Pharmacology and Therapeutics, Preventive Medicine

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Volume VI

Pharmacology and Therapeutics

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PHARMACOLOGY AND THERAPEUTICS

GENERAL CONSIDERATIONS

NOMENCLATURE

New Names for Synthetics. As was reported in previous volumes of this publication the Council on Pharmacy and Chemistry of the American Medical Association has accepted and promulgated the following non-proprietary, "All-American" names:

Neo-arsphenamine for "Neosalvarsan."
Barbital for "Veronal."
Barbital Sodium for "Veronal sodium."
Procaine for "Novocain."
Cinchophen for "Atophan."

This year the Council has adopted the following non-proprietary names:

Acetannin for "Tannigen."
Albutannin for "Tannalbin."
Benzocaine for "Anesthesine."
Eucatropine for "Eupthalmine."
Phenacaine for "Holocaine."
Neocinchophen for "Novatophan."
Phenetsal for "Salophen."

To aid in the emancipation of the medical profession from proprietary medicine domination, the non-proprietary names will be employed by preference in this publication.

(2) New and Nonofficial Remedies, 1920; also Jour. Amer. Med. Ass'n, June 5, 1920; March 27, 1920; and May 1, 1920.
The following American synthetics were investigated by P. N. Leech, W. Rabak, and A. H. Clark, at the Chemical Laboratory of the American Medical Association. Arsphenamine, Barbital, Barbital-sodium, Cinchophen, Procaine, and Procaine nitrate; they found the quality of these preparations second to none.

METHODS OF ADMINISTRATION

Painless Hypodermic Injection. In very sensitive patients, the pain of the needle puncture in giving hypo-

dermic injections should be minimized so far as possible. This can be done by one of the methods illustrated in Figures 1 and 2. Pinching the skin into a fold in which the needle is introduced is the method preferred by J.

(3) Jour. Amer. Med. Ass'n, Sept. 6, 1919.
R. Eastman,\(^4\) while the application of a piece of cotton frozen with ethyl chloride and held on the skin for 30 seconds is the method advocated by J. T. Mason.\(^5\)

A. A. Robinson,\(^6\) reports that hypodermic administration of sodium cacodylate is rendered painless by the addition of about 5 minims of a 1 per cent. solution of procaine. Such solution of procaine will not precipitate the ordinary dose of sodium cacodylate. Stronger solutions, however, will do so.

[Addition of local anesthetics may be resorted to in order to antagonize the pain of other painful injections,

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\(^5\) Ibid.  
\(^6\) Ibid., Sept. 4, 1920.
e.g., quinine and urea hydrochloride with mercury salicylate.—Ed.]

**Technique of Hypodermoclysis.** Dr. Willard Bartlett,\(^7\) advises continuous hypodermoclysis, using the visible dropper and screw clamp, and employing plain, freshly distilled water, as harmful effects occasionally follow the absorption of abnormal amounts of sodium chloride. The water is heated to between 100\(^\circ\) and 110\(^\circ\) F. The injection is made at a point near the outer border of the pectoral muscles, midway between the nipple and the head of the humerus. Here absorption is almost twice as fast as it is when the injection is under the breast alone. Only one side is used at a time. Usually from 800 to 1200 c.c. are given during one injection, though a much larger amount may be given. The procedure has completely supplanted rectal administration with greatest satisfaction.

**An Improved Fordyce Needle for Intravenous Therapy.** The Fordyce needle, the best needle for the administration of arsphenamine, has been modified by E. W. Abramowitz\(^8\) by a stem through the hub beyond the holder, to enable one to collect blood without soiling the patient and then to proceed with the administration of arsphenamine without puncturing the patient again. The needle is shown in Figure 3.

**Continuous Intravenous Infusion.** M. Friedmann\(^9\) warmly recommends the drop method for prolonged intravenous injection, which he has employed for the last

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\(^{8}\) Ibid., July 31, 1920.
seven years with good results. By allowing from 20 to 200 drops a minute to flow into the vein, the sudden embarrassment of the generally weakened circulatory mechanism is avoided. Such injection may be continued for hours, even days. The author employed 0.9 per cent. sodium chloride, with occasional addition of 1 mil of digilen or of epinephrine, 1-1000 solution (1 mil to 750 mils). In cholemic hemorrhage Friedmann repeatedly infused from 200 to 400 mils of 10 per cent. sodium chloride solution with 0.02 per cent. calcium chloride, at times with marked success. He also used sugar and sodium carbonate solutions in this manner. Camphor water gave no result when used against circulatory weakness in pneumonia or peritonitis. Collargol, up to 200 mils of 2 per cent. solution, was without effect in sepsis. The obese and the arteriosclerotic sometimes do not tolerate these injections. In extreme cases hypostatic pneumonia developed with remarkable frequency.

**Danger of Intravenous Administration of Colloids.**
The increasing popularity of intravenous medication, makes the experimental observations of P. J. Hanzlik and H. T. Karsner\(^1\) of importance. They find that even such otherwise harmless colloidal agents as agar, acacia, gelatin, glycogen, starch, and dextrin which possess no demonstrable pharmacologic action and are non-toxic are capable, on intravenous injection, of producing definite anaphylactoid symptoms, such as respiratory distress, pulmonary distension and congestion, hemorrhages and, some of them, thrombi. These disturbances occurring as they do even in unsensitized animals do not necessarily constitute true anaphylaxis.

These observations are of importance, most especially in view of the recommendation of the intravenous use of acacia in treatment of shock.

Similar results were also obtained with peptone, protein, collargol, arsphenamine, neo-arsphenamine, nuclein solution, bile, typho-bacterin, phylaeogen. The results obtained are decidedly against the intravenous method of administering drugs as a routine therapeutic measure.

The authors found that, while intravenous injection of atropine can completely prevent the toxic effects pro-

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duced by the intravenous injection of beef serum and peptone and while epinephrine given intravenously prevents death from true anaphylactic shock in guinea-pigs, these exert no protection against the effects of acacia, dextrin and starch. In the basis of these results it appears that the effects of the latter bear no relationship to true anaphylaxis. Partial protection was afforded by epinephrine as well as atropine against the circulatory disturbance produced by arsphenamine.

While the distension of perfused guinea-pigs’ lungs produced by peptone and histamine is due to active stimulation of bronchial muscles, that produced by agar is due to compression of bronchioles by emboli in the pulmonary vessels.

Mode of Therapeutic Action of Intravenous Injections. Charles Greene Cumston\(^2\) favors the idea that no matter what substance is injected into the blood there always follows an identical vaso-sanguineous crisis with nervous and febrile manifestations, followed by a hematic and leukocytic reaction, then a return to the normal state. The phenomena of the reaction are, in all cases, quite alike, whether they are colloids, collo-biases, sugar, peptones, sera, or plasma. It is a reaction of defense against the sudden introduction of foreign bodies into the blood. It occurs no matter what foreign body enters the circulation. The reaction is also identical with the malarial paroxysm, which is the consequence of a hemoclasis shock identical with that resulting from the sudden intravenous introduction of foreign matter.

The author calls special attention to the remarkable leukogenous action of sugar given intravenously. Within thirty minutes after the injection the leukocyte count reaches from 7,000 to 25,000 and remains at this figure for from two to three hours, afterward falling to about 15,000. The injections produce quite as marked reactions as the colloid metals, sodium nucleinate, etc. This action manifests itself clinically shortly after the injection by a transitory rise in temperature of a few tenths of one degree, ushered in by a severe chill and followed by sweating, as in a malarial paroxysm. Intravenous injections of an isotonic solution of sugar—glucose, saccharose, or lactose—have been employed to increase the