- Schroeder, H. A. (1941). *Amer. Heart J.*, **22**, 141.
 Sherman, H. C. (1946). *Chemistry of Food and Nutrition*, 7th ed., p. 675. New York.
 Wagener, H. P., and Keith, N. M. (1937). *XV Concilium Ophthalmologicum*, **1**, 1. Egypte.
 — (1939). *Medicine*, **18**, 317.
 White, P. D., Bridges, W. C., and Wheeler, O. E. (1946). *Trans. Ass. Amer. Phys.*, **59**, 53.
 Vidal, F., and Lemierre, A. (1903). *Bull. Mem. Soc. méd. Hôp. Paris*, **20**, 678.

SYMPTOMATIC TREATMENT OF MYOTONIA ATROPHICA

BY

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The value of the antihistamine drugs in increasing mobility in Parkinsonism has been noted by various clinicians. This spasmolytic action of the antihistamines is probably due to lengthening of the refractory period of muscle, which then becomes unable to maintain a tetanus. Such an action has been demonstrated on isolated rabbit auricle for quinidine, pethidine, procaine, and other local analgesics (Dawes, 1946). It was later shown that "anthisan" ("neoantergan") was twice as potent as quinidine in this respect (Dews and Graham, 1946).

In the case described below this action of the antihistamine drugs was applied to the treatment of myotonia atrophica.

Case Report

The patient, a Derbyshire farmer aged 49, presented the classical features of myotonia. The facial expression was woebegone, with bilateral cataract and receded frontal hairline. The neck was so wasted that his collars had become unserviceable, and on special occasions he resorted to a neckerchief. There were weakness and wasting in the arms, legs, and small hand muscles, with a delay of several seconds in release of the handgrasp. He was unable to cut up his own food at meals or to do heavy work. He managed, however, to run a small poultry farm, clumping around with a noisy stamping gait, and carrying buckets of water or poultry meal on the crook of his best forearm. The testicles were atrophied and bronchiectasis was present. He had had four attacks of pneumonia in recent years. Although friendly enough with his doctor, others found him moody and difficult.

Symptoms began in 1943, but the condition escaped diagnosis until 1946, when quinine was given with benefit. Treatment lapsed after the first few weeks and had not been resumed.

He was the only member of the family to show the full picture of the disease. His grandfather and father both suffered from senile cataract. His grandfather was a powerful man of great physical stature, who narrowly missed recruitment into the Life Guards. Both his grandfather and his father had been exceptionally heavy beer-drinkers. The patient's brother, a middle-aged man, and the brother's two daughters were said to suffer from short sight. All three wore glasses with lenses of startling thickness. The patient himself had two healthy sons in their teens.

Treatment was started in June, 1949, with 50 mg. of "benadryl" three times a day. After one week the patient was able to use a knife and fork and to cut up his own food for the first time for two years, and he began to carry buckets of water in the normal way by hand. There was objective improvement in the myotonia of the hands, and the small hand muscles became firmer to palpation. He was then given 200 mg. of anthisan three times a day for a further two weeks. Improvement continued, and he was able to fork dung and "sweep out" with greater effect than before. The myotonia of the hands was not, however, altogether abolished.

Discussion

The patient was not a good subject for assessment of a therapeutic remedy. The severe wasting placed a limit on the value of spasmolytic drugs, while the mental condition introduced a big subjective factor. If the value of antihistamines in myotonia is confirmed, they might be employed in two ways: the antihistamine drug could be given with quinine to obtain a summation effect, or the two drugs could be given alternately, say for a week each, to avoid the unpleasantness of cinchonism.

In considering the treatment of myotonia atrophica it is well to take account of the relationship between this disease and myasthenia gravis. A pharmacological antithesis is recognized between these two diseases, drugs which benefit the one causing an exacerbation in the other (Goodman and Gilman, 1941). It was thought possible that this antithesis might operate in the case of the thymus gland. Tumours of this gland are sometimes found in myasthenia, and a remission in the disease sometimes follows thymectomy. Accordingly, after three weeks' antihistamine treatment in the above case it was decided to try the effect of thymus-gland administration. For a fair trial it would be necessary to give fresh gland extract, by injection. As fresh extract is not readily available, dried thymus tablets were given by mouth for a month—10 gr. (0.65 g.) thrice daily. There was no objective change. The patient, however, reported continued subjective improvement, with increase of the myotonia in the hands after withdrawal of the tablets. This may have been a psychological effect, and owing to the preceding antihistamine treatment the experiment was considered inconclusive. It did, however, succeed in showing that thymus gland by mouth does not provide a replacement therapy for the disease.

Further work on the antihistamines is required to establish whether antihistamine and spasmolytic action run parallel. If this is so, the newer and more potent antihistamines should repay trial in myotonia. It is also possible that some of the local analgesic substances possessing a quinidine-like action on rabbit auricle (Dawes, 1946) may prove suitable for clinical use in myotonia.

In general it is to be expected that drugs such as quinine which benefit myotonia would also be beneficial in the rigid type of Parkinsonism.

Summary

A pharmacological basis for the action of spasmolytic drugs in Parkinsonism and in myotonia atrophica is described.

On this basis a spasmolytic agent which is active in one of these diseases should also be active in the other.

A case of myotonia atrophica is reported. Benadryl and anthisan both produced striking symptomatic improvement.

The possible role of the thymus gland in myotonia atrophica is discussed.

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REFERENCES

- Dawes, G. S. (1946). *Brit. J. Pharmacol.*, **1**, 90.
 Dews, P. B., and Graham, J. D. P. (1946). *Ibid.*, **1**, 278.
 Goodman, L., and Gilman, A. (1941). *The Pharmacological Basis of Therapeutics*, p. 908. Macmillan, New York.

Mayfield and Hedrick present in the United States *Journal of Nutrition* (1949, **37**, 487) a study of the nutritive value of protein in foods and how it may be affected by the various processing procedures. The effect of varying the type of cattle feed and subsequent changes of roasting and corning on the digestive and biological value of beef protein were studied. Canning caused a lowering in the biological value and digestibility of the beef, but roasting and corning produced no change.