CASE STUDY

Resolution of Food Intolerances in a 24-Year-Old Male Undergoing Blair Upper Cervical Chiropractic Care: A Case Report & Review of the Literature

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ABSTRACT

Objective: To report on the positive health outcomes following chiropractic in a young man with food intolerances.

Clinical Features: A 24-year-old male presented with low back pain and food intolerances to wheat, garlic, onion, and dairy. History included hospitalization due to digestive issues, abdominal pain, bloated abdomen, excessive hunger, and depression caused by food intolerance.

Intervention and Outcomes: After completion of history, physical examination, and spinographs, the patient underwent chiropractic care via Blair upper cervical technique. The patient's spinographs noted misalignments at C1 and C5 vertebrae. On the patient's ninth visit, three months under care, he had no digestive related issues and was able to eat foods that were previously deemed intolerant.

Conclusion: This case reports on the resolution of food intolerances following upper cervical chiropractic care. Further research in this area is warranted.

Key Words: *Food intolerance, food sensitivity, food allergy, chiropractic; vertebral subluxation, adjustment, Blair upper cervical chiropractic technique, digestive issues, spinographs, radiographs*

Introduction

Food intolerances are becoming more pronounced throughout the world in all age groups. The idea that "one man's food is another man's poison" is evident as intolerances can cause unfavorable symptoms in certain individuals while being an indulgent snack for another. Determining the exact food culprit can be difficult with food intolerances, as sometimes reactions do not present themselves immediately. Gluten has also become a major offender of food intolerances. However, restaurants, breweries, and food companies across the world have reached out to those who have considered themselves gluten intolerant/sensitive. Food intolerance, or food sensitivity occurs when a person has difficulty digesting a particular food. This can lead to symptoms such as intestinal gas, abdominal pain or diarrhea.[1] Food intolerance and food allergy have long been used interchangeably when used to describe adverse reactions to eating certain foods such as wheat, shellfish, gluten, and dairy. However, there is a key difference between the two.

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Terminology

Food allergy is considered an immune response towards food proteins or a form of food associated with a hypersensitivity reaction. These reactions can include both IgE mediated, non-IgE mediated, or a mixture of both.[2] With food allergies, even a small amount of a certain food can cause adverse and even fatal reactions.[3] Adverse reactions to foods can be broadly divided into those with an immune basis which occurs reproducibly on exposure to a given food and is absent during avoidance.[2] In the presence of food allergies, signs and symptoms can include nausea, vomiting, abdominal cramps, diarrhea, skin reactions, and rectal gas excretion.[3-4]

A relatively small number of foods, which are considered "major" food allergens, account for the majority of food allergic reactions. These include milk, egg, peanut, tree nut, seafood, shellfish, soy, and wheat.[4] In addition, fruit represents the largest reported food group outside of these major allergens to cause problems.[5] 20-30% percent of the adult population reports that they have a food allergy, however, only 3-4% can be ascertained.[4] Living with food allergies has nutritional, psychosocial and other consequences that can negatively impact health and quality of life. For this reason, a proper diagnosis is essential.[5]

Food intolerances, on the other hand are considered non-allergic, non-IgE mediated reactions.[6] They are nonspecific, and the resultant symptoms resemble other common medically unexplained complaints, often overlapping with symptoms found in functional disorders such as irritable bowel syndrome. Food intolerances are more frequently reported than food allergies. They can be difficult to diagnosis and are often obscured because of delayed reactions that may range from a few hours to a few days.[2] Similar to that of food allergies, food intolerances also have adverse reactions. Conversely, these reactions do not cause immune responses, rather neurological and gastrointestinal responses. These symptoms include migraine headaches, depression, fatigue, gastritis, abdominal pain, and diarrhea or constipation.[6] The most common examples of food intolerance are lactose intolerance and celiac disease.[2]

Hippocrates first described lactose intolerance around 400 years B.C., but clinical symptoms have only become recognized in the last 50 years.[7] Lactase deficiency results in unabsorbed lactose being present in the intestinal tract, which has effects that can lead to symptoms of lactose intolerance in susceptible individuals.[8] Approximately 20% of Americans and majority of the world's population malabsorb lactose, but most are asymptomatic.[2] Celiac disease is an autoimmune disorder in which the gastrointestinal tract cannot process gluten, a wheat-based product.

Celiac disease is one of the most prevalent autoimmune gastrointestinal disorders but diagnosis is often delayed or missed. The prevalence of celiac disease in many populations is estimated to be approximately 1% and has been increasing steadily over the last 50 years.[9-10] While celiac disease is often considered a mild disorder treatable with simple dietary changes, in reality celiac disease imparts considerable risks including reduced bone mineral density, impaired quality of life, and increased overall mortality. For these reasons, care of individuals with celiac disease requires prompt diagnosis and ongoing multidisciplinary management.[10]

Epidemiology

Historically, the development of food allergy has primarily been attributed to a disproportionate type 2 helper cell response. Food allergic reactions are mostly IgE-mediated, which is also known as immediate type hypersensitivity (type 1 reaction). During type 1 reactions, the body will release IgE on mast cells, initiating the release of chemical mediators such as histamines and leukotriene.[11] These mediators induce severe kinds of allergy symptoms that are immediate and sometimes life threating.[6, 11]

Food intolerances are usually delayed, with symptoms that are not evident for a few hours or days after the initial exposure.[1] Immunoglobulin G (IgG) antibodies are responsible for these "delayed" reactions and play an important role in both antibody dependent cell-mediated cytotoxicity and immune complex hypersensitivity (type II and II hypersensitivity).[12] Food intolerances and sensitivities trigger an immune response by producing IgG antibodies.

