

Utilization of Descending Cortical Pathways to Potentiate Areas of Neurophysiological Shift and Manual Muscle Testing as an Analysis Tool

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ABSTRACT

There is hardly a human function that does not involve muscle activity. When there is a neurophysiological lesion (shift towards potassium equilibrium potential) there will be muscle dysfunction as well as physical and mental complaints. Descending cortical pathways can be used to potentiate areas of neurological shift towards potassium equilibrium potential. Manual muscle testing can be used as a tool to analyze these areas of physiological shift.

Functional disorders of the human neuraxis can express as thousands of different complaints, ranging from visceral disorders to mental depression. Visceral disorders such as hypochlorhydria may be an expression of decreased vagal stimulation. Depression may be a function of cortical neurons shifted towards potassium equilibrium potential resulting in a decreased central integrative state and loss of sense of well being. These expressions of neurophysiological shifts often finally manifest themselves as end stage pathology. This makes early detection and correction of these functional disorders of paramount importance.

A neurophysiological lesion is expressed in areas of synaptic activity in the neuraxis. These areas are concentrated in the cerebrum, brain stem, cerebellum, and spinal cord. Neurophysiological lesions are the result of nerves not being brought to threshold or the inability to maintain synaptic activity. These areas of synaptic activity are potentiated by afferent activity. If afferent input is less than normal then the area is said to be deafferented. Also, the area of synaptic activity may not be able to maintain appropriate synaptic activity due to inadequate neurochemical activity. And finally, the neuron may be shifted towards hyperpolarization by decreased temperature or decreased pH.

If all the descending pathways and spinal internuncial pools are intact and the clinician instructs the patient to perform a manual muscle test the, the patient should be able to resist appropriately. If there is a physiological shift in any area of synaptic activity associated to the system being tested this will result in one or more descending pathways of internuncial neurons being hyperpolarize. If this is the case then the overall bias of the anterior horn is shifted towards hyperpolarization then the patient will not be able to adequately maintain the muscle contraction.

If the anterior horn is shifted towards hyperpolarization, then we can assume that some aspect of either the sensory, motor, or autonomic system is hyperpolarized. If this is actually the case, and we apply either sensory, motor, or autonomic activity to the system and that normalizes the system, bringing the anterior horn to threshold, then we can assume that the lesion is in the system that is stimulated according to the modality applied. For example, if vibration is applied to the system and a weak muscle is facilitated then we would assume that there is a neurophysiological shift in some aspect of the sensory system between the receptor and the cortex. The exact location to be determined by neurological exam.

Once the area of physiological shift is brought to threshold and a motion segment such as a vertebra therapy localizes, then we can assume that this segment is out of step with the rest of the system and is the cause of the deafferentation effect on the system that is dysfunctioning. If this is the case then correction of the dysfunctional motion segment will bring the dysfunctional system more towards its normal level of polarization.

CONCLUSION

Manual muscle testing can be used in conjunction with verbal command can be utilized to test for neurophysiological lesion of the neuraxis. Application of sensory, motor, or autonomic modalities can be used to determine the system that is dysfunctioning and localize the source of deafferentation. Correction of this system will normalize the motor, autonomic, and sensory function of the neuraxis and correct complaints of functional disorders before they manifest in end stage pathology.