

## NEUROCIRCULATORY ASTHENIA

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The problems of war and their effect upon the health of the people again are evident. The strong emotions engendered by war are certain to revive that condition which, common enough during peace times, was unusually prevalent during and following the last great war; namely, neurocirculatory asthenia.

Powerful emotional reactions stimulate the sympathetic and parasympathetic nervous systems, and cause well-known responses and sensations throughout the body. These subjective and objective reactions are generally recognized and accepted to be a comparatively normal but nevertheless variable physiologic accompaniment to a particular emotion; that is, hate, fear, patriotism, etc., induce distinctly different subjective feelings in the individual experiencing these emotions.

The systemic reaction to some of the more powerful emotions, such as fear, anxiety, worry, apprehension, despondency, etc., are unpleasant and annoying. Oftentimes these sensations excite further fear and anxiety and induce introspective thoughts. The pleasant emotional states are usually short lived, while the unpleasant sensations of some emotions may frighten the individual to the extent that still stronger reactions are induced, thereby causing a vicious cycle of fear—reaction, more fear—more reaction, etc. In this manner one can visualize the onset of the chronically unstable sympathetic nervous system, which is the fundamental pathological background giving rise to that vague clinical picture to which many names have been applied, but which is best known as neurocirculatory asthenia, hereinafter referred to as N.C.A.

The above theory serves as a working basis to explain the mechanism of N.C.A. Why some individuals are more susceptible to this annoying and distressing condition than others is not known. Certainly, everyone experiencing unpleasant emotions does not develop N.C.A.

Several factors probably play a role in conditioning this susceptibility. First is the marked difference in the personality of the individual as portrayed by the sympathetic response to his emotional reactions. If he is aware that these reactions also occur in others they are not so likely to cause fear in him. However, when the reactions are chiefly inward or subjective, and especially when they attract attention to some vital organ (the heart, for example), they are likely to excite fear. This is especially true in the timid, self-conscious, introspective person. Thus, a cycle may be started more easily in the introvert than in the extrovert.

The difference in the emotional behavior of individuals undoubtedly arises from a fundamental inherited difference in the germ plasm. Environmental conditions such as climate, nutrition, and disease, which

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alter the physical state of individuals unquestionably change to some extent the true course of the originally inherited emotional pattern. Environment affecting only the psychic state appears to alter the degree and extent of the emotions rather than the fundamental pattern. In many instances too much emphasis is placed upon one environmental episode of a psychic nature as the explanation for functional disorders. The recognition of the state of the fundamental germ plasm is extremely important in the diagnosis and prognosis not only in N.C.A., but also in all functional states.

A less specific but equally important factor in determining the susceptibility to develop N.C.A. is the increasing evidence that the emotional state activates circulating chemical hormones to produce systemic accompaniments of reactions and sensations rather than a simple end-organ effect from a nerve impulse. If such is true, some individuals probably will produce relatively large amounts of these hormones with a trivial emotion while others may be unusually sensitive to a small amount of such hormones. I cannot refrain from comparing this to the allergic sensitization of individuals to a protein and the great variability of the shock organs to the same protein in different individuals and at different times.

The possibility of a vicious cycle formation is visualized better if we consider the possibility of a trivial emotional reaction causing the secretion of excessive amounts of hormones which circulate and act long after the emotion has ceased, and which cause the somatic reaction of the emotion to persist. A familiar example of this is the continued excitement state of the body which continues after a violent spell of anger has subsided.

The above explanations have been entirely theoretical and may contain no basic truths, but until we know more about N.C.A., this conception must serve in both the diagnosis and treatment of N.C.A. and many other functional disorders. Without this or a similar conception of the N.C.A. state, the physician cannot be of much help to these unfortunate individuals. Oftentimes these patients are better off in the hands of those who practice the art of healing with little scientific knowledge, than in those of men better equipped with scientific knowledge but lacking in the art of medicine.

### DIAGNOSIS

To those familiar with the diagnosis and management of functional problems, the diagnosis of N.C.A. is simple in most cases, merely made by a quick glance at the facies, a handshake, and a few simple questions to analyze the personality of the patient. However, to those who believe that all bodily disturbance must be explained on the basis of organic

disease, the diagnosis proves difficult and attempts to treat suspected causal conditions only serve to make the patient worse.

