

Chiropractic Care in a Nine Year Old Female with Vertebral Subluxations, Diabetes & Hypothyroidism

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ABSTRACT

Objective: To report on the effectiveness of chiropractic care of a patient with vertebral subluxations, diabetes mellitus (DM) type 1 and hypothyroidism.

Clinical Features: A 9 year old female with diabetes mellitus, hypothyroidism and vertebral subluxations experiencing hypoglycemic episodes and sleep disturbance.

Interventions and Outcomes: High-velocity low-amplitude adjustments with specific vertebral contacts were administered to sites of vertebral subluxations. Improvement in fruit, vegetable and water intake was also recommended. Mother

reported improvement in DM control with decreased need for insulin, decreased frequency of hypoglycemic episodes and improvement in sleeping pattern.

Conclusion: Successful chiropractic care for a patient with challenged lifestyle due to DM type 1 and hypothyroidism. Control of blood glucose levels was achieved, with stabilization of the amount of insulin needed per day. Improvement in well being with improved sleeping patterns were also reported.

Key Words: *Chiropractic, diabetes mellitus, hypothyroidism, wellness, hypoglycemia, vertebral subluxation*

Introduction

Every year, thirty thousand people worldwide are diagnosed with DM type 1. It is considered a multifactorial disease affecting predisposed individuals with genetic susceptibilities, environmental triggers as well as unbalanced immune responses.¹ It is considered one of the most common autoimmune diseases occurring at any age, but commonly seen from infancy to late thirties.¹ Diabetes is considered a mild infrequent disease, with a classic set of symptoms which could be diagnosed with simple and rapid tests. It is considered that there are few misdiagnosed cases due to the above mentioned characteristics.²

According to some studies, the association between DM type 1 and autoimmune thyroid dysfunction has been confirmed, which would explain the presentation of the patient evaluated for this article.³

This case discusses the chiropractic management of a patient with vertebral subluxation and the association of the above mentioned DM type 1 and hypothyroidism; and the effects of

the chiropractic care on her lifestyle. Epigenetics is discussed as a possible cause of improvement in a genetically driven disease. Epigenetics has been established as a possible cause for phenotypic expression when environmental causes can't be the only cause for phenotypic changes.⁴

Case Report

History and Examination

Patient and mother reported wellness as the reason for care with the health history revealing a diagnosis of DM type 1 by her endocrinologist in 2001. Mother also reported a diagnosis of hypothyroidism since 2006. No other significant findings in past medical history were reported.

Family history revealed Multiple Sclerosis and hyperthyroidism in the mother, gastric ulcer and gastritis in the father, and DM type 1 in an aunt.

The above mentioned conditions affect her life negatively with hypoglycemic episodes at a frequency of once a week. Sleep

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patterns are also affected, with an average of 9 hours of sleep per night, described as irregular and of poor quality and frequent trips to the restroom. Exercise is present in the form of playing in the neighborhood and at school. Diet is described as controlled carbohydrate intake for the diabetes, and low vegetables, fruit and water intake.

The patient did not walk until 14 months old but mother denies negative consequences from this with normal development afterwards. Upon physical examination gait was within normal limits. Sensory function in both upper and lower extremities was intact. Cranial nerve testing was negative. Deep tendon reflexes were 2+ bilaterally at the patellar, achilles, biceps, brachioradialis and triceps reflex. Mother denied any musculoskeletal effects associated with the diabetes.⁵

Vital signs were as follows: blood pressure 105/55 on the left, 105/60 on the right, pulse 94 beats per minute, respiration 14 breaths per minute and temperature 98.4 degrees Fahrenheit. At the time of the examination, patient's height was 4' 5.5" and weight 74.8 lbs.

Posture examination revealed left head rotation, left head tilt, right high shoulder, left high scapula and 8 lbs difference in the bilateral weight scale favoring the right side. Adam's test was positive in the lumbar spine. Gaenslen's test was positive with tenderness upon external rotation in both hips and with restricted motion. Upon palpation, a lymph node enlargement and tenderness was found in the cervical region. Cervical ranges of motion showed restrictions in flexion and right rotation, with tenderness upon flexion. Thoraco-lumbar ranges of motion were all within normal limits.

