Increased Telomere Length and Improvements in Dysautonomia, Quality of Life, and Neck and Back Pain Following Correction of Sagittal Cervical Alignment Using Chiropractic BioPhysics® Technique: A Case Study

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BACKGROUND FROM DAN MURPHY

The telomere is the sequence of DNA nucleotide bases consisting of *TTAGGG*. This sequence exists at the ends of each of our chromosomes and is repeated thousands of times.
Each time a cell divides, the telomere sequence shortens a bit. As such, telomere length was proposed to be a measure of biological aging, and was awarded the Nobel Prize for such in 2009.

An important factor in controlling telomere length is one's catecholamine (epinephrine, norepinephrine) profile. Increased production and release of catecholamines is linked to significant telomere shortening (*Article Review 8-11*).

Chiropractic spinal adjusting has been shown to inhibit the production of and release of catecholamines (*Article Review 7-13*; *Article Review 4-17*).

An interesting proposal is to assess if chiropractic care has the ability to influence telomere length and therefore arguably biological aging, longevity, and health. This study is a preliminary effort to explore these relationships.

This is a single person case study of a 35-year-old female with chronic neck and mid-back pain for 5 years following a motor vehicle collision with nocturnal polyuria.

Examination and x-ray revealed forward head posture and loss of cervical lordosis consistent with vertebral subluxation.

Patient telomere length was measured from her white blood cells.

Quality of life measures were determined by the Short-Form 36 health survey and heart rate variability was measured.

The patient was treated with a poly-therapeutic Chiropractic Biophysics® (CBP®) technique (postural corrective spinal exercises, full spine drop table adjustments, and traction) for 36 visits over 5 months; the patient reported improvement in her nocturnal polyuria, neck and mid-back pain, and quality of life. Cervical x-rays showed correction of cervical lordosis and forward head posture.

"A blood test showed significant improvement in patient telomere length and heart rate variability."

The authors claim that this is the first study to assess the effects of chiropractic care on telomere length.

KEY POINTS FROM THIS STUDY:

1) "In various cross-sectional studies, observations of shortened telomere lengths are associated with metabolic and inflammatory diseases, pulmonary diseases, cardiovascular events and diseases, psychological and stress disorders, neurodegenerative diseases, cancer, chronic and serious illnesses, and mortality."

2) "Chiropractic Biophysics® technique is a full-spine and posture rehabilitation approach to correcting poor posture, deviation of normal spinal alignment and subluxation through incorporating mirror image® exercise, adjustments, and traction procedures. Chiropractic Biophysics® has an extensive amount of quality scientific evidence supporting reliable correction of spinal and postural misalignment yielding improvements in concomitant neurological, musculoskeletal symptoms, spine movement, and patient disability levels. It seems logical to propose that improvements in spinal and neurological health may have a beneficial impact on telomere length."

3) Following 5 months of care encompassing 36 patient visits:

> "The patient reported to be virtually pain-free and had been able to sleep through the night without having to go to the bathroom to urinate."
>
> "This report documents the successful outcome in a 35-year-old patient with neck and mid-back pain and nocturnal polyuria as well as unhealthy spinal alignment and posture and autonomic dysfunction."

4) At the end of care assessment showed a telomere value increase of 8.23%. **[Very Important]**

5) "Our case suggests, for the first time, that cervical spinal alignment and posture may be directly related to telomere length (health longevity) and that correction thereof may have a directly related effect on health longevity as represented by telomere length." **[Key Point]**

COMMENTS FROM DAN MURPHY

Chiropractic Biophysics® technique is a poly-therapeutic approach to chiropractic, including full-spine adjusting, traction, exercise, and other adjuncts. It is probable that there is more than one mechanism by which mechanical care can influence telomere length. These authors propose a plausible central mechanism involving the spinal cord. Alternative mechanisms (also supported by the data from this case

study) would be improved balance between the sympathetic and parasympathetic nervous systems, resulting in a reduction of the production and release of catecholamines. Much more work needs to be done in this area.

This study involves only one subject. There is no control group. There is no long-term follow-up. As such, these authors note that this work is preliminary and state:

> "Randomized clinical controlled trials involving measuring telomere length of a large population of chiropractic patients should be conducted."
>
> "Hopefully this case report will serve as a motivation for higher levels of evidence from which correlations and causations regarding the effects that chiropractic spinal corrective care might have on health longevity can be made."

Chiropractic academics have suggested that it is biologically plausible that long-term chiropractic care might result in longer telomere length. Assessing telomere length in those under chiropractic maintenance care has the potential to change everything. If such studies reliably show longer telomeres in those under maintenance chiropractic care as compared to control populations, it could be argued that all people should be under chiropractic maintenance care. If this were to happen, we are going to need a lot more chiropractors.