Unlike IgE reactions, IgG antibodies do not directly trigger degranulation of mast cells.[12] These antibodies are elaborated approximately 1 month following antigen recognition. IgG class a half-life in circulation that ranges from 22-96 days and constitutes about 75% of the total serum immunoglobulin pool. The symptoms associated with delayed food allergy target systemic organs, digestive tract, lungs, and the brain.[12]

Gastrointestinal disorders related to food intolerances and sensitivities cause considerable economic and social impact on our society. It is estimated that 11% of the United States population suffers from chronic digestive disease, the prevalence as high as 35% for those 65 and older.[13] Although many gastrointestinal disorders have no proven cause, epidemiological studies have enormously broadened our knowledge of these disorders, and better knowledge always leads to better management.[13] An increasing number of adults may be needlessly avoiding nutritious foods without seeking medical advice, which highlights a public health need for better education and communication to the public about seeking proper diagnosis, especially to differentiate between food allergy and intolerance.[5]

Clinical Testing Considerations

Diagnosis of food sensitivities can be very difficult. However, the antigen leukocyte cellular antibody test (ALCAT) can be used to accurately identify offending foods and other environmental triggers, regardless of the underlying mechanism.[14] The ALCAT test is not an allergy or IgE test, as testing for such allergies include total serum IgE, RAST, and skin prick test.[3] The ALACT test has been available for over 25 years and is a laboratory method for identification of non-IgE mediated reactions to foods, chemicals, and other categories of substances.[15]

The ALCAT test objectively identifies cellular reactions to over 450 foods, chemicals, and other substances for which an individual may have sensitivity. The test is based on the

theory that a substantial increase in leukocyte size and number is characteristic of an intolerant response. Identifying the specific inciting agent facilitates avoidance of that agent, which may lead to a reduction in symptoms. Almost all of the common foods that are analyzed using the test are organic.[6, 15]

The test is performed by taking a sample of blood, which is first treated to remove the red blood cells and tested to determine the baseline number and size of leukocytes and platelets. Measurement of size cell count is performed by the Coulter technique, which is a standard technique in clinical hematology. Next, a small quantity of blood is incubated with multiple agents. Following this procedure, change in the number and size of cells is determined for each exposure. A 10% increase in the size of leukocytes is considered characteristic of a response to an intolerant agent.[6, 16]

The test provides accurate measurements to change in cell size and volume using electronic principles of cell counting and sizing to produce a histogram. The ALCAT test measures three cellular responses: swelling, decreases in cell numbers (degranulation and burst), and shrinking due to potential partial degranulation. From there, the results are categorized into four colored scores (Table 1). Studies have established that the ALCAT test is useful for the identification of substances that cause adverse reactions. The test provides a complementary approach for overall health. However, it should be noted that there is lack of full-length, peer-reviewed publications that evaluate the utility of the ALCAT test.[6, 16]

Another clinical tool that is commonly used is the cytotoxic food sensitivity test. This test monitors the patient's white blood cells and ailment. For this test, 10 mL of venous blood is drawn into a tube containing 1mL of anticoagulant and is gently mixed. The blood is then transferred to a plastic tube and centrifuged for 20 minutes.[17] A panel containing 20-90 different antigens are used against one panel classified as the control antigen. The panels are then covered with a glass cover slip, incubated for two hours, and then read under a light microscope. The results are revealed as either negative or positive. Patients with positive results are counseled and told to eliminate foods from their diet for three months to six months.[17]

Case Report

History

The patient is a 24-year-old African American male. He initially presented to the chiropractor after searching for a practitioner closer to the area in which he had recently moved. The patient had been under Kale knee-chest upper cervical care since 2005 before moving to the new area. The foundational basis of Kale knee-chest is rooted in the work of Dr. William G. Blair. However, the technique incorporates the upper cervical biomechanics in the knee chest posture.[18] The patient presented with low back pain as his main issue due to his occupation as a software developer.

The patient reported that he had been dealing with low back pain "on and off" for years and non-celiac gluten sensitivity for six years. The patient listed that he had food intolerances to wheat/gluten that triggered him to experience manic depression, garlic and onion that affected his concentration and cause an upset stomach, as well as dairy, which caused him to have abdominal pain and gas.

The patient conveyed that he had been "dealing" with his digestive problems by using avoidance of certain foods as a way to prevent issues. The patient listed that he took over the counter multivitamins, fish oil, digestive enzymes supplements, as well as n-acetyl l-cysteine to aid in his depression and tolerance of his symptoms.

The patient also supplied x-rays that were taken in 2005 by his previous chiropractor, which showed an ASL listing on APOM, lateral, and left and right protracto views. However, when analyzing the patient, the doctor suspected that another listing might be present. The doctor informed the patient that she was not able to use the old films and would need new ones to acquire his current listings. The patient understood the doctor's recommendations and new films were ordered.

Examination

History, the most important part of the patient examination was completed prior to the physical examination. Examination of the spine was executed via palpation, joint motion, and observation. Joint fixations with biomechanical alterations of the surrounding areas were noted with hypomobility, and a hard end feel at the levels of C2 and C3. Palpation on the right side of the patient's body showed objective pain and spasm. Findings also included normal vital readings (respiration, blood pressure, temperature, pulse, and head circumference). A Tytron scan revealed right-sided neck heat differences.

Range of motion (ROM) testing revealed 10 degrees of restriction in cervical extension, however the patient experienced no pain. In addition, ROM revealed five degrees of restriction in both right and left sides during lateral flexion. For the lumbar ROM, testing revealed hypermobility in flexion, extension, and lateral flexion (Table 2).

Orthopedic Examinations

The patient tested positive for Kemps on the right as well as cervical distraction bilaterally.

The Kemp test is used to assess the lumbar spine facet joints. To conduct the test, the patient was seated with his arms crossed in front of his chest. The examiner stood behind the patient and stabilized the patient at his left posterior superior iliac spine. The examiner then used her other hand to reach around the patient and grasp his shoulder. From there, she passively brought the patient's shoulder back toward her body and diagonally pushed his shoulder toward the left posterior superior iliac spine. This test was completed bilaterally. Radicular and local pain is a positive finding for Kemp test and suggests lumbar spasm or facet capsulitis as in the case of the patient. The localized pain was reproduced on the right side.

Cervical distraction is used to assess cranial nerve root encroachment or muscular strain/ligamentous sprain. To

conduct this test, the patient was seated with the examiner standing behind him. The examiner grasped the patient's head with both of her hands and gradually exerted an upward pressure while keeping her hands off the patient's temporomandibular joint and ears. A positive finding for this test can either be diminished or absence of cervical pain or an increase in pain. In the case of the patient, he had an increase in cervical pain under his mastoids on both the left and right, which indicated a possible muscular strain, ligamentous sprain, myospasm, or facet capsulitis.