Prone leg check revealed a left functional short leg, with a Negative Derefield on the left according to Thompson Technique protocol.

Motion palpation revealed restricted segments at C1, C4, T6, T7, T11, T12, L1, L5 and right Sacroiliac joint with palpatory tenderness associated with the above mentioned segments. Left fossa thermal instrumentation reading showed a high reading on the left of 0.3 degrees. Instrumentation applied at assessing the neural component of the subluxation has been used for decades, with proven reliability and validity.⁶ Infrared devices were used to measure paraspinal skin temperature, which is under the direct control of the nervous system.^{6,7} The scan revealed medium to low heat differentials at C1, T8 and T9. X-Ray findings revealed a shallow lumbar left convexity, which is not considered a scoliosis at this point.

Patient was diagnosed with cervical-thoracic subluxation complex associated with abnormal posture and taut muscle fibers; and sacroiliac subluxation complex associated with abnormal posture.

Management plan included checking patient 3 times a week and adjusting the subluxations when necessary according to Diversified Technique protocol, then re-assessing the patient after a period of 2 weeks. Lifestyle modifications were recommended in the form of increased water, fruit and vegetable intake.

Adjustments were administered according to Diversified Technique protocol to the following segments: C0, C1, C2, C3, C4, C6, T2, T3, T4, T5, T6, T7, T8, T9, T11, L1, L4, L5, Sacrum and both SI joints at different times during the chiropractic care. The patient was analyzed using motion palpation and instrumentation in the form of styloid fossa readings for the upper cervical region. Atlas was adjusted in the presence of .5 or more degrees difference according to the thermal readings. Isolation tests were also performed to locate subluxations. A specific contact, high-velocity low amplitude adjustment was given to the sites of subluxation.

Cervical adjustments were given in the supine position, with the patient's head in lateral flexion towards and rotated away from the contact. The contact used for the cervical adjustments was the lamina-pedicle junction on the side of body rotation. The opposite hand was rested on the adjusting table, with the head stabilizing the above segment and patient's head. The segment was brought to tension in an anterior, medial and superior line of drive. Excessive rotation was avoided during the thrust, which was given in the same line of drive.

Thoracic adjustments were given in the prone position, with a bimanual pisiform contact in the line of drive of the thoracic vertebrae facets, taking into account the disc plane lines and changing angles of particular segments. The clinician stood straight away over the contact segment. The thoracic transverse processes were used as a contact point, with the hand towards the head in the side of body rotation, the opposite hand stabilizing the opposite transverse process with the pisiform adjacent to the contact hand's pisiform and a 90 degree angle between both hands. The procedure is referred to as Double-Transverse or Crossed Pisiform. Anterior adjustments were used when patient didn't relax enough, to ensure a more gentle adjustment.

In that case, the patient sat at the end of the adjusting table, with the clinician standing by her side, on the side of the transverse process that was going to be contacted. A fist was made by the clinician and the involved spinous process was placed between the thenar eminence and the distal interphalangeal joint of the index finger. The opposite hand was used to ensure the correct line of drive by contacting both elbows of the patient in the front of the patient, and guiding her down to a supine position.

The patient ended in the supine position with the contact hand under the involved segment. The opposite hand was used to take the joint play away and a body drop over the patient was performed.

In the lumbar spine and pelvic region, the patient lay on her side with the contact side up. The leg on the involved side was flexed with the foot resting on the inferior leg at the level of the popliteal fossa. A mamillary contact was used on the side of body rotation in case of a lumbar subluxation, and the posterior superior iliac spine (PSIS), depending on the type of subluxation. In case of sacral subluxation, the contact was determined by bisecting the distance between the S2 tubercle and the PSIS in the involved side. From that position, the opposite hand was used to stabilize the upper body by

contacting the shoulder. The patient was rolled towards the doctor to bring the joint to tension. The doctor was standing in a fencer-stance towards the head of the patient, and a body drop was used to deliver the adjustment.

