focus the search for instances of this disease only on the descendants of the inhabitants of the Mediterranean basin, and Downey [14] may be correct in his feeling that many cases in other races may have been overlooked because of this.

We are reporting the following case of thalassemia minor occurring in an American Negro to add to the small list of previously described cases.

REPORT OF CASE

A veteran, a 36 year old Negro man, was admitted to the Northport Veterans Administration Hospital on Aug. 23, 1943 by transfer from an Army General Hospital. He had been inducted into the Army in August 1942 and had been sent overseas to the Southwest Pacific Theater in January 1943. In April 1943 he manifested delusions of persecution and auditory hallucinations and was admitted to a station hospital in the New Hebrides Islands, where a diagnosis of a schizophrenic reaction, paranoid type, was made, and he was evacuated to the United States.

The history obtained from available records showed that he was born in San Antonio, Texas, in 1914 and that he was an only child. His father had died while the patient was an infant, and his mother had died of "heart disease" at the age of 42. Physical examination on admission was essentially noncontributory, and he has been continually institutionalized since then. On Aug. 6, 1943 the red blood cell count was 4,560,000, with a hemoglobin content of 88 per cent, and the white blood cell count 8,400, with 64 per cent neutrophils, 34 per cent lymphocytes, 1 per cent monocytes and 1 per cent eosinophils. No malarial parasites were seen in the blood smear, and the Wassermann and Kahn reactions were negative. Spinal fluid and urine were normal.

On Sept. 12, 1944 the red blood cell count was 4,970,000, with a hemoglobin content of 90 per cent. Many stippled red blood cells were noted at this time. The white blood cells included 59 per cent neutrophils, 35 per cent lymphocytes, 3 per cent monocytes, 2 per cent eosinophils and 1 per cent basophils. Blood studies on September 21 again showed numerous stippled red cells, with a red cell count of 5,310,000, a hemoglobin content of 100 per cent, 64 per cent neutrophils, 29 per cent lymphocytes, 4 per cent monocytes, 2 per cent eosinophils, and 1 per cent basophils.

On March 6, 1950 an acute nasopharyngitis developed with a temperature of 100.4 F., and the patient was sent to the medical service for treatment. Physical examination at this time showed a rather light-skinned Negro actively hallucinating. The ocular fundi were normal, and the pupils reacted to light and in accommodation. Acute nasopharyngitis was present. The lungs were clear on percussion and auscultation, and the heart showed a soft systolic murmur of grade II intensity over the aortic area. The blood pressure was 112/70. The liver and spleen were not palpable, but a few small and shotty lymph nodes were present in the right groin. There was a pitting edema (2 plus) of the dorsa of the feet. Rectal examination was noncontributory. Studies of the peripheral blood at this time showed 5,500,000 red cells, a hemoglobin content of 93 per cent and 16,500 white cells, with 66 per cent neutrophils, 29 per cent lymphocytes, 3 per cent monocytes and 1 per cent eosinophils. The reticulocyte count was 1.4 per cent. The red blood cells on smear showed anisocytosis, poikilocytosis and polychromasia. Many red blood cells showed basophilic stippling, and 30 per cent were target cells. The hematocrit reading was 37 per cent, color index 0.84, volume index 0.773, mean corpuscular volume 67.27 cubic microns, mean corpuscular hemoglobin 24.54 micromicrograms and mean corpuscular hemoglobin concentration 36.48 per cent. A red blood cell fragility test showed hemolysis to begin at 0.4 per cent in the control cells and to be complete at 0.28 per cent, while the patient's cells began to show hemolysis at 0.4 per cent dilution and to be completely hemolyzed at 0.04 per cent. Tests for sickling, both direct and latent, gave negative results. Sternal marrow aspiration showed a hyperplastic erythropoiesis of the normoblastic type and red blood cells with basophilic stippling. Many target cells were demonstrable, and anisocytosis, poikilocytosis and polychromasia were marked. Urinalysis was noncontributory, and repeated urobilinogen tests gave negative results in significant dilutions. Blood chemistry studies showed total protein 7.06 Gm. (albumin 4.28 Gm. and globulin 2.78 Gm.); albumin:globulin ratio 1.54; cephalin-cholesterol flocculation, negative; icterus index 8; direct van den Bergh test, negative; indirect test, 0.42 units; cholesterol, 347 mg. per 100 cc., with 73 per cent cholesterol esters; alkaline phosphatase, 8.82 Bodansky units; calcium, 8.87 mg. per 100 cc., and phosphorus, 3.76 mg. per 100 cc. A 24 hour urine specimen did not contain lead. Roentgen studies of the skull, spine and long bones were noncontributory. The stools gave a negative reaction for occult blood. The patient's nasopharyngitis rapidly subsided and the edema of the feet disappeared the morning following admission. This edema was no doubt due to the fact that the patient, because of his mental condition, stood on his feet in one position for long periods, and the edema was of postural origin.

SUMMARY

A case of thalassemia minor in a Negro is presented. This is the eighth report of its occurrence in Negroes.