The patient had the following care plan: 28 visits 12 weeks (3 months) and included Infrared thermal scan readings with each visit, neurological evaluation with each visit, specific Blair upper cervical correction (as needed), progress exams and x-rays. The patient's x-rays indicated Phase1 cervical spine degeneration inclusive of the beginning of deforming disc degeneration at the third, fourth, fifth, and sixth cervical vertebrae. Phase 1 is characterized by decreased space between the disc and loss of normal curve. Both features were present in the patient. Moreover, the fifth cervical vertebra had moved posterior toward the neural canal and the patient presented with a left leg length insufficiency of ½ inch.

Blair Upper Cervical Chiropractic Technique

The chiropractic specialty used on the patient was Blair upper cervical chiropractic technique (BUCCT). Dr. Blair (developer) observed various skeletal specimens that led him to conclude that the prevailing view of the misalignment of atlas in relation to the occiput was inaccurate: atlas could not move in a truly lateral direction because the slope of the lateral masses and the condyles created an osseous locking mechanism preventing such motion, and atlas could not rotate in relation to occiput in the coronal plane without causing a gapping of the atlanto-occipital articulations due to the complementary shapes of the articular surface of the occipital condyles and the lateral masses.[19]

In late 1949, Dr. Blair created this unique system centered on imaging misalignments of the cervical vertebrae at their articulations.[20] Blair theorized that if a misalignment of a joint occurs at the articulation, diagnosis imaging of that joint should allow visualization of the misalignment.[20] The major premise of the Blair technique is that (1) asymmetry of structures is normal, (2) subluxation occurs at the articulations, (3) posterior and anterior are the primary direction of atlas misalignments and, (4) the body accomplishes the correction and manages postural and functional changes.[20]

BUCCT is composed of specific analysis criteria that are tailored to the cervical adjustment to accommodate each individual patient and their personal anatomical situation.[19] Blair technique uses three indicators/tests to determine a patient's subluxation presentation pattern (SPP) on each visit. The SPP informs the practitioner on misalignments, how to adjust, when to adjust, and the segment involved.[20]

The Blair upper cervical protocol includes:

Thermography scans for pattern analysis using heat readings:

Thermography uses infrared sensing devices to evaluate the relative levels of heat emitted through the skin. The temperature of tissues is determined by a number of factors, including metabolic activity, perfusion and environmental temperature.[21] Thermal scans are stable in the short-term (3-10minutes) and reliability was found to be very high.[20]

Functional leg length deficiency in the prone positions:

Spinal balance leg length measurements are used as indicators in helping chiropractors determine spinal subluxations. The leg length inequality indicators (LLIIs) are used for obtaining information on how the patient presents while subluxated. With the LLII procedure, Thompson-Derefield, cervical syndrome, and modified Prill leg checks can be utilized. [20]

Specific spinography regime in order to see the misalignment at the joint

Spinographs are x-rays taken with precision aligned equipment with the patient assuming natural head carriage and posture. The BUCCT uses eight spinographic views.

1. Base Posterior
2. A-P Open Mouth
3. A-P Cervical
4. Lateral cervical
5. Left lateral stereo cervical
6. Right lateral stereo cervical
7. Left Blair protracto view (Oblique nasium)
8. Right Blair protracto view (Oblique nasium) [20]

Analysis of Blair Spinographs to obtain listing

Once spinographs are completed, they are used to obtain either anterior superior or posterior inferior listings for the first four cervical vertebrae (C1-C4). [20]

Customized adjustment using adjustment/correction procedures

Dr. Blair used the angles and listing from the spinograph to establish the Blair Adjustment/Correction procedures. Each individual received a "customized" adjustment specifically related to his or her needs. This included side posture adjusting, Toggle-Torque for anterior superior misalignments and toggle adjustment without recoil for posterior inferior alignments. [20]

Post adjustment rest period and post thermography

After the practitioner adjusts the subluxated vertebra, the patient should rest for at least 10 minutes. The rest period is centered on the history of the upper cervical adjustment according to B.J. Palmer. [20] It was required of his patients to rest for two hours, as he believed the patients innate needed time to re-establish itself in the normal position. He found that during the resting period, the patient would maximize the holding of their adjustment. [20]

Blair radiographic analysis

As stated previously, before an adjustment could be

administered, specific spinography x-rays were completed.

While the patient was seated in his natural head position, the practitioner placed a dot on the symphysis menti (line of junction where the two lateral halves of the mandible are fused) and episternal notch (v-shaped notch located between neck and collar bone) with a grease marking pencil. Then the patient was asked to turn his head to the right, back to center, left, and back to center while a vertical line was recorded where the menti stopped. The vertical lines were subsequently compared to the menti on both sides in relationship to the dot on the episternal notch. The position in which the head stopped at least 2 out of the 3 measurements was noted as the neutral head carriage position. This mark was used to make sure the patient stayed in neutral position while other spinographs were performed.

The first view completed was the base posterior (BP) spinograph. This view was used to measure the convergence angles of the occipital-atlantal (OA) articulation. BP views allow the practitioner to study the asymmetry of the condyles, foramen magnum, and spinal canal as well as the formation of the posterior arch of atlas and transverse processes of atlas.

This view is important in determining the most appropriate adjustment in relation to the occipital condyle convergence. It should be noted that this is the only film where the patient may not be in natural head carriage position. When taking this view, there should be little to no rotation or head tilt for it to be an acceptable BP spinograph. Lead ear markers were placed in the patient's ears. These markers created an earplug line, which is a true measurement with the convergence angles in relationship to the condyle-lateral masses. [20] Here, no more than ¼ inch difference should be recorded. If the measurement is within this limit, the convergence angel can be accurately calculated. [20]

The convergence angle is the angle of longitudinal axis of the occipital condyle lateral mass structure. The average convergence angle is between 18^0 and $33^{0.}$ [20] To create the convergence angle, the doctor etched a line through the anterior and posterior condyles. This line was drawn through the orbits and the straight edge is slid out to the end of the lateral edge of each condyle with a line is drawn at the orbit. This line is called the viewing line and if it intersects the nasal bones, a stereo protracto view may be necessary. From here, the ear marker line was constructed by drawing line across the skull to connect the lead ear markers.