Leg checks, palpation and isolation tests were repeated after the adjustment to ensure the correction of the subluxation, not just being guided by the presence or absence of cavitations.⁸

The patient was checked for subluxations and adjusted when necessary 3 times a week for the first two weeks. A re-assessment was performed at that time with instrumentation readings, postural analysis and spinal exam. After the first re-assessment, decreased visit frequency was warranted and patient started being checked twice a week. Thirty days later a second re-assessment was performed with the same components as the first one. The thermal scan at that point showed medium to high heat differentials at C1, C2 and T12, as well as medium to low heat differentials at T2, T3, T5, T11, L1, L2 and L3. A third re-assessment was performed 60 days later.

Outcomes

A re-physical was performed after a total of 52 visits with analysis of the same indicators as in the first chiropractic examination. During the updated history, the mother reported a stabilization of the levels of glucose as well as the amount of insulin needed to control the glycemia. There were no reported changes in the past medical history of the patient or in the family history. Patient maintains the same type of activity in elementary school, with vacation period at the time of the examination. Mother reported a marked decrease in the frequency of hypoglycemic episodes from once a week to once a month. Patient described an improvement in her sleeping patterns, from an average of 9 hours of poor-quality irregular sleep, to an average of 8 hours of regular sleep without frequent waking up due to recurrent need to urinate. The mother reported an increase in the amount of vegetables, fruits and water intake by her daughter.

Vital signs were as follows: Blood Pressure was 105/60 on the left and 105/55 on the right. Pulse was 92 beats per minute and respiration was 16 breaths per minute. Temperature was 98.6. At the time of the re-physical, the patient's height was 4' 6.5" and she weighed 73 pounds.

Upon physical examination, changes in postural deviations were noted, with left head rotation, balanced scapulas and just 2 lbs difference in the bilateral weight scale favoring the left side. There were no changes in the ear and shoulder level at this time. Leg check showed a left short leg with a -D according to Thompson technique protocol.

Upon hip examination, bilateral tightness was found. Lymphadenopathy in the cervical region was no longer present. Cervical range of motion as well as thoraco-lumbar was within normal limits. Motion and static palpation of the spine showed significant improvement in fixated segments, reduced to C2, C7, T1 and Sacrum. The thermal scan at this point showed medium to low differentials at C7, T1, T2 and T3.

After this re-physical, the patient was encouraged to maintain regular care and good compliance as before. Further evaluation will be made to keep track of possible future changes.

Discussion

Diabetes Mellitus (DM) type 1 is diagnosed in thirty thousand people worldwide every year, becoming one of the most common autoimmune diseases in the world. It has been established that it could happen at any age, but it is more common to be diagnosed from birth to late thirties.¹ The medical community considers it an easy to diagnose condition, since it shows classic symptomatology and simple quick tests are available and accurate, like blood tests.² Thyroid dysfunction has been linked to DM type 1. In a longitudinal study by Umpierrez et al., the association was confirmed to the point that subjects with DM type 1 are encouraged to undergo annual screenings to detect possible thyroid dysfunction.³

The medical treatment for DM type 1 is centered on reducing symptoms by giving insulin to the patient. In a study by the Department of Developmental Immunology¹ different etiologies of this autoimmune disease are discussed, as well as possible effective therapies. Two main goals were established to benefit all the patients that suffer from this condition, considering the genetic and pathologic heterogeneities between subjects. First of all, the stimulation of the immune system and the regeneration of the beta-cell mass in order to maintain normal glycemia. This approach tries to prevent the development of the condition (either by altering the immune response or stimulating beta-cell production), since it has been currently established that it can be detected in predisposed individuals. Environmental factors are also accepted as a possible cause of the development of the disease.^{1,2} However, according to another study by Wong, environmental factors would not be enough of an explanation for changes in gene expression, and consider epigenetics as a possible cause.⁴

Prevention of the development of a condition is a treatment option that gets closer to the chiropractic paradigm. Chiropractic is an art, science and philosophy that holds that the human is a self healing and self regulating organism and explains how the cause of disease is inside the body, contrasted with allopathic medicine which believes illness results from an outside source.⁹ According to D.D. Palmer - discoverer of chiropractic, the ability to heal is present at birth and runs through the nervous system. Any interference with the nervous system would affect that ability of the body to heal and its perception of the environment appropriately, resulting in disease.⁹⁻¹¹ That interference is described as *vertebral subluxation* in the chiropractic community.

