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TREATMENT OF MULTIPLE SCLEROSIS WITH OXYTOCIN

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This invention relates to treatment of multiple sclerosis with oxytocin, and more particularly to the administration of hormonal substances consisting predominantly of oxytocin for the alleviation of multiple sclerosis.

Multiple sclerosis is a chronic progressive disease affecting the central nervous system, characterized by exacerbations and remissions, and pathologically involving multiple patches of sclerosis scattered throughout the central nervous system in which there may be disintegration of the myelin sheet and preservation of the access cylinder in the midst of extensive patches of sclerosis. The patient afflicted with multiple scleroisis may early undergo symptom-free periods between episodes of symptomatology until the gradual disintegration of the access cylinders produces permanent central nervous system impairment.

It is believed that the pathological features represent a general central nervous system response to a variety of etiological agents. There is as yet no specific therapy for multiple sclerosis, but there are available numerous techniques for providing temporary allevation of symptoms in patients afflicted with multiple sclerosis.

A primary object of the invention is to provide for the alleviation of multiple sclerosis through the administration of a substance consisting predominantly of oxytocin. A further object is to provide for the alleviation of multiple sclerosis or for the arresting or delaying of the course of the disease through the administration to human beings afflicted with mulitiple sclerosis of oxytocin. Other specific objects and advantages will appear as the specification proceeds.

Oxytocin is the hormone of the posterior pituitary or neurohypophysis which has hitherto been employed primarily to stimulate parturition on the basis of its action in enhancing uterine contractions. The drug has been available for a number of years as a semi-purified preparation containing vasopressor and anti-diuretic activity (vasopressin). Also, oxytocin, as well as vasopressin, has recently been synthesized by Du Vigneaud.

In one embodiment of the invention, oxytocin is administered to the patient afflicted with multiple sclerosis over periods of time, which together with the dosage will be determined largely by the condition of the patient, the severity of systems, and the status of the disease in the patient at the time of treatment; that is, the dosage and plan of treatment with oxytocin will be determined by the physician at the time of instituting treatment. However, it may be stated generally that alleviation of multiple sclerosis may be obtained with conventional oxytocin preparations of te fast-acting type with about 5 to 100 USP units thereof administered about every 12 hours. The drug may be administered parenterally, especially intramuscularly or subcutaneously, or by insufflation, etc. In administering the drug by injection, any suitable vehicle, such as water, saline, aqueous gelatin, etc., may be employed. Also, long-acting preparations may be used so that the injections may be required only once a day or several times a week during the period of treatment.

The treatment may be required only during periods in which there is exacerbation of the disease process in the afflicted patient or, if desired, treatment may be continued with oxytocin during periods of remission. It will also be apparent that due to the unknown and varied etiology of the disease, and because of the vicissitudes of making a diagnosis of this condition, not all patients in whom there is the impression of affliction with multiple sclerosis, will be expected to benefit by the treatment of this invention. However, those patients who will respond to this treatment may be readily determined by trial therapy.

The treatment will be further illustrated by the following examples.

EXAMPLE I

Patients afflicted with multiple sclerosis were treated with various dosages of oxytocin administered subcutaneously in aqueous gelatin.

Before setting out the results obtained, it is necessary to indicate the method of determining or scoring the results obtained.

Considerable difficulty has heretofore been experienced in the treating of multiple sclerosis because of the frequently noted discrepancy between the extent of recovery of individual signs and symptoms (e.g., reflexes, strength, etc.), and the degree of change in the overall disability status (as expressed strikingly by the quality of locomotion, as well as by the ability to carry out other complicated tasks). After trial and error, a weighting system and resulting scoring method have been finally arrived at which appear to reflect adequately the state of the disease and its fluctuations in individual patients. It is comprised of score values assigned to 50 significant variables of the disease, weighted according to the importance of the variable. Normal findings are given a score of zero, while varying degrees of neurologic involvement are weighted from −1 to −20. Thus, high score values are given to signs of relatively great heuristic value, while relatively low scores are assigned to items which either are less important or meaningful or are not necessarily representative of the organic state, being instead subject to fluctuations of emotion, energy level, or motivation. Using this method, a patient without neurologic abnormalities would receive a score of zero, while the maximum score of a totally disabled patient ranges down to a −500 points. Such a weighting chart was employed in the evaluation of the results obtained by the administration of oxytocin to patients inflicted with multiple sclerosis in accordance with this invention. By and large the results were most promising.

A detailed account of this scoring system, which was developed by Dr. Leo Alexander of the Boston State Hospital, Boston, Mass., is reported in the Quarterly Review of Pediatrics, vol. 7, No. 2, May 1952, pages 82–84, inclusive, under the title, "Quantitative Aspects of the Neurological Examination as a Means of Evaluating Improvement in Chronic Disease of the Nervous

System." The weighting chart employed in our tests is set out below:

