Clinical Notes**SUDDEN COLLAPSE FOLLOWING INJECTION
OF DIPHTHERIA ANTITOXIN;
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Recent reports in *THE JOURNAL* of fatal results following the use of antitoxin, especially the cases reported by Drs. Wiley¹ and Boone,² prompt me to report a very unpleasant experience with serum a few months ago. Although the patient survived, I certainly do not care to have any more experience of like character.

Dec. 15, 1907, I was called to see a boy 15 years of age. He had always been healthy in every way, until the past few days, when he thought he had taken cold, and was now complaining of his throat. Examination showed a flushed face, rapid respiration, and quick pulse, 120 per minute. He breathed through the open mouth, indicating nasal obstruction. Inspection revealed a large mass of diphtheritic membrane which almost filled the pharyngeal and postnasal spaces. I at once sent for antitoxin, and on its arrival injected, by the usual technic, a dose of 4,000 units into the subscapular region.

Immediately there was a change in the boy's countenance. A look of intense anxiety came over him, and the lips, face and neck quickly became livid in appearance. He gasped for breath, and cried out that he was smothering, and that he had a pain in his heart. Froth poured from his mouth, and he clutched with his fingers at his throat and chest. There was a peculiar death-like stare in his eyes; the pupils became widely dilated, and very soon he went into convulsions, throwing himself from one side of the bed to the other. Finally his breath seemed to leave him, and he dropped back on the bed in a state of complete collapse and unconsciousness, while the radial pulse entirely disappeared from both wrists. Death seemed imminent.

Restorative measures were promptly instituted in the form of strychnin, atropin, and nitroglycerin, hypodermically, while heat was applied to the extremities and hot coffee injected into the bowel. Dr. Frank Garcelon of Pomona was called in consultation. Stimulation was pushed to the limit, without any apparent benefit, so far as restoration of consciousness or pulse was concerned. After lying in this condition for an hour and a half with no improvement, and as the throat was filling up rapidly with the false membrane which continually threatened strangulation, it was decided to try another dose of antitoxin, and 3,000 units were injected in the submammary region. One hour later, another dose of 2,000 units was administered. In each instance strychnin 1/30 gr. was given hypodermically coincident with the antitoxin.

No immediate effect was noticeable from either of these doses, one way or the other. Respiration continued weak and rapid, while the extremities were cold and blue. The case at this time seemed hopeless. One hour later an ounce of hot saturated camphorated oil was injected into the bowel, and retained. Two hours later respiration began to improve, and a faint radial pulse could be detected, the first perceptible in six hours' time, and the patient soon regained consciousness, but was very much prostrated.

As the boy could not now swallow, alcoholic stimulants were freely given, and peroxid of hydrogen spray, full strength, was used in the nose and throat at frequent intervals. At 9 a. m., the next day, 3,000 units of antitoxin were given, and the same sized dose repeated at 1:30 and 5:30 p. m., making in all 18,000 units administered in twenty-two hours.

Improvement in pulse and respiration became more noticeable, and the symptoms much more favorable, but the membrane did not begin to slough until the fourth day. After this it was freely cast off. On the eighth day severe muscular and articular pains came on, and the characteristic eruption ap-

peared over the whole body, accompanied with intense itching, and the eyes became bloodshot.

Absolute rest was enjoined for several weeks after all troublesome symptoms had disappeared, and strychnin was continued until the patient had regained his strength. Convalescence was rather slow, but the patient finally made a complete recovery.

The question may be asked why succeeding doses of antitoxin were given this patient after the untoward effect of the first dose. The answer is that the boy's system was so thoroughly saturated with the toxemia of the disease that recovery seemed impossible without heroic measures such as antitoxin offers. The precaution was taken to give strychnin coincident with each of the succeeding doses of antitoxin for the purpose of sustaining the flagging heart action. Whatever theory may be applied to the case, the important thing is that the boy recovered. Without vigorous and continued stimulation death would certainly have followed.

The question of the untoward effects of serum injections have attracted the attention of the profession to a considerable extent within the past few months,³ and now the federal government, through the Marine-Hospital Service, is making extensive investigation and study of the subject with reference to this point, and it is hoped that the department will be able to throw light on a mysterious condition concerning which we are in the dark at the present time.

The difficulty is that we have no criterion by which we may be able to foresee contraindications for the use of the serum that is so universally recognized as the most potent remedy we have with which to combat the poison of diphtheria. I have used antitoxin for years, and have given it twenty-five times since that unfortunate experience five months ago, and only with good results; but in the light of the experience reported during the past few months it behooves the profession to be on guard in the use of this remedy that we have heretofore given with feelings of absolute safety.

**A NEW METHOD FOR THE QUANTITATIVE
ESTIMATION OF ALBUMIN IN URINE.***

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Although there have been many new methods devised in past years which have simplified and enriched our laboratory equipment, there seems to have been no method suggested whereby the percentage of albumin in a given specimen of urine can be rapidly determined. The only means we possess is the Esbach albuminometer, which besides being inaccurate, possesses the added disadvantage of requiring twenty-four hours before a result can be obtained.

We have worked out a method which is extremely simple, accurate and which gives results in a few minutes. It is based on the precipitation of albumin by phos-

1. *THE JOURNAL A. M. A.*, Jan. 11, 1908, 137.2. *THE JOURNAL A. M. A.*, Feb. 8, 1908, 453.3. *THE JOURNAL A. M. A.*, March 14, 1908, 875.

* A preliminary report from the private laboratory of Dr. John H. Musser.