There are different models to explain the subluxation and its effects on the physiology of the body. For the purpose of this case report, different models are studied to explain how the subluxation could affect immune function and proper visceral function.

It has been accepted and described by the different models, that vertebral subluxation has some form of kinesiologic dysfunction, as well as neurologic effects.¹⁰⁻¹³ According

to the dysafferentation model, proper input to the central nervous system is required for adequate efferent response to the rest of the body and consequently, adequate visceral function.^{10,11,14} Part of this model recognizes the presence of hypo-mobility of the affected segments,^{10-12,14} which would affect mechanoreception^{10,14} and lead to an alteration in the balance between mechanoreception and nociception present in the human body. Decreased mechanoreception has been linked to an increase in nociception.^{10,14} Altered mechanoreception has also been linked to physiological reflex activation, causing altered autonomic nervous system function, as well as general peripheral nervous system dysfunction.^{15,16} It should be noted that these responses were obtained in experimental situations.

According to one study of dysafferentation, the increase in nociception has a neuroendocrine response including the release of catecholamines and other hormones like cortisol.¹⁴⁻¹⁶ Other causes of increased cortisol levels are related to trauma, inflammation, anxiety, fear and apprehension.¹⁷ It is important to remember that this starts a downward spiral between nociception, cortisol levels and emotional and physical stresses.¹⁴⁻¹⁷ Cortisol, related to the fight and flight mechanism, would have an effect in the entire organism, as reported by an article in JAMA where psychological stressors also were shown to decrease immune function through biochemical changes in the body.¹⁴⁻¹⁸ This is a very significant finding since it would suggest the importance of chiropractic in immune deficient diseases and stress-induced conditions.

Cortisol is also known to antagonize the action of insulin,¹⁴ which can be related to the onset of DM type 1, explaining why the adjustment or restoration of the normal input to the nervous system can be related to the symptom improvement in the patient studied in this case report.

The chiropractic adjustment is designed to restore proper motion, re-establishing the normal balance between nociception and mechanoreception.^{10,14,20} These changes would stop the downward spiral of the stress response through regulation of cortisol and other hormonal secretions.

Another theory of why the chiropractic adjustment would alter the expression of genetic conditions such as DM type 1 is epigenetics. According to one study, the expression of such a disease in monozygotic twins or genetically identical siblings was statistically relevant to be able to say neither genes nor environment (since both individuals were raised in the same type of environment) were the single cause of such an expression.⁴

Most importantly, gene expression, transcription and translation would be altered by glucocorticoids and therefore be related to the stress response.²¹ The same study reports alteration of the thyroid axis, which would be affecting the presentation of the patient in this case.

One other study reports that gene expression could also be affected by exercise.²² A sedentary lifestyle would negatively affect the expression of insulin regulating factors. The implications of this study are observed in the education part of the management plan of the patient, where improvement in diet and exercise were recommended.

Conclusion

Chiropractic is a discipline that deals with the entire organism, not looking at a single disease process. Conducting research in chiropractic differs with the medical model in that the objective with the first one is to restore proper function in the organism to allow the body to heal itself, versus removing the symptoms that arise from the dysfunction. In this case study, the patient shows signs of nervous system dysfunction and through the chiropractic adjustment, lifestyle changes, and by restoring the body's physiological homeostatic state, the patient demonstrated signs of improvement. These changes were reported as improvement in quality of sleep, behavior, stabilization of glucose levels and decreased amount of insulin on a daily basis. These are all signs of a step closer to the ideal homeostatic state. More research is needed in this profession to further explore the benefits of the chiropractic adjustment on well being associated with lifestyle modifications, regardless of the presence or absence of symptomatology.

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