Next, the middle line was scribed perpendicular to the ear marker. [20] The right and left convergence angles were found by measuring from the middle line. The right convergence angle is to the right of the middle line posterior to the ear marker and to the left of the ear marker line when measured anterior to the ear marker line. The left convergence angle is measured to the left of the ear middle line posterior to the ear marker line, and to the right of the middle line when measured anterior the ear marker line.

From here, a sagittal line was drawn perpendicular to the earplug line, allowing a reference to the occipital condyle angle. The left and right occipitoatlantal (OA) articulation was outlined, and the convergence angle of each articulation was drawn down the long axis of the joint, creating both left and right convergence angles.[22] Once the angles are labeled, the orbits are divided into four equal quadrants above the patient's eyebrow between the canthus of the eye (location where the upper and lower eyelid meet) and the glabella (skin between the eyes and above the nose). [23] A dot is marked in the quadrant in which the patient's convergence angle runs through. This marks the vertical central ray used when completing the Blair protracto view. [20]

The next films to be analyzed were the anterior-posterior open mouth (APOM), anterior-posterior (AP) cervical, and lateral cervical views. The purpose of the APOM is to study the lateral deviation of the neural canal and osseous asymmetry of the occipito-atlanto-axial articulating segments. Here, the practitioner can assess the integrity of the axis dens as well as the posterior arch of atlas and transverse processes. Additionally, the APOM determines which lateral stereo view is best to visualize the patient's misalignments and the AP cervical view is completed for pathology. [20, 22-23]

The patient's stereo view (SV) intersected the nasal bones. Therefore, it was essential to assess the patient's SV to obtain listings at axis and the lower cervical vertebrae. [20]

Lastly, the Blair protractoview (PV) completed our spinograph films. This view was used to distinctly see the OA articulation. With the PV, the x-ray's central ray is in line with the occipital condyle convergence angle. Head clamps were placed on the patient to the setting required for the perfect angle of the condyle as established on the BP view. [20] Here, the patient's head is rotated to match the convergence angle, the PV view shows the lateral edge of the lateral mass/occipital condyle articulation and demonstrates the position of the articulating structures.[22]

The atlas lateral mass can misalign either anterior or posterior along the axis of the corresponding occipital condyle. [22] To help practitioners distinguish between the two movements, the principle of Blair states that if atlas misaligns anterior, the lateral edge of the lateral mass will appear as an overlap or lateral to the condyle on the PV view. Contrary, if atlas has misaligned posterior to the occipital condyle, the lateral edge of the lateral mass will appear as an underlap or medial to the condyle on the PV. Furthermore, if the lateral mass and condyle are juxtaposed, no misalignment will be seen. [20,22] Depending on the degree of the patient's convergence angle determines if a lateral stereo view is required. [20]

The patient's spinographs per Blair upper cervical chiropractic technique protocol can be found in Figures 1-9 (Appendix). The patient was found to have cervical listings of ASL (anterior-superior-left) and PIL (posterior-inferior-left) 49/33 (convergence angle degrees) for C1 (atlas) and PRI 20 (posterior-right-inferior) for C5.

The patient demonstrated a double atlas. This listing did not make the correction more or less difficult, but rather the categorization of this pattern of misalignment was important in assisting the practitioner in reduction of the misalignment post-adjustment. No matter the type of misalignment, the goal is "not to diagnose or treat diseases or conditions, but to analyze and correct vertebral subluxations in an accurate,

precise and specific manner to allow the body's intelligence, to mend, repair and maintain health from within."[19]

Chiropractic Intervention and Outcome

In total, there were ten adjustments performed over a three-month period using the Blair upper cervical chiropractic technique. The "adjustment" is a tool used by the chiropractor for correcting a subluxation. A subluxated vertebra has moved out of juxtaposition in a three-dimensional torqued directional fixation. Therefore, the adjustment must use a three-dimensional torqued thrust to unlock the subluxation. Upon completion of the initial exam, the patient received a report of findings as well as recommendations. At this time, the doctor also explained the patient's double atlas listing as seen on the protracto view.

The Prill leg checks were also used to assess the patient during his visits. Prill incorporated the kinesiology principle that suggests that spinal segments biomechanically work together. Blair uses this protocol to assess which segment of the spine may be causing nerve interference. To test for the patients C1 subluxations, the doctor completed the vertical Prill leg check.

The doctor began by putting pressure against the posterior leg while the patient attempted to raise his thigh off the table. The patient's fulcrum of movement was at the femur head while his hamstrings were contracted. The patient then held this pressure for 3-4 seconds and relaxed. [20] A left short leg was noted. The doctor also confirmed this misalignment by using a stress test.

First, C1 was stressed in the direction of the subluxation. Once the legs were balanced, the segment was stress in the direction of misalignment. The leg length became uneven when the doctor was on the subluxated segment. After correcting the patient, he was rested for 20 minutes and a post thermography scan was completed. Depending on the patient's presentation each visit, determined if the doctor corrected C1, C5 or both.

The majority of the patient's visits resulted in the patient receiving an adjustment to atlas (C1). After the fourth adjustment, the patient did not present with a misaligned vertebra at C5. The doctor reported that the patient was holding his adjustment at that particular segment. To correct the misaligned C1 vertebra, the doctor performed the following procedure:

1. Patient was properly placed on side posture table; lying on his right side
2. Lateral, BP, right and left PV films were placed in view box for doctor to reference
3. Patient's horizontal vision was parallel to shoulder end of the headpiece
4. Doctor contacted left transverse process of C1 by using finger of right hand
5. Excess skin tissue was pulled over the transverse process inferiorly and anteriorly.
6. Still maintaining contact, the doctor assumed a comfortable stance in front of the patient and positioned her left pisiform (carpal bone commonly used in chiropractic adjustments) over the contact finger with her arm as near to 180 degrees as possible.
7. With her feet stationary, the doctor maintained pisiform contact starting with the posterior-inferior left (PIL) correction until her arm was 90° to the right slope angle. Immediately following was the correction of the anterior-superior left portion (ASL) from 90° to slope angle to completion of 180 ° clockwise Blair-Toggle-Torque with a pisiform pull.