Weighting chart

Vision:	
Corrected—	
Less than 20/20	20
20/200–2/100	15
20/70–20/50	10
20/40–20/25	5
Pupils:	
Pupillary asymmetry	2
Abnormal reaction to light or accommodation	5
Eye movements:	
Marked (such as eye muscle palsies, diplopia)	10
Moderate or slight (such as disturbance of convergence)	5
Nystagmus	5
Tongue—deviation	2
Facials:	
Asymmetry—	
Marked	5
Slight	3
Optic discs:	
Pallor—	
Marked	15
Moderate	10
Minimal or slight	5
Blurring	10
Visual fields:	
Restricted—	
Marked	15
Moderate	10
Minimal or slight	5
Scotoma (not to be scored if vision is less than 20/200)	10
Speech:	
Defect—	
Marked	15
Moderate	10
Minimal or slight	5
Posture:	
Inability to stand	15
Abnormal—	
Marked	10
Slight	5
Status:	
Bedridden	20
Wheel chair	15
Walking with support of other person	10
Crutches	8
Cane	7
Walking unaided with abnormal gait	5
Coordination:	
Disturbance[1]—	
Marked	10
Moderate	5
Minimal or slight	2
Adiadochokinesis:	5
Slight or ±	2
Romberg:	
+	10
±	5
Strength[2]:	
Paralysis	20
Weakness—	
Marked	15
Moderate	10
Slight	5
Tonus [3] (increased or decreased):	
Marked	15
Moderate	10
Slight	5
Abnormal movements:	
Marked	10
Moderate	5
Slight	2

Tendon reflexes:	
+++	1
++++	2
Absent	2
Clonus:	
++++++	4
+	3
Mayer 0	2
Hoffman:	
+	5
±	3
Abdominals— (per side):	
Absent	15
Partially preserved	10
Exhaustible	5
Cremasterics— (per side):	
Absent	15
±	10
Babinski—(per side):	
+	20
±	10
Absent plantar reflex without Babinski	5
Other abnormal toe phenomena:	
Each	5
Sphincters:	
Incontinence	20
Occ. incontinence	10
Retention	10
Frequency	5
Urgency	5
Difficulty in starting stream— occasional retention	5
Sensation—per side—per quality:	
Absent	10
Diminished	5
Hyperesthesia or focal pain	10
Paresthesia or subjective numbness	5
Impotence	15
Other significant signs	10
Such as:	
Exophthalmus due to retrobulbar neuritis with pain of eyeball.	
Temperature differences.	
Paravertebral spasm, etc.	

[1] Disturbances of coordination are scored as follows: One combined score is given for ataxia, intentional tremor and dysmetria, but a separate score for each arm and leg, and a separate score for performance with eyes closed and for performance with eyes opened; i.e., for finger-to-nose test, finger-to-object test, knee-to-heel test, and for toe-to-object test. One combined score for each side is given for bradyteleokinesis, one for static tremor, and one for tremor at rest.

[2] Strength is scored for extension and flexion of each important group of muscles separately. The following groups are distinguished: hip, knee, foot, shoulder, elbow and grip of hand (together with wrist—no separate score for wrist). Thus a complete triple flexion paralysis of the leg would be scored −60; moderate weakness of extension of one hip −10; or marked weakness of grip on one hand −15; or slight weakness of extension of one wrist −5.

[3] Tonus—score per extremity.

Of twenty-one patients treated in accordance with this invention, twelve showed immediate improvement by raising their scores from 3–50 points, three raised their scores from 50–100 points, three raised their scores more than 100 points, and only three showed either no improvement or regression. It should be borne in mind that a change of score from −300 to −200, for example, represents a raise in score of 100 points.

In the treatment for multiple sclerosis, the hormone substance administered to the patient preferably consists predominantly of oxytocin, and best results have been obtained where the oxytocin is substantially free from anterior pituitary hormones. The oxytocin may be administered in various vehicles, as above described, and may also be supplemented by other substances which give long-acting results, etc., and such vehicles or addition preparations may be utilized for their well-known advantages and functions.

While in the foregoing specification I have set forth specific preparation ingredients and procedures in considerable detail for the purpose of illustrating embodiments of the invention, it will be understood that such details may be varied by those skilled in the art without departing from the spirit of my invention.

I claim:

1. In treatment for multiple sclerosis, the parenteral administration to a human being afflicted with multiple sclerosis of a hormone substance consisting predominantly of oxytocin said hormone substance containing sufficient oxytocin to provide said human being with at least from about 5 to about 100 USP units of oxytocin per 12 hours.

2. In treatment for multiple sclerosis, the parenteral administration to a human being being afflicted with multipule sclerosis of oxytocin in an amount sufficient to provide at least about 5 USP units of oxytocin per 12 hours of treatment.

3. The method of treatment for multiple sclerosis comprising administering parenterally to a human being afflicted with multiple sclerosis at least an effective amount of a hormone substance consisting essentially of oxytocin.

4. The method of treatment for multiple sclerosis comprising administering by insufflation to a human being afflicted with multiple sclerosis at least an effective amount

of a hormone substance consisting essentially of oxytocin.

5. The method according to claim 3 in which said hormone substance is substantially free from anterior pituitary hormones.

6. The method according to claim 4 in which said hormone substance is substantially free from anterior pituitary hormones.

7. The method of treatment for multiple sclerosis comprising administering parenterally to a human being afflicted with multiple sclerosis a dose containing at least from about 5 to about 100 USP units of oxytocin per 12 hours of treatment and a non-toxic pharmaceutically acceptable excipient.

8. The method of treatment for multiple sclerosis comprising administering by insufflation to a human being afflicted with multiple sclerosis a dose containing at least from about 5 to about 100 USP units of oxytocin per 12 hours of treatment and a non-toxic pharmaceutically acceptable excipient.

No references cited.

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