



Resolution of Epigastric Pain & Chronic hiccups following Chiropractic Care, Applied Kinesiology (AK) and related techniques: A case report

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Objective: The objective was to determine the effect of Applied Kinesiology (AK) and complimentary neurological based techniques to provide relief of the effects of chronic hiccups.

Clinical features: A 73-year-old man presented with complaints of chronic hiccups ongoing for 1 year with concurrent pain in the epigastric region of his chest which radiated into the cervicothoracic junction. This was also further complicated by weight loss and extreme fatigue noted by the patient.

Intervention and outcomes: Multiple AK based techniques were utilised to in the areas of vertebral subluxation to help decrease the frequency and duration of the hiccups and discomfort associated with them. Nutritional manual muscle testing (MMT) was also used to determine proper facilitation of reactive muscle testing. After seven visits utilising chiropractic care, nutritional testing and AK based techniques, the patient's hiccups had subsided and resolved.

Conclusion: This case report exemplifies a combination approach of care to a patient with epigastric pain with chronic hiccups with a resolution of symptoms and a return to activity in a manner of seven visits. A combination of techniques benefitted the patient by use of AK based analysis of vertebral subluxations, and also while working with chief complaints allowed the patient to return to activities of daily living in a relatively quick manner. However, research involving one or two specific techniques would benefit to know the true potential of care involving the area of complaints. know the true potential of care involving the area of complaints.

Indexing terms: Chiropractic; Applied Kinesiology; hiccups; nutritional testing; Manual Muscle Testing.

Introduction

Hiccups are understood by most people, but are still a poorly understood phenomenon caused by involuntary, repetitive contractions of the diaphragm and, in many cases, the intercostal muscles. The medical term for this condition is 'Singultus', which can be translated from Latin as 'to be caught in the act of sobbing'. The coordinated contraction of the inspiratory musculature leads to a rapid intake of air that is, within a few milliseconds, interrupted by closure of the glottis. It is this that results in the characteristic sound, the 'hic' in hiccups, between 4 and 60 times a minute. (1)

...HVLA adjustments to the various cervical spine vertebrae, especially in the mid cervical spine (C3-C5), could have stimulated a parasympathetic response from the brain to increase vagal tone and allow the diaphragm to properly relax and not cause a reflex action to trigger the patient's hiccup responses ...'

The classification of hiccups is based on their duration. An acute attack lasts less than forty-eight hours. Persistent hiccups last more than 2 days. Intractable hiccups are present if the attack lasts more than 1 month. (2) Persistent hiccups are most likely to be associated with an underlying pathological, anatomic or organic disease process. (3) Intractable hiccups that continue for more than 1 month are usually indicative of a serious organic disturbance. (4)



If left untreated, intractable hiccups can cause severe discomfort, depression, reduced physical strength, and even death. (5) According to a report by William H Dobelle, approximately 4000 hospital admissions are due to hiccups are reported each year in the United States. (6)

The intractable hiccups are more common in men (82%) than in women. Most of the men suffering from hiccups are 50 years of age or older. (2) Psychogenic hiccups have been reported to occur more commonly in women. The usual rate for hiccups is four to sixty per minute with fairly constant frequency in an individual. (7) Pathological hiccups can be explained as a form of epilepsy or a failure of supra-spinal inhibition. (8)

Pathophysiology

The central component is located in the periaqueductal grey, sub-thalamic nuclei among the brain stem respiratory centre, phrenic nerve nuclei, reticular formation and hypothalamus. (9) The central component for hiccups lies in the medulla and is thought to be entirely separate from the pathways involved in rhythmic breathing. (10) Dopamine, gamma-amino-butyric-acid (GABA), serotonin, glutamate, and glycine neurotransmitters can regulate this central mechanism. The hiccup arc has modulatory input from catecholaminergic and serotonergic afferents.

The release of 5-hydroxyl-tryptamine (5HT) from the gut enterochromaffin cells and enteric vagal afferents may also lead to hiccups as seen in a case report following administration of cisplatin, a chemotherapeutic agent. (11) The *mental branch* of the *trigeminal nerve* was also postulated to develop hiccups when stimulated via chin shaving. (12)

Significant negative intrathoracic pressure may occur during hiccups that may result in hypotension, bradycardia, pneumomediastinum, and subcutaneous emphysema. (13) The mechanism of action of hiccups might be mediated through agonising 5-HT_{1A} and antagonising 5-HT_{2A} receptors to enhance the activity of the phrenic nerve, thereby inducing hiccups. This concept was supported in a case report in which quetiapine was successfully used to resolve the aripirazole-induced hiccups. This may suggest the partial agonist and relatively high 5-HT_{1A} receptors binding affinities in the pathophysiology of hiccups. (14)

The most commonly used pharmacological treatments include metoclopramide which reduces the intensity of oesophageal contraction, chlorpromazine, (15) baclofen, nifedipine which reverses the abnormal depolarisation in the hiccups reflex, valproic acid that enhances GABA transmission centrally, (16) antipsychotics, glucagon, GABA analogue which acts by activating an inhibitory neurotransmitter, and dimethylamine derivative of phenothiazine which acts centrally by dopamine blockade in the hypothalamus. (17) Baclofen (GABA-agonist) is among the substances that act through the nervous system and has by far the best ability to treat chronic hiccups. (1, 18, 19, 20)

However, a Cochrane systemic review found insufficient evidence as to which pharmacological agent is best for hiccups. (21) Hiccups are the manifestation of diaphragmatic myoclonus and are considered to be a form of physiologic myoclonus. It has been suggested that damage to the cervical cord, brainstem, hypothalamus, and supratentorial area precipitate hiccups by stimulating the hiccups reflex arc or decreasing the normal inhibition of hiccup neurons. It is suggested that all potentially successful therapeutic drugs used to treat hiccups either decrease

the input from gastrointestinal tract (GIT) to the hiccups centre or decrease the excitability and output from the hiccups centre. (20, 22)

The exact aetiology of hiccups is unclear, and it is unknown why diverse drugs like dopamine blocking agents (DBA), baclofen, clonazepam, and phenytoin, which have widely varying mechanisms of action, can be effective in the treatment of hiccups. (23)

The purpose of this paper is to describe chiropractic and Applied Kinesiology (AK) based interventions for the management of a patient with epigastric pain stemming from chronic hiccups. Future research is needed to determine which protocols will be most effective for different populations and what types of hiccups complaints are being presented. It should be noted that only short-term effects were assessed, and it is still unclear what long-term effects AK-based therapies have on patients with chronic hiccups.