To those familiar with the syndrome, a discussion of N.C.A. is unnecessary, and to those who are not familiar with it, this article will prove of little value because any effort to present a word description of this kaleidoscopic clinical picture is totally inadequate. A total description of the tremendous variations of this syndrome would be confused with so many disease states that again it would fail in its purpose. Therefore, I shall confine my remarks to the cardinal features of the typical cases because one or more of these features will be present in nearly every case. If one learns by experience the less obvious features associated with the obvious, the diagnosis of the unusual case becomes less difficult.

A patient will present himself with a story of multiple complaints out of proportion to any one disease process. His chief symptoms will be nervousness, fatigue, heart consciousness and palpitation, and nearly always some form of gastro-intestinal disturbance. His nervousness is of the stage-fright type, always aggravated by situations which cause self-consciousness. If there is no evidence of an anxiety state, the diagnosis must be made with a great deal of hesitation. The other symptoms mentioned above are not so pathognomonic.

Other suggestive symptoms are tremor, peculiar feelings in the head, dizziness of the vasovagal type, photophobia and aching eyes, globus hystericus, sighing respirations, syncopal attacks, all varieties of gastro-intestinal disturbances, all varieties of peculiar somatic sensations, excessive perspiration, frequency of urination, disturbed fears concerning sex and peculiar sensations about the genitalia, and many other complaints too numerous to mention.

The patient usually is in the teens or early twenties. If seen at an older age, his symptoms usually will have started at this early age. Males always predominate slightly, but the ratio increases enormously in war times because of re-adjustments in life.

The hand is moist, sometimes dripping with perspiration, frequently cold, but occasionally quite warm. The hands and feet are beefsteak red in color with a sharp delineation at the wrists and at the ankles. As the patient sits stripped for examination, a stream of perspiration trickles from his axilla. A most characteristic sign is the brilliant dark brick red color of the ears and lips due to capillary dilatation and stasis. The pupils are dilated. A coarse intention tremor frequently is present. The pulse usually is rapid and sinus arrhythmia is present. The systolic blood pressure is elevated slightly and the diastolic pressure is low. The increased pulse pressure often is sufficient to cause a capillary pulsation beneath the nails. The pulse and blood pressure alter quickly with exercise, position, and bed rest. Sighing respirations are observed and

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the patient complains of effort to get a deep breath. The abdomen may or may not show diffuse tenderness. The colon may be spastic and may cause "right-side-itis" for which the appendix frequently is removed, without relief.

The outstanding features of the examination are the unstable vasomotor system, the excessively moist hands and axilla, and the red ears and lips. In conjunction with a self-conscious introvert personality and a host of subjective symptoms the diagnosis should be obvious. However, in spite of many fundamental differences in the clinical picture, this condition frequently continues to be confused with hyperthyroidism. It is true that there are many symptoms common to the two diseases to make them superficially similar, but there are so many distinguishing features that there is rarely any question as to the true nature of the disease. I have seen a few young individuals with a characteristic picture of N.C.A. who also developed hyperthyroidism. Relief from the latter was obtained by surgery but the symptoms of N.C.A. continued without change.

Palpitation and tachycardia, nervousness, tremor, weakness, and loss of weight are common to the two conditions and yet in each there is a clinical difference. The palpitation and tachycardia of N.C.A. is associated chiefly with effort and excitement, and quiets down with bed rest. In hyperthyroidism it is more constant and sustained, and responds much slower to bed rest.

The nervousness is different in each condition. In N.C.A., it is a feeling of apprehensiveness. The patient almost invariably will reply in the affirmative if asked the leading question, "Is your nervousness similar to that of stage fright?" The nervousness of hyperthyroidism is like an uncontrolled inner stimulation and is not so definitely related to fear and anxiety.

The tremor is slightly different but not enough to be of differential value.