14. Downey, H.: Handbook of Hematology, New York, Paul B. Hoeber, Inc., 1938, vol. 3.

ADENOSINETRIPHOSPHATE

TRIAL IN THE TREATMENT OF RHEUMATOID ARTHRITIS

Lincoln Godfrey, M.D., Philadelphia

The remarkable results that Hench and his colleagues [1] and subsequently others have obtained in rheumatoid arthritis using cortisone and pituitary adrenocorticotropic hormone (ACTH) have led to the search for other compounds which are more readily available and could produce comparable results. Carlström and Lövgren [2] reported good results in rheumatoid arthritis with the administration of adenosinetriphosphate. Favorable responses occurred within five to 10 days after therapy was begun in the majority of their patients. This rapidity of response with adenosinetriphosphate, in comparison with the slow response of patients treated with gold compounds or other conventional methods, suggested that adenosinetriphosphate influenced the disease in a manner comparable to that of cortisone and pituitary adrenocorticotropic hormone.

Adenosinetriphosphate is a high energy phosphate compound occurring naturally in the body, of great importance in the intermediary metabolism of dextrose. There have been a few scattered reports in the literature of its use in vascular disorders. I have found no reports of toxic reactions.

Twelve patients with severe rheumatoid arthritis were treated with adenosinetriphosphate for varying periods, from five to 11 days. The patients were selected for therapy on the basis of clinical severity and rapid progression of the disease. Only one patient was in the early stage of the disease; the remainder had had rheumatoid arthritis for one or more years. All were having clinical relapses at the time of treat-

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1. Hench, P. S.; Kendall, E. C.; Slocumb, C. H., and Polley, H. F.: Proc. Staff Meet., Mayo Clin. **24**: 181-197 (April 13) 1949.

2. Carlström B., and Lövgren, O.: Acta med. Scandinav. **115**: 568-586, 1943.

ment with adenosinetriphosphate, and all needed rather large quantities of both salicylates and codeine for pain relief. The patients were hospitalized during the period of this treatment. Adenosinetriphosphate was administered intramuscularly, 20 mg. dissolved in 2 cc. of isotonic sodium chloride solution every six hours, making a total of 80 mg. every 24 hours. No local or systemic reactions were encountered.

Of the 12 patients treated, 11 failed to show any symptomatic response. Moreover, there was no decrease in joint swelling or increase in range of motion. Four of the 11 patients were treated for 11 consecutive days and six for five consecutive days. One patient, treated for seven days, seemed improved symptomatically and demonstrated some increase in range of motion. Total eosinophil cell counts [3] were done on eight of the 12 patients in an attempt to demonstrate adrenal cortex stimulation. However, there was no significant fall in the total number four hours after the first injection of adenosinetriphosphate, as compared with that immediately prior to administration of the compound. The number of eosinophils in the one patient with symptomatic improvement also failed to show a change. Sedimentation rates were not significantly altered in any patient.

SUMMARY

Eleven of 12 patients with rheumatoid arthritis treated with adenosinetriphosphate failed to show any subjective or objective signs of improvement. These results do not confirm the report by Carlström and Lövgren of the beneficial effect of adenosinetriphosphate in rheumatoid arthritis.

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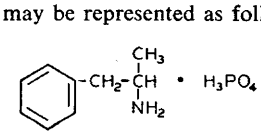
COUNCIL ON PHARMACY AND CHEMISTRY

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

R. T. STORMONT, M.D., *Secretary.*

Amphetamine Phosphate. — $C_9H_{13}N.H_3PO_4$.—M.W. 233.21. — Raphetamine Phosphate (Strasenburgh). — Mono-1-phenyl-2-aminopropane phosphate.—The structural formula of amphetamine phosphate may be represented as follows:



Actions and Uses.—Amphetamine phosphate shares the actions and uses of amphetamine sulfate. Its one advantage, greater solubility, is significant only in the preparation of solutions for injection. For the indications for its use see the monograph on Amphetamine Sulfate.

Dosage.—Doses of amphetamine phosphate approximately 20 per cent greater by weight than those recommended for amphetamine sulfate provide the same amount of the base. Because the average oral dose seldom exceeds 10 mg., the difference between the prescribed amount of the phosphate and sulfate is likely to be clinically undetectable. Theoretically, 12 mg. of amphetamine phosphate represents the approximate equivalent of 10 mg. of amphetamine sulfate. As an analeptic, the drug is administered intravenously or intramuscularly in doses of 20 to 50 mg. every 30 to 60 minutes until consciousness is restored. The same precautions and contraindications must be observed as in the case of other sympathomimetic amine compounds.

Tests and Standards.—

Physical Properties: Amphetamine phosphate is a white, odorless powder with a bitter taste. It sinters at about 150 C., it becomes an amorphous mass as heating is continued and decomposes at about 300 C. It is freely soluble in water; slightly soluble in alcohol; and practically insoluble in benzene, chloroform and ether. The p_H of a 10 per cent solution is about 4.6.