Case Report

Patient history

The patient was a 73-year old male presenting with chronic hiccups. The symptoms of the chronic hiccups began in February of 2022 suddenly and without provocation. This patient was also experiencing *Gastroesophageal Reflux Disease* (GERD) symptoms alongside when having the hiccups. On the initial intake form, he indicated a circle over the chest with an emphasis on the epigastric region of where pain was present. The description of the timing of the pain in the online intake said that the patient was experiencing this pain was '*Occasionally*' (25-50% of the time).

The nature of the symptoms was described as a 'burning' and 'tightness' that was not changing. The average intensity of the patient's symptoms was between a 3 and 8 out of a possible 10, with 1 being 'mild' and 10 being 'severe'. The Patient had also described the symptoms were being made worse by bending, especially leaning over to put on shoes, cold climate, and lifting/carrying anything. The symptoms only improved with rest and time. It should also be noted that the patient had seen several other doctors and had an abdominal CT scan in May of 2022 and an upper GI endoscopy on 10/24/22, both with negative results. The patient had been prescribed Omeprazole and Rosuvastatin (Crestor) by his primary care physician, but only took the medication as needed.

The patient had also noted that he had extreme fatigue, which had been constant for a period of at least 6 months. The patient's sleep schedule was also severely affected with him waking up around 1:00 AM-3:00 AM to urinate. There were also complaints of haemorrhoids and some flatulence in the history. The patient had also noted that there were sinus issues to which that were attributed to sinusitis, which also the patient alluded to the laboured breathing patterns. It is also noted that this condition caused the patient to slow down eating, and in a 6-month period the patient claimed to have lost 4.5 kg (10 lbs.)

Initial Vital examination

The patient's height and weight were measured, with him weighing in at 65.7 kg (145 lbs) and standing at 175.2 cm (5'9"). The patient's blood pressure was also taken, and recorded at 140/104 mmHg and had a resting pulse of 70 beats per minute. The patient's forehead temperature was also recorded at 36.5°C (97.7°F).

Chiropractic examination

The patient's first initial appointment took place on Saturday, February 11th, 2023 for evaluation and treatment. No advanced imagery was taken on his first visit. There were no motor patterns within the cervical or thoracic spinal myotomes. The patient did have a decreased (1+) hyporeflexia response on the left *biceps* reflex test, indicative of the C5 nerve root involvement.

There was also a hyperaesthesia noted on the right arm in the C8 dermatome region. Subluxation complexes were found at the base of the sacrum and at C1 on the left.

Postural exam

An initial standing posture exam revealed the patient to have a high left head tilt, a high left shoulder, an elevated right hip crest, anterior head translation with a bit of thoracic kyphosis, and an externally rotated right foot.

Range of Motion exams

The patient was noted to have restricted cervical extension with tight pain noted in the right upper cervical region with an 8/10 severity noted. The patient also noted having a tight pain discomfort upon performing left lateral cervical flexion, with pain being noted in his left mid-cervical region with an 8/10 severity. In addition, the patient also noted tight pain when performing left lateral flexion, especially noted in his left rib cage with an 8/10 severity.

Orthopedic exams

Ely's Test on the left leg with some pain in the left quadriceps was rated as tight sensation in the left *quadriceps* with an 8/10 severity was noted on a prone examination of the patient. *Hibb's Test*, assessing for posterior sacroiliac ligament pathology or *piriformis* contracture, was positive on the left. The patient was also revealed to have pain in his left lower abdominal quadrant with it feeling a tight sensation and having a severity of 8/10. Palpatory findings on hip, leg, and low back musculature were determined on a visit-by-visit basis upon what was found and needed for AK-based therapies.

Motion Palpation

Upon spinal examination, there was noted myalgia and myospasm on the left C1 vertebrae, the right C5 vertebrae, the right L3 vertebrae, and the base of the sacrum. The C1 vertebrae was noted to have a 'vertebral body left malposition' while the C5 was noted to have a 'vertebral body right malposition'. The right L3 was noted to be posterior, left, and inferior, or what Diversified Protocol determines a PLI-M listing.

Techniques utilised

There were several different techniques and strategies used in the care of this patient that were for his benefit to remove subluxations found and alleviate symptoms associated with the chief complaint of epigastric pain with chronic hiccups.