The weakness is entirely different. N.C.A. is like neurasthenia, while hyperthyroidism causes a weakness characteristic of the exhaustion of actual organic disease. The patient with N.C.A. loses weight because he does not eat; the patient with hyperthyroidism loses weight in spite of satisfying a ravenous appetite. Anorexia is unusual in hyperthyroidism; the rule in N.C.A. If in N.C.A., the appetite is good, there is a tendency to quick satisfaction and an early feeling of fullness.

Goiter may be present in both conditions, but in N.C.A. it will be a soft colloid type, or a small adenoma. A symptom that causes more confusion than any other is the common symptom of feeling a lump or tightness in the throat, to which the term "globus hystericus" is applied. Characteristic of the anxiety tension state and rarely, if ever, present in

hyperthyroidism, except where complicated with thyroiditis, globus hystericus unfortunately directs the patient's attention to the thyroid region. If in addition the N.C.A. patient has a small colloid goiter, he becomes very susceptible to the idea of hyperthyroidism and consequent surgery. As a general rule, a subjective feeling of discomfort in the neck always should steer the cautious physician away from rather than towards the diagnosis of hyperthyroidism. His surgical results will be much the same as those from the removal of the appendix in chronic right-sided pain.

True exophthalmos, of course, is pathognomonic of hyperthyroidism. This should be measured because the wide palpebral fissures of a frightened person are very confusing. The individual who inherits large protuberant eyes also offers some confusion. The patient or a life-long friend, however, usually is able to tell whether or not there has been a change in appearance. The physician seeing the patient for the first time might be confident that true exophthalmos exists.

The basal metabolic rate has not been emphasized in the differential diagnosis because, while helpful if interpreted properly, it often may be more confusing than otherwise. Agitated, frightened, N.C.A. patients frequently have a high rate of from plus 12 to plus 20. This, of course, is not a basal rate. Only after two to four readings by the same technician is it possible to get satisfactory relaxation. Sometimes the patient consults or is referred to another physician for opinion. The new atmosphere may again raise the rate. While several rates may be high, if done in different places they are consequently of little value. If, clinically, the patient has N.C.A. a moderately elevated basal metabolic rate should not influence the physician's clinical judgment.

The most difficult problem that confronts one from a diagnostic standpoint is to feel confident that exhaustive conditions such as early sub-clinical tuberculosis, undulant fever, the rheumatic state, focal infection, endocrine disturbance other than thyroid, primary myasthenias, and a host of others have not been overlooked. Fortunately, these conditions rarely simulate N.C.A., but they may coexist and add an additional drain to the patient's energy, interfering seriously with therapeutic efforts. The problem of coexisting disease is especially difficult in the patients with N.C.A. brought in by parents to find out why the child cannot carry on a normal routine without the fatigue. The parent usually insists that it must be disease, will not accept N.C.A. as a diagnosis, and insists that a thorough search must be made for disease, usually with failure. Even if mild coexisting conditions are found, their treatment helps the fundamental condition very little. The whole problem of N.C.A. strains the relations of the patient, and especially the relation of the patient's family with the physician. This attitude of the parents is also unfortunate

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in respect to the patient because they often are unwilling to cooperate in a rational therapeutic regimen.

### TREATMENT

It might truthfully be said that no specific medical treatment can be considered to have any effect upon this condition. Treatment of the annoying symptoms helps to halt the vicious cycle. Psychotherapy through instillation of confidence, while difficult to evaluate, certainly appears to be the most important treatment in this disease. Time, the great healer, is slow but certain in eradicating most of the signs and symptoms of this disease of young people. While the endocrine approach would certainly seem promising, the efforts in this direction are not encouraging either through depression or stimulation of the functions of the various glands. Drugs having a particular action on the sympathetic nervous system have been most disappointing and exert little effect in stabilizing this feature of the disease. At the best, they bring occasional symptomatic relief.

Until more specific methods are available the treatment of these cases should be approached in the following way after the diagnosis is established satisfactorily.

