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Stress: Fright, Flight or Fight?

Can our thoughts really change our physiology and anatomy causing chiropractic subluxations?

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Considerable psychological, neuropsychological and neurobiological research on stress, including considerable medical research indicates that as much as 80 percent of illnesses are tied to this condition. Even the expanding field of immunology, psychoimmunology and psychoneuroimmunology are offering an important link to better understanding of the interrelationship between our mind, body, and illness.

In fact, even the list of common conditions, from Alzheimer's, arthritis, diabetes, kidney disease, back and neck pain, headaches including migraines, insomnia, fibromyalgia, repetitive strain injuries, to numerous digestive disorders like certain ulcers, Crohn's Disease, irritable bowel syndrome, all sorts of hormonal imbalances, and many more complicated conditions like a suppressed immune system, autoimmune diseases, rheumatoid disease, multiple sclerosis, even some heart diseases, cancers and even sudden death have been shown to be triggered by prolonged periods of unusually high stresses in some individuals.

Therefore, our thoughts and feelings do generate electrical as well as chemical messages, which are, in turn, transmitted throughout our bodies. This is how stressful thoughts can lead to increased muscle tension, cause pain, change body chemistry, affect and change our neuro-networks, affect our cardiovascular system and even affect our mood and behavior and therefore even cause the chiropractic subluxation.

Discussion

Some of us may remember reading books on back pain by John E. Sarno, M.D., a highly regarded rehabilitation physician and researcher on musculoskeletal pain. The major point of Dr. Sarno's findings and cures, he believed, was that psychological problems and stress in the lives of the individuals he treated was causing their back pain. He later attributed the same cause to several spinal conditions.

Even with my post graduate study in behavioral science, psychology and physiological psychology and therefore very well aware of the implications of psychological overlay's and stress issues involved in various illness including back and neck pain, as a chiropractor, I became alarmed at the inferences that Dr. Sarno was making — that most back pain (including neck pain) had a psychological and/or stress basis rather than a mechanical or structural basis.

However, after further thought, I recalled that this concept was also similar to what D. D. Palmer said more than 100 years ago when he stated that thoughts can be a cause of chiropractic

subluxations! Perhaps Dr. Sarno was overplaying the issue a little, but rather than simply disregard or ignore his concept as well as his cure successes, we instead decided to consider his theory as perhaps helping to validate one of D.D. Palmer's basic chiropractic premises — that our thoughts and stress can in fact cause what we call a chiropractic subluxation.

Stress physiology

To further validate some of D.D. Palmer's thinking on this subject, it may interest you to know that miniature receptor sites have now been found in muscles that are connected to the limbic system. The limbic system as you may remember is the reptilian part of our brain where stress is reflexively triggered and muscles do move and/or affect bones and other cellular tissue structures.

So, why can't they cause subluxations? For example, these receptors can signal to the brain how much blood flow is needed. In stress filled situations, especially, when ongoing in nature, the message is to alter blood flow to certain areas and to activate other physiologic mechanisms even via the blood stream like hormones, neurotransmitters as well as the nourishment for the nervous system itself. They can also render some of those muscles and nerves ischemic.

In fact, a relatively recent cause of what can be considered a temporary or even a fatal type of a stress induced heart attack and/or heart failure called "stress cardiomyopathy" or "Broken-Heart Syndrome" has been identified due to an overload of catecholamines caused by this exact stress mechanism. This stress induced ischemic reaction, besides mimicking a heart attack can also lead to neurological compromise, joint and muscle aches, pains, tension and injury. It sounds like a subluxation to us. So, if it sounds like a subluxation, looks like a subluxation, maybe it is a subluxation! This type of situation is also very commonly seen in conditions such as fibromyalgia, repetitive strain injuries, as well as, neck, trapezius, headache, shoulder and lower back pain and other conditions.

Chemical influences

There is usually a triggering or hormonal component to these very painful episodes as well. However, periods of high stress seem to precede many of these cases as we are discovering and they do cause many illnesses.

The vagus nerve known as the "wanderer" is the most widely distributed cranial nerve. The dorsal nucleus of the vagus nerve contains motor and sensory components. The motor fibers are general visceral efferent to the smooth

muscle of the bronchi, heart, esophagus, stomach and intestines. These are all very important stress deposit centers of the body, whose health is vitally affected by stressors and are often involved in stress related diseases.