Applied Kinesiology (AK) Muscle Testing

One of the main ways that the patient was evaluated during treatment was by means of Manual Muscle Testing (MMT)/Applied Kinesiology (AK) analysis. Within the chiropractic discipline the ICAK has established an operational definition for the use of the MMT: *'Manual muscle tests evaluate the ability of the nervous system to adapt the muscle to meet the changing pressure of the examiner's test. This requires that the examiner be trained in the anatomy, physiology, and neurology of muscle function. The action of the muscle being tested, as well as the role of synergistic muscles, must be understood. Manual muscle testing is both a science and an art. To achieve accurate results, muscle tests must be performed according to a precise testing protocol.'*

The following factors must be carefully considered when testing muscles in clinical and research settings:

- ▶ Proper positioning so the test muscle is the prime mover
- ▶ Adequate stabilisation of regional anatomy
- ▶ Observation of the manner in which the patient or subject assumes and maintains the test position

- ▶ Observation of the manner in which the patient or subject performs the test
- ▶ Consistent timing, pressure, and position
- ▶ Avoidance of preconceived impressions regarding the test outcome
- ▶ Non-painful contacts, non-painful execution of the test
- ▶ Contraindications due to age, debilitating disease, acute pain, and local pathology or inflammation (24)

This technique was well utilised in the care of this patient for the treatments regarding a need for chiropractic adjustments/manipulations, sacro-occipital technique (SOT) category blocking needs, ocular lock technique, nutritional testing, soft tissue based care, acupuncture meridian therapies, pulse synchronisations, Therapy Localisation (TL) of care, Ileocecal Valve (ICV) functioning, and any emotional-related stressors that pertained to neurovascular reflexes aka Bennett's Reflexes on the head.

Diversified technique

Spinal manipulation is a passive and rapid movement of a joint beyond its active and passive limit of movement, but remaining within the limit of the joint's anatomical integrity. This patient received one to two dynamic thrusts, applied with high velocity low amplitude force, directed at one or more restricted lumbar, thoracic or cervical spine segments. This approach to manipulation is commonly referred to as diversified technique. (25) This technique was well utilised in the correction of adjusting specific segments of the spine and pelvis.

Quantum Neurology

Quantum Neurology® Rehabilitation is a method of exercising and strengthening the Nervous System. This is done by incorporating neurological activation, physical mobilisation, and light therapy. Using a patented system of evaluation and correction, it enables the practitioner to find hidden neurological weaknesses in the body. Specific techniques allow practitioners to activate the Nervous System's innate healing power so that the body can heal itself. (26) This technique was used in evaluating and treating various myotomes and cranial nerves and their associated inhibitory muscle tests.

Neuro-Emotional Technique

Building upon these principles and incorporating several health disciplines, neuro-emotional technique (NET) was introduced by Dr. Scott Walker, who based it on the principle that the stressor effects of dormant and/or unresolved-issues-trauma are what determines the body's responses. These responses are relatively personalised to the conditioned, experiential and emotional reality of the individual. NET is defined as a multimodal stress reduction mindfulness-based intervention and was founded upon 3 essential concepts:

- i) Cognitive behavioural psychology: sharing aspects in common with standard CBT for traumatic stress, in terms of exposure therapy, NET seeks the reversal or extinction of classically conditioned, distressing emotional responses to trauma-related stimuli, such as stress.
- ii) Traditional Chinese medicine: NET engages the energy system, in which a patient touches a pulse point that is determined to be involved in the body's stress reaction to a particular stimulus. The links between emotions and the meridian system have been expressed in acupuncture theory for 2000 years. Current concepts hold that tightness in the fascial system might represent acupoints and meridians in the human body.
- iii) Muscle testing: this feedback technique is believed to be an indicator of altered physiological function, in which a given muscle is less capable of resisting an outside force

when there is some alteration in the function of the nervous system. Specifically, Walker proposed that the muscle test responds to cognitive and emotional stimuli. (27)

This technique was used in finding any underlying subtle subconscious physiological nervous system interferences with the patient's subjective nature in dealing with his various epigastric or hiccups discomfort.

Chiropractic and AK treatment

This patient was seen for a total of 7 visits of the time period from February 11th, 2023 to March 14th, 2023. After the initial history taking and examinations were conducted, the doctor performed initial chiropractic care and AK analysis on the first visit as well.

Upon the first visit, February 11th, 2023, the patient was evaluated and treated based on findings from an inhibited muscle test via the Quantum Neurology (QN) model of analysis with the cranial nerves. This was demonstrated in a seated position by testing the various motor and sensory examinations of individual cranial nerves and then noting whether an anterior-adducted straight arm push-down Manual muscle test (MMT) 'weakened' or inhibited.

This would be followed by 'scanning' or contacting the body with fingers by the doctor down the surface of the spine while there was a straight arm MMT being applied with one arm until there was a secondary inhibition or 'weakening' of the muscle test at a various segment of the spine contacted by the fingers of the practitioner. An appropriate analogy would be 'finding the "short circuited" vertebral area/segment'.

From there the doctor would use a 2-pronged fork from a *Hypervolt*[™] massage instrument on the bilateral sides of the spinous process segments of where the 'short circuited' contacted vertebrae was found. This in clinical QN practice is usually corrected by me using an *ArthroStim*[™] instrument, but the *Hypervolt*[™] sufficed in this case. This was to provide a sensation of vibration that correlated with mechano-reception within brain centres that corresponded to the vertebrae found to inhibit the straight arm MMT. The same cranial nerve MMT would then be re-checked for 'strengthening' or facilitation.

This strategy of a technique was used on the right eye of Cranial Nerve (CN) II (*optic* nerve) by shining a pen light in each eye to measure pupillary contraction correlated with the MMT. For CN III/IV/VI (*oculomotor/trochlear/abducens* nerves) the doctor had the patient follow a pen with just his eye tracking and it was found that in the right lower corner there was an inhibition of the muscle test. For CN VII (*facial* nerve) the action of smiling inhibited the muscle test. For CN IX/X (*glossopharyngeal/vagus* nerves) the action of swallowing inhibited the muscle test.

And finally, for CN X (*vagus* nerve) I used *Valsalva's Manoeuvre* of taking a deep inspiration and bearing down, which also caused an inhibition of the muscle test. Each of these CN tests were corrected using the 2-pronged fork from a *Hypervolt*[™] massage instrument on the bilateral sides of the spinous process segments that correlated with the specific CN inhibition from the muscle test and were retested for 'strengthening', aka facilitation.