   Note: Blair-Toggle-Torque is used to unlock the subluxation of a patient. Toggle is a term used for a joint that has two arms and come together at an angle. When a force is applied, the arms straighten, producing greater force at the end of the arms. Torque is a corkscrew like action, either clockwise or counterclockwise, used to unlock the three-directional subluxation. Torque also allows for a quicker adjustment procedure. [20]

8. The patient was rested for 20 minutes and post thermography scans were taken.

Each week, the patient was carefully examined by the doctor to locate misaligned vertebrae and any other subluxated regions. After the ninth visit, the patient revealed to the doctor that he had not had any episodes of abdominal pain, depression, or concentration issues after eating foods that he usually avoided.

Patient's Experience

The patient stated that he went out with his family for dinner and indulged in a spicy dish that he would normally avoid. The patient explained to the doctor that the dish contained garlic and onion, and normally, these foods would cause him to get an upset stomach and experience manic depression. The patient reported that when holding his correction, he did not experience issues when digesting outliner foods that normally caused him to experience unfavorable symptoms.

Furthermore, he noticed that he never got an upset stomach or felt a change in his mood anymore. When the patient presented for his weekly visit, he told the doctor he was delighted to be able to eat his spicy foods again. The patient also reported to the doctor that he started to eat foods that contained dairy and experienced no symptoms. The patient rambled off a list of foods to the doctor that he could not wait to try as chiropractic care had helped him find his love for food again.

Discussion

It is well known that deficient intake of protein, calories, vitamins, or minerals leads to a variety of nutritional disorders. It is also known that food contaminated with toxic materials may cause illness. However, it is not general knowledge that the nutrient components of food may be toxic for certain people, causing illness or aggravating a pre-existing illness.[24]

The mechanism behind food intolerance is regarded as one of the greatest enigmas in modern medicine. Its multidisciplinary modalities, sharing properties with immunological, environmental, and psychosomatic reaction patterns, makes the grouping and individual approach rather complex, both regarding classification of disease, diagnosis and therapy.[25]

Food intolerance is a non-immunologically mediated reaction due to various factors comprising toxic contaminants, pharmacological properties, metabolic factors, or simply, undefined reasons.[26] Food intolerances are "true" when there is evidence of abnormal reaction to food. Food intolerances are considered reproducible on ingestion of the specific food even when the food is disguised and unrecognized. Moreover, there is no psychological connection.[27]

Food intolerances are more common than food allergies.[28] Based on a self-reporting questionnaire, 33% of a population reported on food related symptoms, and consequently regarded themselves as food intolerant individuals. [26] Out of 33% population, 45% stated that they avoided foods due to "medical" reasons. According to the survey, medical reasons represented foods that participants were advised to avoid as a result of an established medical disorder.[26] The study also concluded that out of the 560 persons to take the survey, 86 of them had not taken medical advice about their condition. This suggests that the frequency of adverse reactions to foods may be higher than medical records have reported.[26]

For practitioners today, food intolerances are an important differential diagnosis to rule out specific organic and functional diseases. Proper evaluation should be performed in collaboration with a dietician to make sure specific diseases have been ruled out. [25] It is estimated that 5-20% of respected medical practitioners have extensive experience of patients suffering from food intolerance.[28]

Mia Nelson conducted a semi-structured interview in 2008 regarding general practitioners (GPs) and their experience with patients who reported food intolerances.[29] The interview was considered semi-structured because the GPs were asked specific questions to guide the interview to investigate a wide range of experiences. Questions asked were: What do you understand by food intolerance? Have you seen patients experiencing it? What did you do? How do you manage patients that believe they have food intolerance? What do you think the patients want from you? Who gets food intolerance? Why do the patients have food intolerance? How do you feel about managing patients who believe they have food intolerance? [29]

It was concluded, that overall, GPs felt that food intolerance was a broad term. The GPs felt that they could allow the patients to frame their own experience and work towards the relief of their symptoms in the absence of a diagnosis. Most GPs saw food intolerance as a benign issue and needed no medical intervention. In order to alleviate food intolerances, GPs stated that treatment necessitated lifestyle changes, not medical intervention.[29] Nevertheless, the GPs showed a willingness to engage with their patients on ways to help them overcome their food intolerances and symptoms. [29] Although GPs were eager to help their patients, it was shown that more than 60% of patients would be better off with the advice of an experienced dietician.[25, 29]

The use of herbs was also documented as a means of treating food intolerances. The patient in the case study sought help for her food intolerance via a herbalist. The herbalist reported that herbs offered a long-term strategy that did not rely on elimination and restrictive diets. It was noted however that the progress in this case was unusually slow because the herbs had to be introduced gradually to the patient to avoid any reaction.[30] Herbs used for this patient included barberry root bark, pot marigold, ribwort plantain, nettle leaf, slippery elm, liquorice root, meadowsweet, and huang-qi.[30] The case also explained that the used of herbs can also address any underlying problems by maintaining intestinal barrier integrity, improving digestive function, reducing stress responses and normalizing immune function.[30]

The most popular treatment protocol in patients with food intolerance is aversion.[31] Avoiding foods in which the patient has an adverse reaction has been used as a means of prevention. Predictive testing is another method of primary prevention because it enables risks to be identified and controlled. Labeling is also a means of prevention because it enables individuals to avoid foods to which they are intolerant.[31] Dietary exclusion of foods are said to improve a multitude of symptoms such as abdominal complaints, and behavior disturbances.

Limitations

This case study does have limitations. First, this patient had been under the care of a Kale Knee Chest doctor for ten years prior to seeing his new Blair Upper Cervical practitioner. Blair Upper Cervical and Knee chest are very similar in their approach, as upper cervical (UC) practitioners are primarily concerned with finding and correcting upper cervical misalignments.[32]

It should be noted, that while both techniques are UC based, Knee Chest does not uses palpation based on tenderness, spasm, and restriction nor functional leg length inequality as a means of assessment. Blair protocol used both palpation and leg length inequality for the assessment. Moreover, none of the literature on food sensitivities resolution was about Blair upper cervical chiropractic technique, or any other chiropractic technique for that matter.