Identity Tests: Dissolve about 0.1 Gm. of amphetamine phosphate in 5 ml. of water and add a few drops of silver nitrate T.S.: a yellow precipitate forms which is soluble in diluted nitric acid or in ammonia T.S. *(presence of phosphate).*

Dissolve about 0.1 Gm. of amphetamine phosphate in 5 ml. of water and add a few drops of ammonium molybdate T.S.: a yellow precipitate forms which is soluble in ammonia T.S. *(presence of phosphate).*

Place about 1 Gm. of amphetamine phosphate in an Erlenmeyer flask, and add 50 ml. of water and 5 ml. of 40 per cent sodium hydroxide. Then add 5 ml. portions of benzoyl chloride, shaking the flask after each addition, until no more precipitate forms. Recrystallize the benzoyl derivative twice from 50 per cent alcohol and dry the crystals in a vacuum at room temperature for 24 hours: they melt between 134 and 135 C.

Purity Tests: Dissolve about 0.5 Gm. of amphetamine phosphate in 50 ml. of water and acidify with hydrochloric acid: separate portions of 10 ml. each of the solution yield no turbidity with 1 ml. of barium chloride T.S. *(absence of sulfate);* and no color or precipitate on saturation with hydrogen sulfide *(absence of salts of heavy metals).*

Dry about 0.5 Gm. of amphetamine phosphate, accurately weighed, to constant weight at 105 C.: the loss in weight is not more than 1 per cent.

Ash about 1 Gm. of amphetamine phosphate, accurately weighed: the residue is less than 0.05 per cent.

Assay: (Amphetamine) Dissolve about 0.2 Gm. of amphetamine phosphate, accurately weighed, in 25 ml. of water in a separatory funnel. Add 4 ml. of 10 per cent sodium hydroxide and extract the solution with six 15 ml. portions of chloroform. Wash the combined chloroform extracts with 25 ml. of water. Shake the wash water with an additional 15 ml. of chloroform and add the chloroform layer to the original chloroform extracts. Transfer the chloroform to a glass-stoppered Erlenmeyer flask and shake it with exactly 20 ml. of 0.1 *N* sulfuric acid. Evaporate the chloroform on a steam bath. Cool the solution, add 1 drop of methyl red T.S., and titrate the excess acid with 0.1 *N* sodium hydroxide. Each ml. of 0.1 *N* sulfuric acid consumed is equivalent to 0.01352 Gm. of amphetamine. The amount of amphetamine present is not less than 57.1 nor more than 58.8 per cent, equivalent to not less than 98.5 nor more than 101.5 per cent of amphetamine phosphate.

Dosage Forms of Amphetamine Phosphate

SOLUTION. *Assay:* Pipet a volume of solution equivalent to about 0.2 Gm. of amphetamine phosphate into a separatory funnel and proceed as directed in the assay for amphetamine in the monograph for Amphetamine Phosphate. The amount of amphetamine present is not less than 55.1 nor more than 60.9 per cent, equivalent to not less than 95 nor more than 105 per cent of the labeled amount of amphetamine phosphate.

TABLETS. *Assay:* Grind 50 tablets and accurately weigh an amount of powder equivalent to 0.2 Gm. of amphetamine phosphate. Transfer the sample to a glass-stoppered Erlenmeyer flask, add 150 ml. of water and shake the flask for 1 hour. Filter the solution into a 250 ml. volumetric flask, wash the precipitate with five 20 ml. portions of water, and make up to the mark with additional water. Pipet 50 ml. of the solution into a separatory funnel, add 3 ml. of 10 per cent sodium hydroxide, shake and extract the solution with six 20 ml. portions of chloroform. Combine the chloroform extracts in a separatory funnel and wash them with 25 ml. of water. Shake the wash water with an additional 15 ml. of chloroform and add it to the original chloroform extracts. Transfer the chloroform to a glass-stoppered flask and shake it with 50 ml. of 0.02 *N* sulfuric acid. Evaporate the chloroform on a steam bath, cool the solution, add 1 drop of methyl red T.S. and titrate the excess acid with 0.02 *N* sodium hydroxide. Each ml. of 0.02 *N* sulfuric acid consumed is equivalent to 0.002704 Gm. of amphetamine. The amount of amphetamine present is not less than 55.1 nor more than 60.9 per cent, equivalent to not less than 95 nor more than 105 per cent of the labeled amount of amphetamine phosphate.

Solution Raphetamine Phosphate 1%: A solution containing 10 mg. of racemic amphetamine phosphate in each cc. Preserved with 0.5 per cent chlorobutanol. R. J. Strasenburgh Co., Rochester, N. Y.

Tablets Raphetamine Phosphate: 5 mg. R. J. Strasenburgh Co., Rochester, N. Y.

3. Thorn, G. W.; Forsham, P. H.; Prunty, F. T. G., and Hills, A. G.: J. A. M. A. **137**: 1005-1009 (July 17) 1948.