In addition to QN treatment, the doctor used AK analysis in a standing position by using the right deltoid muscles as a group evaluating the patient in a head forward and cervical flexion position, and it was determined to do a standing first thoracic (T1) adjustment. This was done by having the patient place his feet together, arms out horizontally and bilaterally to each side, and then the doctor placing their hands interlocked underneath the patient's arms and hands on the back of his neck. This was followed by the patient placing their hands on the doctor's interlocked hands, followed by the patient taking a deep inspiration and expiration, while slouching back into the supporting knee of the doctor and then the doctor would do a manual 'traction' from inferior to superior of the cervicothoracic junction area. The right *deltoid* muscle group was retested and shown to be facilitated.

The doctor also performed Ocular Lock Technique (28) from AK analysis and it was determined that the patient had a Base Posterior (BP) Sacrum due to the inhibition of a bilateral *pectoralis major-clavicular* (PMC) division muscle test with the patient's eyes looking directly inferior. Following this, the doctor then performed a side-posture push from superior to inferior on the intermediate sacral crest segment and then retested the ocular lock which showed a facilitation of the bilateral PMC muscles.

The doctor also performed Primary Atlas Technique (PAT) (28) and AK analysis and it was determined that the left C1 segment had shifted laterally. The doctor used an *Activator*[™] instrument for the adjustment adjusting the segment from Left to right/lateral to medial. MMT was also used with Therapy Localisation (28) (TL'ing) the C5 vertebrae, which was also adjusted by the *Activator*[™] instrument from posterior to inferior with a slight vector of right to left.

The doctor also checked the patient's ileocecal valve (ICV) (28) and it was determined that the patient had a 'closed' or spastic ICV. This was determined by having the patient using a strong indicator muscle test of the right PMC, and placing his left hand in a closed fist position just 2.5cm (1") above his right Anterior Superior Iliac Spine (ASIS). Upon having the patient push the tissue of his right fist inferior and lateral towards his right hip, it was determined that the patient had a Closed ICV. This was also confirmed via testing the *quadriceps* as a group, and noting that the *quadriceps* had an inhibited muscle test as a group. This was corrected by first checking the nutrition by having the patient tasting the *Standard Process*[™] supplement Choline, which facilitated the muscle test of the *quadriceps* as a group.

The L3 vertebrae was also TL'ed while testing the quadriceps as a group and was corrected using a side posture adjustment while the patient laid on his left side. The doctor also applied light pressure to the bilateral Bladder 58 meridian point, which lies on the posterior aspect of the lower leg, behind the external malleolus, 7 cun directly above UB 60, 1 cun inferior and lateral to UB 57. (29) Upon retesting the original TL of the ICV, the patient's right PMC facilitated, and the *quadriceps* as a group also facilitated.

The patient's pulse points (28) were also checked as part of AK diagnosis. This test was performed by using the *Rectus Femoris* muscle as an indicator muscle, and then having the patient contact/TL98 the various pulse points until there was an inhibition of the muscle noted. It was determined that he had a right-distal wrist crease point show up as an inhibited muscle test, indicating the most deficient meridian, which in Chinese medicine is designated as a 'Metal Element' point. The metal element related muscle that was checked was the *tensor fascia latae* (TFL) on the left side. This was correlated by the patient TL'ing the 'alarm point' for the TFL which is 3 - 4 cm (1.5") lateral to the patient's umbilicus on each side of the abdomen, which facilitated the previously inhibited TFL.

The patient also had lingual nutritional testing establish that there was a need for *Standard Process*[™] Betaine Hydrochloride, which facilitated the muscle as well. In addition to this, the doctor also held the 'tonification' point of Large Intestine 11 (LI11). LI11 is a point located at the elbow, which is located at the end of the crease on the outer side of the bent elbow. (29) The doctor then retested the original left TFL muscle and there was a facilitation of the muscle.

The doctor also noted a needed diversified prone adjustment on T8-T10 via TL'ing those areas, and it was used with a bilateral hypothenar contact with a line of drive of straight posterior to anterior. There was also a need for a Category 228 (CAT 2) SOT blocking procedure because the left side showed an inhibited straight arm supine arm-fossa test, which correlated with an inhibited left hamstring as well. The CAT 2 listing is usually considered a hypermobile sacroiliac joint. This was performed supine by having the patient pull the straight arm superiorly against the doctor's hand, while the patient was holding the inferior-medial part of the lower aspect of the inguinal ligament of the left side. It was corrected using 2 SOT blocks by placing one block

underneath their left ischial tuberosity pointing 45° superior to the patient's right shoulder, and the other block just underneath the right posterior superior iliac spine (PSIS) and then rechecking the arm fossa test for facilitation. The patient laid on these blocks supine for about 2 minutes, and then the arm fossa test was rechecked for a 'titration point' whereby the arm fossa test would inhibit, showing no more need for a block placement, and the blocks were removed.

The second visit took place on February 13th 2023. The doctor used PAT and found a right lateralization of the C1 vertebrae, which was adjusted via a rotary Diversified chiropractic HVLA thrust, adjusting in a superior to inferior and lateral to medial line of drive with an 2nd digit (index finger) contact. A lateral left occiput was also noted using bilateral PMC muscle testing, with the patient protruding his tongue out to left indicating this finding, and was also adjusted via Diversified chiropractic technique with a contact at the left nuchal line of the occiput and having a superior to inferior line of drive with a fingertip contact.