Lastly, despite the commonality of food intolerances, there was surprisingly little published research on the topic using chiropractic as a resolution. Majority of cases focused on children under the age of 10 who experienced milk intolerances. It is possible that relevant research was not reviewed and considered because it was not peer-reviewed or predominantly addressed food allergies (IgE reactions) related to nuts, wheat, eggs, and seafood.

Conclusion

It has been over 10 years since the patient in this case study has been under upper cervical chiropractic care. After nine adjustments under the Blair upper cervical chiropractic technique, the patient disclosed that he could eat foods off his restricted list without any adverse reactions. For the last two

months, the patient has been able to eat the foods that he once loved yet caused him much distress. While most patients with food sensitivities use avoidance as a technique to prevent symptoms, this patient is now indulging in his "sensitive" food list.

This paper confidently helps both the chiropractic and medical profession to consider an alternative to food intolerances, other than avoidance. This condition has afflicted many people and this case study offers an approach that allows patients to eat foods that they enjoy without fear of an adverse reaction.

References

1. American Academy of Allergy Asthma & Immunology. [Internet]. [Place unknown]: [Publisher unknown] [Date unknown]; 2015 [cited 17 November 2015]. Available from: http://www.aaaai.org/
2. Turnbull JL, Adams HN, Gorard DA. Review article: the diagnosis and management of food allergy and food intolerances. Aliment Pharm Ther. 2015 Jan;41(1):3-25.
3. Pasqui F, Poli C, Colecchia A, Marasco G, Festi D. Adverse Food Reaction and Functional Gastrointestinal Disorders: Role of the Dietetic Approach. J Gastrointestin Liver Dis. 2015 Sep;24(3):319-27.
4. Ho MH, Wong WH, Chang C. Clinical spectrum of food allergies: a comprehensive review. Clin Rev Allergy Immunol. 2014 Jun;46(3):225-40.
5. Verrill L, Bruns R, Luccioli S. Prevalence of self-reported food allergy in U.S. adults: 2001, 2006, and 2010. Allergy Asthma Proc. 2015 Nov;36(6):458-67.
6. Pietschmann N. Food Intolerance: Immune Activation Through Diet-associated Stimuli in Chronic Disease. Altern Ther Health Med. 2015 Jul-Aug;21(4):42-52.
7. Lomer MC, Parkes GC, Sanderson JD. Review article: lactose intolerance in clinical practice--myths and realities. Aliment Pharm Ther. 2008 Jan 15;27(2):93-103.
8. Deng Y, Misselwitz B, Dai N, Fox M. Lactose Intolerance in Adults: Biological Mechanism and Dietary Management. Nutrients. 2015 Sep 18;7(9):8020-35.
9. Kabbani TA, Vanga RR, Leffler DA, Villafuerte-Galvez J, Pallav K, Hansen J, Mukherjee R, Dennis M, Kelly CP. Celiac disease or non-celiac gluten sensitivity? An approach to clinical differential diagnosis. Am J Gastroenterol. 2014 May;109(5):741-6.
10. Leffler D. Celiac disease diagnosis and management: a 46-year-old woman with anemia. J Am Med Assoc. 2011 Oct 12;306(14):1582-92.
11. Moriyama T. Diversity of Food Allergy. J Nutr Sci Vitaminol. 2015;61:106-8.
12. Mullin GE, Swift KM, Lipski L, Turnbull LK, Rampertab SD. Testing for food reactions: the good, the bad, and the ugly. Nutr Clin Pract. 2010;25(2):192-8.
13. Smith ER. Epidemiology of gastrointestinal disorders. Can Fam Physician. 1978 Oct;24:1007-11.
14. Deutsh RD. The Right Stuff: Use of ALCAT Testing to Determine Dietary Factors Affecting Immune Balance, Health, and Longevity. 10th ed. Klatz R, Goldman R, editors. Chicago: American Academy of Anti-Aging Medicine; 2007.
15. Cell Science System [Internet]. [Place unknown]: [Publisher unknown] [Date unknown] Food Sensitivity Testing with the Alcat Test; 2015 [cited 18 November 2015]. Available from: https://cellsciencesystems.com
16. Blue Cross Blue Shield. Policy: Antigen Leukocyte Cellular Antibody Test (ALCAT). Alabama: Medical Policy #165; 2015. p. 1-7.
17. Jackson JA, Riordan, HD, Neathery S, Guinn, C. The cytotoxic food sensitive test: an important diagnostic tool. J Orthomol Med. 1995;10(4):60-61.
18. KCUCS.com [Internet]. [Publication unknown]: [Publisher unknown] [Date unknown] [cited 2015 Dec 1]. Available from: http://www.kcucs.com
19. Blair Upper Cervical Chiropractic Society, Inc. [Internet] [Publication unknown]: [Publisher unknown] [Date unknown]. 2014 [cited 2015 Nov 6]. Available from: http://www.blairchiropractic.com
20. Hubbard T. Blair upper cervical technique. 5th ed. Davenport, IA: (published by the author); 2007.
21. Triano JJ, Budgell B, Bagnulo A, Roffey B, Bergmann T, Cooperstein R, Gleberzon B, Good C, Perron J, Tepe R. Review of methods used by chiropractors to determine the site for applying manipulation. Chiropr Man Therap. 2013 Oct 21;21(1):36.
22. Hubbard TA, Vowles BM, Forest T. Inter- and intraexaminer reliability of the Blair protractoview method: examination of a chiropractic radiographic technique. J Chiropr Med. 2010 Jun;9(2):60-8.
23. Drake, RL. Gray's anatomy for students. 2nd ed. Philadelphia: Churchill Livingstone/Elsevier; 2010.
24. Herman RH, Hagler L. Food intolerance in humans. Western J Med. 1979 Feb;130(2):95-116.
25. Vatn MH. Symptoms and manifestations of food intolerance. Environ Toxicol Phar. 1997 Nov;4(1-2):51-326.
26. Bender AE, Matthews DR. Adverse reactions to foods. Br J Nutr. 1981 Nov;46(3):403-7.
27. Young E. Prevalence of intolerance to food additives. Environ Toxicol Phar. 1997;4(1-2):111-14.
28. Brostoff J, Challacombe SJ. Food allergy and intolerance. 4th ed. East Bourne, England. Bailliere Tindall; 1987.
29. Nelson M, Ogden J. An exploration of food intolerance in the primary care setting: the general practitioner's experience. Soc Sci Med. 2008 Sep;67(6):1038-45.
30. Owen, N. An herbal therapeutic approach to food intolerance and immune dysfunction: An illustrative case history, J Herb Med. 2011 Nov;1(2):53-63.
31. Hodge L, Swain A, Faulkner-Hogg K. Food allergy and intolerance. Aust Fam Physician. 2009 Sep;38(9):705-7.
32. Woodfield HC 3rd, York C, Rochester RP, Bales S, Beebe M, Salminen B, et. al. Craniocervical chiropractic procedures - a précis of upper cervical chiropractic. J Can Chiropr Assoc. 2015 Jun;59(2):173-92.

