonia. The urine was loaded with albumen; 6,000 units of antitoxin were injected into the median-basilic vein. The patient continued desperately ill for two days, but on the third day mucus was