The patient tested once again for a Closed ICV to which Choline again strengthened the response of the quadriceps muscles as a group. The patient was instructed to take 2 Choline tablets per day before sleep. The doctor again applied light pressure to the bilateral Bladder 58 meridian point, which lies on the posterior aspect of the lower leg, behind the external malleolus, 7 cun directly above UB 60, 1 cun inferior and lateral to UB 57 until a pulse was noticed. Upon retesting the original TL of the ICV, the patient's right PMC facilitated, and the quadriceps as a group also facilitated.

This patient once again had a 'Metal element' distal wrist crease pulse point identified, which corresponded to an inhibited left TFL muscle, and was treated by holding the LI 11 point until a pulse was found on the left elbow crease, and the left TFL muscle was facilitated.

The patient also received QN care for CN III/IV/VI combination. The doctor once again had the patient follow a pen with just his eye tracking and it was found that in the right lower corner there was an inhibition of the muscle test. This was treated with a facilitation of the muscle once corrected with the corresponding vertebral level treated with the 2-pronged fork from a *Hypervolt*[™] massage instrument on the bilateral sides of the spinous process segments. QN was also used when treating the CN combination of IX/X via the patient swallowing, which showed an inhibited straight arm pull down muscle test, and then corrected by the 2-pronged fork on the *Hypervolt*[™] massage instrument on the bilateral sides of the spinous process segments. The swallowing action was re-tested showing a facilitation of the straight arm muscle pull down test.

This patient also received an NET clearing on the emotion of 'low self-esteem' after TL'ing the epigastric area with his hand and identifying the main original event memory. The patient was tapped on the T1, T5, and T9 vertebrae of the spine, and then retested with the straight arm MMT while the patient held the idea of the original event memory, which was 'strong' or facilitated. This patient also required the NET[™] homeopathy remedy spray #9 of ER911 for further assistance in the emotional processing.

The third visit took place on February 20th 2023. The patient showed no signs of hiccups. The patient via ocular lock was determined to have a left posterior C2 vertebrae by means of his eyes laterally looking left with an inhibition of the bilateral PMC muscles. This was corrected via a Diversified rotary HVLA adjustment, and the bilateral PMC was retested showing facilitation.

This patient once again had a 'Metal element' distal wrist crease pulse point identified, which corresponded to an inhibited left TFL muscle, and was treated by holding the LI 11 point until a pulse was found on the left elbow crease, and the left TFL muscle was facilitated. The patient also had his neurovascular (NV) aka Bennett's reflexes (28) corrected by holding the pulse points on the head for the Circulation-Sex related muscles, specifically the *piriformis*, left *gluteus medius*, and adductor muscles as a group all on the left side. These muscles were all tested previously showing an inhibition of the muscles, and showed a facilitation when retested after the NV points

were corrected. The hands were placed on the frontal eminences of the forehead bilaterally and there was a synchronisation of the pulse points.

The fourth visit took place on February 28th 2023. The patient's hiccups had returned in greater frequency. The patient via ocular lock was determined to have a left posterior C2 vertebrae by means of his eyes laterally looking left with an inhibition of the bilateral PMC muscles. This was corrected via a Diversified rotary HVLA adjustment with a posterior to anterior, medial to lateral line of drive. This patient once again had a 'Metal element' distal wrist crease pulse point identified, which corresponded to an inhibited left TFL muscle, and was treated by holding the LI11 point until a pulse was found on the left elbow crease, and the left TFL muscle was rechecked showing facilitation.

The patient also received QN care for CN II with the pen light shining in the right eye causing an inhibition of the straight arm pull down muscle test, and was corrected. The CN III/IV/VI combination was also checked and corrected in the same manner. The CN VIII (auditory/ vestibular nerve) was tested by a rubbing of the doctor's fingers to create a sound just lateral to the external aspect of the ear on the right side of the patient, while the doctor was performing the straight arm muscle test, which showed an inhibited test. This was also corrected in the same manner as the previous CN tests. CN X was also checked via Valsalva's Manuever of taking a deep inspiration and bearing down, which also caused an inhibition of the muscle test, and the same correction was applied. CN XI (spinal accessory nerve) was also checked, having the action of elevating the shoulders was also shown to have an inhibited straight arm muscle test.

These CN findings were all treated with a re-facilitation of the muscle once corrected with the corresponding vertebral level treated with the 2-pronged fork from a *Hypervolt*[™] massage instrument on the bilateral sides of the spinous process segments.

The 5th visit took place on March 2nd, 2023. This patient received an NET clearing on the emotion of 'resentment' while the doctor TL'ed his T4-T6 segments. The patient also received an NET clearing on the emotion of 'lost' while he TL'ed his neck. The doctor also performed Primary Atlas Technique (PAT) and AK analysis and it was determined that the left C1 segment had shifted laterally. This was corrected via a Diversified rotary HVLA adjustment with a line of drive of superior to inferior, left to right. This patient once again had a 'Metal element' distal wrist crease pulse point identified, which corresponded to an inhibited left TFL muscle. In addition to the TFL, the *Pectoralis Major-Sternal* (PMS) division muscle on the right as well as the *Teres Minor* muscle on the right were also tested, and showed inhibition. Hypothalamus PMG from *Standard Process*[™] was lingually tested and showed a facilitation of the left TFL, right PMS and right *Teres Minor* muscles. In addition, the patient was also treated by holding the LI 11 point until a pulse was found on the left elbow crease to re-engage the left TFL. The patient was instructed to take 1 Hypothalamus PMG tablet per day with food.

The 6th visit took place on March 7th, 2023. The patient reported having no hiccups. The patient also received QN care for CN III/IV/VI combination. CN VIII was also tested once again by a rubbing of the doctor's fingers just outside of the ear on the right side of the patient, while the doctor was performing the straight arm muscle test, which showed an inhibited test. These were both treated with a re-facilitation of the muscle test once corrected with the corresponding vertebral level treated with the 2-pronged fork from a *Hypervolt*[™] massage instrument on the bilateral sides of the spinous process segments. The patient via ocular lock was determined to have a left posterior C2 vertebrae by means of his eyes laterally looking left with an inhibition of the bilateral PMC muscles. This was corrected via a Diversified rotary HVLA adjustment.