Appendix

Score	Evaluation	Level of intolerance
Green	Identifies a nonreactive item	No reaction; acceptable food
Yellow	Identifies a equivocal reaction	Mild; Avoid food if possible
Orange	Identifies a positive reaction	Moderate; avoid for minimum of 3-6months
Red	Identified a strong positive reaction	Severe: avoid for minimum of 6 months

Table 1. Scores and evaluation criteria of ALCAT results

	Cervical	Lumbar
Flexion	60º without pain	30º without pain
Extension	50º without pain	40º without pain
Left lateral flexion	40º without pain	35º without pain
Right lateral flexion	40º without pain	40º without pain

Table 2. Initial examination of patient before first chiropractic adjustment—Cervical and Lumbar ROM

Figure 1. Base Posterior View: Used to measure the convergence angles of the occipital-atlantal (OA) articulation. Primarily allows the practitioner to study the asymmetry of the condyles, foramen magnum, and spinal canal as well as the formation of the posterior arch of atlas and transverse processses of atlas.

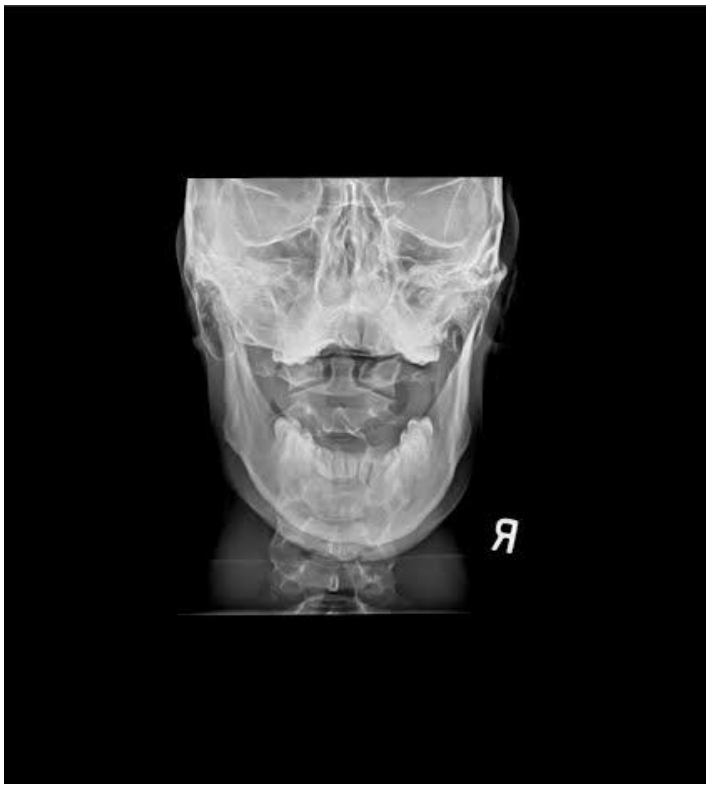

Figure 2. Anterior-posterior open mouth (APOM): Primary purpose is to assess lateral deviation of the neural canal and osseous asymmetry of the occipito-atlanto-axial articulating segments. In addition, APOM is used to assess the integrity of the axis dens as well as the posterior arch of atlas and transverse processes. This film also determines which lateral stereo view to complete.

Figure 3. Neural Lateral cervical view

Figure 4. Left Protractoview: Using 30 and 15 degree tilt, this view shows the lateral edge of the lateral mass/occipital condyle articulation and demonstrates the position of the articulating structures. Also used distinctly to display OA articulation; classified as overlap or underlap.

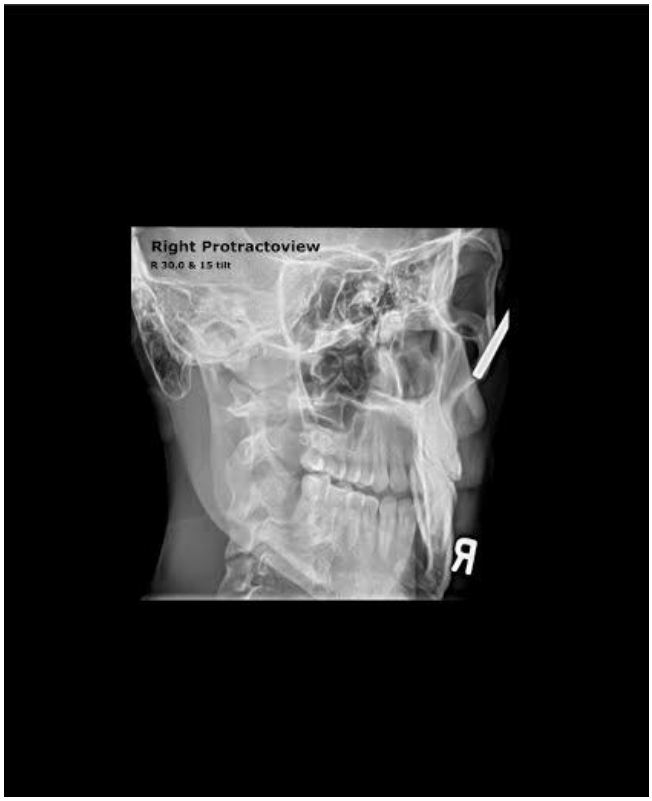

Figure 5. Right Protractoview: Using 30 and 15 degree tilt, this view shows the lateral edge of the lateral mass/occipital condyle articulation and demonstrates the position of the articulating structures. Also used distinctly to display OA articulation; classified as overlap or underlap.