A long talk with the patient is necessary to impress him with the fact that all his symptoms are due to an emotional upset of the sympathetic nervous system. This is relatively easy because the patient immediately realizes that all of his symptoms are like stage fright. Time, however, must be spent in dissipating specific fears, especially those about the heart. More than one session with the patient is necessary to remove fears and restore confidence. The mechanism of the vicious cycle and conditioned reflexes should be explained because the patient cannot understand why he should have symptoms when he consciously has nothing to fear. Explanations always should be in simple language that the patient can understand and similes and analogies are most helpful in illustrating points. High sounding medical terms only confuse the patient further. Any psychic twists, especially about sex and the sex habits of the young, should be discussed frankly and fears relieved. It is inadvisable to attribute this condition to perverted or solitary sex habits.

These patients frequently are ambitious and their ambitions are thwarted by their poor endurance. Efforts to reconcile their points of view in regard to overambition should be made. Competition and striving should be discouraged.

The enormous requirements for physical rest must be emphasized. Most of these patients do unusually well on ten hours of bed rest, but seldom get along well on less. Morning sleep is especially valuable.

Efforts should be made for them to join social groups gradually and to cultivate poise and confidence. Taking courses in public speaking, joining athletic groups, and attending church groups are especially good. Caution must be used to keep them from rushing into this too fast, or this type of treatment will prove detrimental.

Early marriage with a socially inclined mate is most helpful. When N.C.A. persists into later life, as it does occasionally, it is not unusual to find that many of these patients never have married. Which is cause and which is effect is unanswerable.

It is impossible to discuss adequately all the ways and means necessary to employ in every case to build up confidence and to allay the fear that keeps the cycle going. Unless a great deal of time is given to this phase of treatment, results are hopeless. The change that comes over these patients during and for a short while following a confidence inspiring talk is frequently amazing. A simple discussion of their troubles helps them to understand and this understanding is most vital to dissipate fears.

A very simple and effective method of treatment in relieving the annoying vasomotor symptoms is to urge the patient to do brisk calisthenic exercises for ten minutes, endeavoring to bring out a good sweat, using adequate clothing during the exercise if sweating is difficult. Following this, he should take a cold shower immediately or plunge into a tub of cold water previously drawn. Long and hot baths should not be taken as they cause further peripheral vascular dilatation. Following the cold plunge, the patient first dries in the usual manner, and then rubs himself with a dry, rough Turkish towel until the skin begins to glow. Following this, a thirty-minute period of relaxation should be taken. Usually the patient will report a surprising amount of improvement after following this procedure for thirty days. Treatment should be undertaken at least daily and preferably twice daily. At the start the patient often resents this drastic water cure and frequent urging to continue is necessary. If play and relaxation in a gymnasium can be incorporated with the above treatment, it is much better.

The use of medicine should be avoided as much as possible and the patient should be encouraged to believe he is not ill and, therefore, does not need medicine. Occasionally, however, sedation is necessary for extreme nervousness and insomnia. Treatment of gastro-intestinal symptoms frequently will require a brief period of medication.

It is important to relieve annoying symptoms as well as to explain their benign character because nothing is so reassuring as their disappearance.

With each slight improvement the patient gains more confidence and the course of treatment of N.C.A. can be shortened in this manner. In

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some, N.C.A. can be prevented from becoming chronic, because if the condition still is present in patients over thirty-five years of age there is not much encouragement. Occasionally because of severe psychic insults resulting in tremendous loss of self-confidence, the disease will start in later years. If recognized early and if proper treatment is applied, it is short lived; otherwise, it presents a most difficult problem.

One difficulty in handling these patients is to find an adequate amount of time to give them. Good results are proportional to the time spent with them. Visits should be frequent. If too much time elapses between visits, the patient becomes discouraged, loses the benefits obtained, loses confidence, and goes elsewhere or entirely ceases efforts to obtain help. Engaging the help of the minister, teacher, or layman whom the patient respects often relieves the busy physician of some of this responsibility to these patients.

### CONCLUSIONS

N.C.A. is an important subject. Futures may be completely changed by the advice the young N.C.A. patient receives. It is a subject worthy of our best efforts, especially now when many of our young men are experiencing the fearful emotions that go with war.

An attempt has been made to present a clinical approach to the diagnosis and treatment of the difficult problem of N.C.A.