This patient once again had a 'Metal element' distal wrist crease pulse point identified, which corresponded to an inhibited left TFL muscle, and was treated by holding the LI 11 point until a pulse was found on the left elbow crease, and the left TFL muscle was facilitated.

The 7th and final visit took place on March 14th, 2023. The patient again reported having no hiccups for a 1 week period. The patient was shown through MMT of the bilateral PMC muscles to have a left lateral occiput, signified by having him protrude his tongue out and to the left. This was corrected via an HVLA adjustment with a superior to inferior line of drive on the superior nuchal line on the left. The doctor also performed Primary Atlas Technique (PAT) and AK analysis and it was determined that the right C1 segment had shifted laterally. This was corrected via a Diversified rotary HVLA adjustment with a line of drive of superior to inferior and lateral to medial (right to left).

The patient tested once again for a Closed ICV to which choline again strengthened the response of the quadriceps muscles as a group. The patient was instructed to take 1 Choline tablet per day before sleep this time. The doctor again applied light pressure to the bilateral Bladder 58 meridian 101 point, which lies on the posterior aspect of the lower leg, behind the external malleolus, 7 cun directly above UB 60, 1 cun inferior and lateral to UB 57. Upon retesting the original TL of the ICV, the patient's right PMC facilitated, and the quadriceps as a group also facilitated.

This patient once again had a 'Metal element' distal wrist crease pulse point identified, which corresponded to an inhibited left TFL muscle, and was treated by holding the LI 11 point until a pulse was found on the left elbow crease, and the left TFL muscle was facilitated. Hypothalamus PMG from *Standard Process*[™] was again lingually tested and showed a facilitation of the left TFL, and the patient was instructed to continue taking 1 tablet per day with food.

Chiropractic/AK outcomes

SOAP notes were taken as a daily record keeping procedure to monitor patient progress. The notes explained the basic procedures mentioned on each subsequent visit and what was found upon chiropractic examination and what was adjusted or worked on with QN, NET, and AK therapies.

Upon conclusion of the 7th and last visit of the patient, he had reported his hiccups to be decreased by 100%, and he was released to maintenance care as needed. The patient had mentioned that the incorporation of NET, QN and AK treatments of the epigastric pain from the first visit-on had made a big difference in terms of the progression of decreasing the frequency of the resulting hiccups.

Discussion

The aim of this study was to determine the effect of several different AK based techniques with Chiropractic care on decreasing the frequency and duration of hiccups that had become chronic in nature. In this case report, the epigastric discomfort he had been experiencing was likely causing his hiccup symptoms to become a chronic issue.

Research indicates that the presence of hiccups is usually due to the sudden onset of erratic diaphragmatic and intercostal muscle contraction and immediately followed by laryngeal closure. The abrupt air rush into lungs elicits a 'hic' sound. Hiccup is usually a self-limited disorder; however, when it is prolonged beyond 48 hours, it is considered persistent whereas episodes longer than 2 months are called intractable. A reflex arc involving peripheral phrenic, vagal and sympathetic pathways and central midbrain modulation is likely responsible for hiccup. Accordingly, any irritant in terms of physical/chemical factors, inflammation, neoplasia invading the arc leads to hiccups. (31)

The onset of this patient's chronic hiccups was unknown, but what could be postulated is that this patient's resolution of the frequency of hiccups could be due to the correction of QN based techniques that involved the vagus nerve (CNX).

Since hiccups has a neurological reflex arc consisting of peripheral pathways and central midbrain modulation, patients with intractable hiccups are likely to have structural or functional irritation involving the reflex arc. (32) The Central process of hiccup remains poorly understood, it may not only be confined to the medulla but may also involve other parts of central nervous system (CNS) located between brainstem and cervical spine. (33) It can be conjectured from the chiropractic intervention involving the HVLA adjustments to the various cervical spine vertebrae, especially in the mid cervical spine (C3-C5), this could have stimulated a parasympathetic response from the brain to increase vagal tone and allow the diaphragm to properly relax and not cause a reflex action to trigger the patient's hiccup response.

Unfortunately, there is no guideline available to direct treating these serious disorders effectively. Chlorpromazine is approved by the US Food and Drug Administration as the only drug to treat hiccups until now. (33) However, using chlorpromazine to treat hiccups without correct diagnosis of lesion responsible for hiccup may lead to missing potentially serious conditions that may cause this symptom. Literature suggests that measures ranging from conventional remedies, alternative medicines to emerging therapies may treat hiccups successfully. (33)

Basically, transient hiccups are self-limited, and neither etiological evaluation nor immediate treatment is needed for these subjects unless their hiccup recurs. The effective hiccup treatment is established upon a correct diagnosis of lesion responsible for the serious event. For example, after effective measures were undertaken to CNS lesions such as vascular ischemia and tumours, hiccup episodes subsided. Similarly, some peripheral lesions related hiccups responded well after these lesions were ablated. In addition, many available therapies are not evidence-based; moreover, alternative medicines and remedies have been tested with acceptable effectiveness. (31)

Acupuncture has been employed to treat serious hiccups among patients with myocardial infarction and metastatic liver tumour. (34) A control trial confirmed that this procedure was superior over *ritaline* to treat stroke related hiccups. (35) The addressed mechanisms of acupuncture procedure are complex which include changed axonal excitability, diminished nociceptive circuits in the dorsal horn, inhibited spinal reflexes, segmental pre- and post-synaptic inhibition mediated by GABA, and activated supra-spinal centers via spinoreticular fibers, and spinothalamic and spinomesencephalic neurons etc. (35) Similarly, near-infrared irradiation applied on the acupoints to improve the local blood circulation of affected areas has been shown to effectively treat intractable hiccups. (37) This may be a potential reason why the patient responded well to meridian pulse point analysis and correction of the Large Intestine 11 point (LI 11) on several visits, and why meridian therapy of holding certain tonification centres improved the response of the patient's muscle tests from inhibited to facilitated.