The sensory fibers are generally visceral afferent originating in the esophagus and upper bowel, with cell bodies in the superior and inferior vagal ganglia. So, the vagus nerve may play an even larger part than previously thought. However, as far as our discussion goes this will serve as an introduction to the further discussions that will follow.

The stress complex

The vagus nerve plays an important role in this stress complex. Arguably, for various reasons many people carry stress in their upper bodies. We happen to think that a part of the reason is as a protective mechanism which would include a survival mechanism to protect the head which houses the body's main sensory organs and brain. Since there really is not much of a protective mechanism for the head other than the bony skull, the muscles of the neck and traps are called into play as a part of the "head/brain protective mechanism. Two of the important muscles in this region are the sternocleidomastoid (SCM) and the upper trapezius muscles.

Ask patients what is the area where they most often feel tightness especially when they are stressed out and many will point to their traps and SCM areas. As clinicians we can often feel the stress and tightness (guarding) in these muscles in our patients (with the possible exception of the very young) who are under tension every day. These are also two of the main muscles that work in concert to turn the head for protection and/or avoidance of injury to the sensory organs of the head and the brain. They also can work in an isometric function to lock the head position in a fall or accident.

The spinal accessory or 11th cranial nerve is the nerve that tells those muscles what to do. It has a branch which continues to the throat and voice box (pharynx and larynx) after it supplies the neck muscles. The 10th cranial nerve or the vagus nerve already mentioned, also supplies these two structures. Besides helping supply the voice box and throat, the vagus nerve has a unique function to play in supplying the heart and GI tract with its nerve supply.

Imagine the significance of the communication of these two nerves, the spinal accessory and the vagus in response to stress. Both of them have the same origin in the brain, the nucleus ambiguus and, for all practical purposes, in our opinion, should have perhaps even been just one nerve. In fact, one neuro-anatomist even went so far as to think they should have been named just one nerve, the vagus X, with several branches.

The part of our brain that responds to stress is our limbic system. We also know it as the reptilian or early portion of the brain because it resembles the lower animals. Therefore, it has not made the advancements that the cerebral cortex (gray portion with the many folds to increase the gray matter needed for reasoning) has. So, if we allow the primitive limbic system to function automatically, then it will respond reflexively to the stress stimuli.

The limbic systems response to dan-

ger and/or stress is designed with a fright, flight or fight option. The initial fright reaction arouses the flee or fight response. In today's social culture, we are often prevented from exercising these survival responses. Therefore, we often have to try and "override" these natural responses because they are not appropriate behaviors. Instead, we become frustrated and stressed. This flight or fight response was first described by Walter Cannon, Ph.D. at the University of Chicago some years ago. Later, Hans Selye, M.D. described the Stress Syndrome also known as the General Adaptation Syndrome (GAS). They both pointed out that the flight or fight reflex response was originally intended to be used when our ancestor's life or health was threatened. The hormonal responses also fueled by the stress response helps in the intended flight or fight response.

If we override or suppress either of these natural physiological responses to stress, then these hormones, rather than being expended are left to circulate in the body without being metabolized by the flight or fight reactions for hours instead of minutes as in the case of our ancestors. These stress hormones, i.e., adrenaline, create aggravation, anger and a variety of stress responses including the production of cortisol in our bodies including in our brain as well as in our organs and the musculoskeletal system. So, instead of a physical action or expression taking place, today, often times our only reflex response is a thought process of wanting to "retaliate," "to get back at someone" or something for making us feel this way i.e., we are therefore, mentally upset, angry, and stressed out... but we are most often not allowed to "fight or flight."

Physical and mental responses to stress

Some of the typical responses to this type of stress that we see every day are as follows:

- Speech becomes more rapid
- The volume of speech increases. In fact, one may even be accused of yelling
- The hair on the body, especially, on the arms, back and head feels like it stands-up (This may actually be due to an ancient remnant attempt to make us look larger and more frightful to our opponents like we see in certain animals when challenged)
- Prone to over exaggerate the incident
- Tendency to justify one's behavior and expect others to apologize
- Manifest physical or imaginary ways to retaliate
- Become angry, agitated, short tempered, and over react both physically and mentally
- Body movements become rapid
- Restlessness, keeping awake
- Experience an increase in strength and endurance
- Tendency to try and rationalize the incident to justify ones behavior or feel okay about the incident
- Harbor feelings of guilt for our actions.

This retaliatory type reflex may occur many times whenever there is this