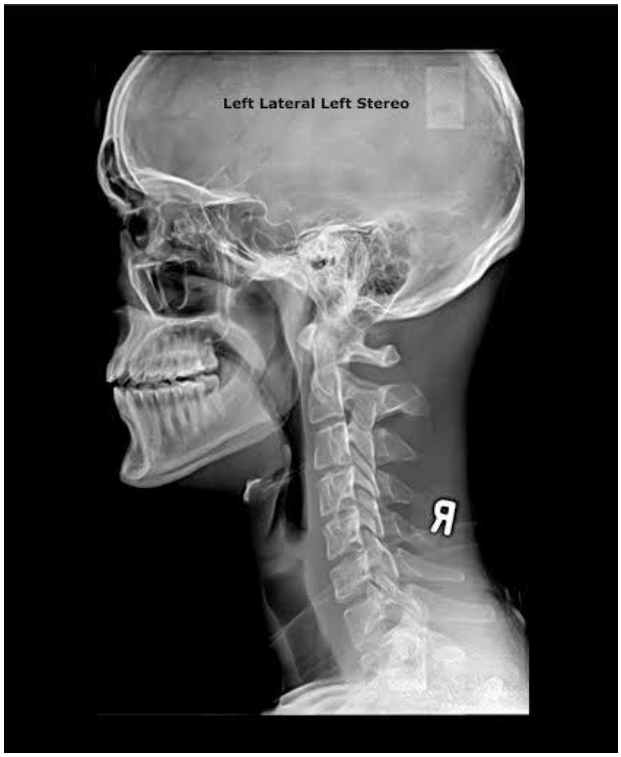

Figure 6. Left lateral Left stereo view: used to obtain listings at axis and the lower cervical vertebrae.

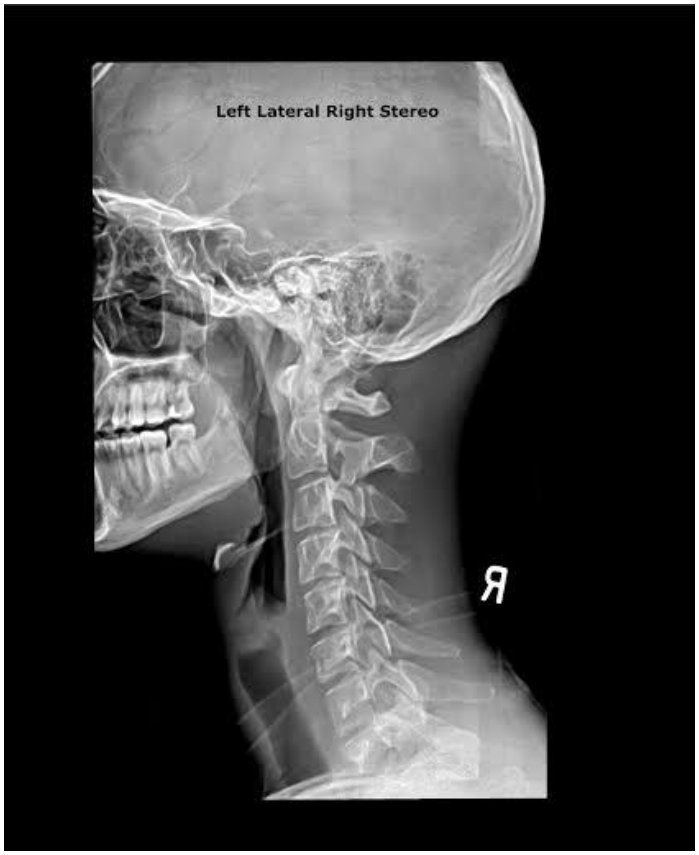

Figure 7. Left lateral right stereo view: used to obtain listings at axis and the lower cervical vertebrae

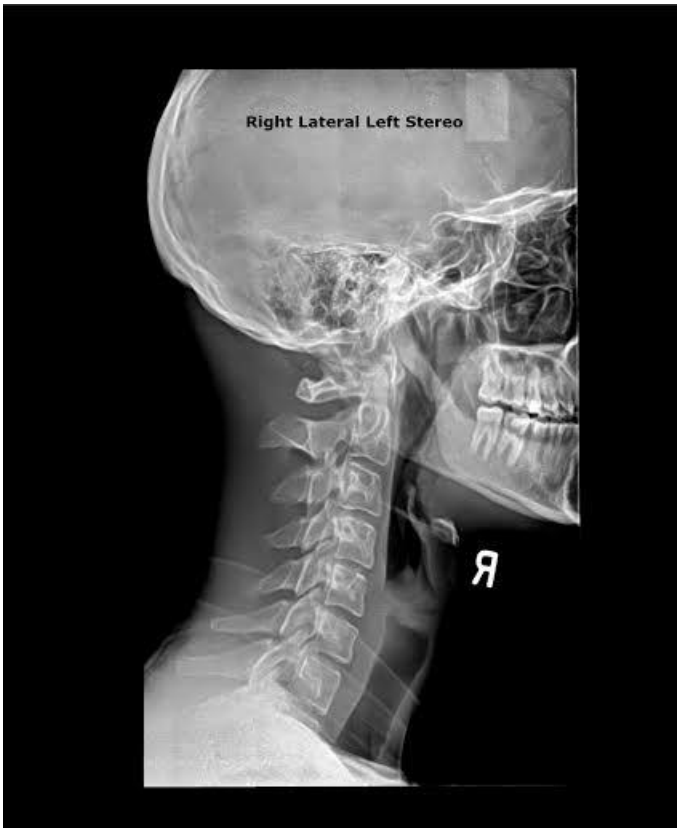

Figure 8. Right lateral left stereo view: used to obtain listings at axis and the lower cervical vertebrae

Figure 9. Right lateral right stereo view: used to obtain listings at axis and the lower cervical vertebrae