It is well known that GERD is commonly associated with belching. Apart from the main reflux symptoms in terms of acid regurgitation, heartburn, globus, dysphagia and hoarseness etc, hiccup was not rare among the GERD patients. (38) Granted the patient the patient had an abdominal CT scan as well as an upper GI endoscopy with negative results, the betaine hydrochloride tablet which was lingually tested initially on the first visit potentially complimented the strengthening of the TFL response via stomach functioning to produce stomach acid, which would be potentially beneficial in aiding relief of any GERD-like symptoms.

Other remedies in terms of breathing into a bag, breath holding, swallowing granulated sugar, drinking/gargling iced water, forceful traction of tongue, biting lemon, eating peanut butter, eyeball compression, carotid/rectal massage, Valsava maneuver, fright and gastric lavage etc. have long been recommended to treat hiccups for many years. These remedies may be very convenient and less hazardous, however, their effectiveness to treat serious hiccups are usually uncertain. (32, 33, 39) The only time the patient performed Valsalva's maneuver was when doing the

specific muscle test related for QN analysis and treatment, so it does not serve as the best example for a potential remedy of treatment.

Walther (28) mentions in regards to gait analysis that sacroiliac articulations equate with the sterno-costal articulations. Treatment to this association is sometimes effective in treating Tietze's syndrome. The xiphoid process and coccyx relate together and may be associated with general diaphragmatic involvement or specific problems, such as hiccups. It can also be postulated that a hiatal hernia can also lead to hiccups. The hiatal hernia is sometimes referred to as 'the great mimic' because of the numerous symptoms it can create that often lead diagnosis astray. The symptomatic picture can relate to apparent digestive disturbances, heart problems, and shoulder, neck, and jaw pain, as well as dysphagia and hiccups. (28)

Being that the diaphragm is also interrelated with the hiccups reaction, correction of the diaphragm also should typically be addressed. When there is general low energy in the meridian system, correction of the diaphragm will often improve an individual's energy level. (28) This was seen in the patient across the seven visits that he was seen for care. Knowing that the phrenic nerves control diaphragmatic function, it was also important to address this as well. Efferent supply to the diaphragm is by the phrenic nerves, arising from C3, 4, 5. (40) Very often when this nerve appears to be disturbed a subluxation is found at C3, although it can be located at C2, 4, or 5. This was often an area that was adjusted on the patient and postulates why the patient was able to have cessation for periods of times without having a chronic hiccup reaction. Long term studies would be more beneficial in evaluation of the benefits of treatment.

Conclusion

This case report describes several AK based therapies for the treatment of chronic hiccups. It's applicability to other patients with similar conditions should be explored. More research is needed on the subject of AK care-based therapies with chiropractic for the treatment of chronic hiccups.

Specifically, focusing on one individual technique in the treatment of chronic hiccups and/or epigastric pain for further research would be best.

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Cite: McBride AS. Resolution of Epigastric Pain & Chronic hiccups following Chiropractic Care, Applied Kinesiology (AK) and related techniques: A case report. [Proceedings]. Asia-Pac Chiropr J. 2024;4.4. [apcj.net/ak-Proceedings-papers/#McBrideEpigastricPain](https://doi.org/10.1111/apt.13374)

References

1. Steger M, Schneemann M, Fox M. (2015). Systemic review: The pathogenesis and pharmacological treatment of hiccups. *Alimentary Pharmacology & Therapeutics*, 42(9),1037–1050. <https://doi.org/10.1111/apt.13374>

2. Cymet TC (2002) Retrospective analysis of hiccups in patients at a community hospital from 1995-2000. *J Natl Med Assoc* 94(6):480-3.
3. Vaidya V (2000) Sertraline in the treatment of hiccups. *Psychosomatics* 41(4):353–355. doi:10.1176/appi.psy.41.4.353
4. Nausheen F, Mohsin H, Lakhan SE. (2016). Neurotransmitters in hiccups. *SpringerPlus*, 5(1). <https://doi.org/10.1186/s40064-016-3034-3>.
5. Consults D (2011) Hiccups - etiology and treatment. <http://hslibrary.ucdenver.edu/>. Accessed Sept 2011
6. Dobelle WH (1999) Use of breathing pacemakers to suppress intractable hiccups of up to thirteen years duration. *ASAIO J* 45(6):524–525104.
7. Howes D (2012) Hiccups: a new explanation for the mysterious reflex. *BioEs-says* 34(6): 451-3. DOI 10.1002/bies.201100194
8. Launois S, Bizec JL, Whitelaw WA, Cabane J, et al. (1993) Hiccup in adults: an overview. *Eur Respir J* 6(4):563-75.
9. Hansen BJ, Rosenberg J (1993) Persistent postoperative hiccups: a review. *Acta Anaesthesiol Scand* 37(7):643-6.
10. Davis JN (1970) An experimental study of hiccup. *Brain* 93(4):851-72.
11. Jatoi A (2009) Palliating hiccups in cancer patients: moving beyond recommendations from Leonard the lion. *J Support Oncol* 7(4):129-30.
12. Todisco T, Todisco C, Bruni L, et al. (2004) Chin stimulation: a trigger point for provoking acute hiccups. *Respiration* 71(1):104. DOI 10.1159/000075661
13. Rousseau P (1995) Hiccups. *South Med J* 88(2):175-81.
14. Gilson I, Busalacchi M (1998) Marijuana for intractable hiccups. *Lancet* 351(9098):267. DOI 10.1016/S0140-6736(05)78270-2.
15. Twycross R, Wilcock A, Charlesworth S, et al. (2002) *Palliative care formulary, 2e*. Radcliffe Medical Press, Oxford.
16. Smith HS, Busracamwongs A. (2003) Management of hiccups in the palliative care population. *Am J Hosp Palliat Care* 20(2):149-54.
17. Friedman NL. (1996) Hiccups: a treatment review. *Pharmacotherapy* 16(6):986-95.
18. Guelaud C, Similowski T, Bizec JL, et al. (1995) Baclofen therapy for chronic hiccup. *Eur Respir J* 8(2):235-7.
19. Oshima T, Sakamoto M, Tatsuta H, et al. (1998) GABAergic inhibition of hiccup-like reflex induced by electrical stimulation in medulla of cats. *Neurosci Res* 30(4):287-93.
20. Petroianu G, Hein G, Petroianu A, et al. (1997) Idiopathic chronic hiccup: combination therapy with cisapride, omeprazole, and baclofen. *Clin Ther* 19(5):1031-8.
21. Moretto EN, Wee B, Wiffen PJ, et al. (2013) Interventions for treating persistent and intractable hiccups in adults. *Cochrane Database Syst Rev*. DOI 10.1002/14651858.CD008768.pub2105.
22. Burke AM, White AB, Brill N (1988) Baclofen for intractable hiccups. *N Engl J Med*. 319(20):1354. DOI 10.1056/NEJM198811173192016.
23. Peleg R, Peleg A (2000) Case report: sexual intercourse as potential treatment for intractable hiccups. *Can Fam Physician Medecin de famille canadien* 46:1631-2.
24. Cuthbert S, Goodheart. GJ 'On the Reliability and Validity of Manual Muscle Testing: A Literature Review. *Chiropractic & Osteopathy*, vol. 15, no. 1, 2007. <https://doi.org/10.1186/1746-1340-15-4>.
25. Gemmell H, Miller P. Relative Effectiveness and Adverse Effects of Cervical Manipulation, Mobilisation and the Activator Instrument in Patients with Sub-Acute Non-Specific Neck Pain: Results from a Stopped Randomised Trial." *Chiropractic & Osteopathy*. vol. 18, no. 1, 2010, <https://doi.org/10.1186/1746-1340-18-20>.
26. Gonzales G et al. *Quantum Neurology. Elevate Your Practice with Quantum Neurology, We Make Neurology Easy.*, 2018, <https://quantumneurology.com/>.
27. Bablis P, et al. Stress Reduction via Neuro-Emotional Technique to Achieve the Simultaneous Resolution of Chronic Low Back Pain with Multiple Inflammatory and Biobehavioural Indicators: A Randomized, Double-Blinded, Placebo-Controlled Trial. *J Int Med*, vol. 20, no. 2, 23 Dec. 2021, pp. 135-44. <https://doi.org/10.1016/j.joim.2021.12.001>.
28. Walther DS. *Applied Kinesiology: Synopsis*. 2e. Triad of Health Publishing, 1988; 37-39, 44, 48-51, 76-78, 112, 172, 275, 494-497, 572, 582.
29. Urinary Bladder 58. *Acupuncture.Com - Acupuncture Points - Urinary Bladder UB 58*. <http://www.acupuncture.com/education/points/urinarybladder/ub58.htm>.

30. Revett, T. What Does That Point Do? Large Intestine 11. Synergy Acupuncture & Wellness, Synergy Acupuncture & Wellness, 28 Apr. 2021. <http://synergyacupunctureandwellness.com/blog-feed/2017/6/what-does-that-point-do-large-intestine-11>.
31. Chang F-Y, Ching-Liang L. Hiccup: Mystery, Nature and Treatment." J Neurogastroenterology Motility, vol. 18, no. 2, 2012, pp. 123-30. <https://doi.org/10.5056/jnm.2012.18.2.123>.
32. Kumar A. Gag reflex for arrest of hiccups. Med Hypotheses 2005; 65:1206.
33. Becker DE. Nausea, vomiting, and hiccups: a review of mechanisms and treatment. Anesth Prog 2010;57:150-6.
34. Liu FC, Chen CA, Yang SS, et al. Acupuncture therapy rapidly terminates intractable hiccups complicating acute myocardial infarction. South Med J 2005;98:385-387.106.
35. Hongliang X, Xuemei C, Shizhao H, Chaofeng L. Acupuncture and cupping for treatment of hiccup in cases of cerebrovascular accident. J Tradit Chin Med 2006;26:175-176.
36. Schiff E, River Y, Oliven A, Odeh M. Acupuncture therapy for persistent hiccups. Am J Med Sci 2002;323:166-8.
37. Chang CC, Chang YC, Chang ST, et al. Efficacy of near-infrared ir-radiation on intractable hiccup in custom-set acupoints: evidence-based analysis of treatment outcome and associated factors. Scand J Gastroenterol 2008;43:538-544.
38. Bor S, Mandiracioglu A, Kitapcioglu G, et al. Gastroesophageal reflux disease in a low-income region in Turkey. Am J Gastroenterol 2005;100:759-65.
39. Schuchmann JA, Browne BA. Persistent hiccups during rehabilitation hospitalization: three case reports and review of the literature. Am J Phys Med Rehabil 2007;86:1013-18.
40. Carpenter, M., Human Neuroanatomy, 7th ed Baltimore. Williams & Wilkins. 1976.