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CLINICAL EVIDENCE

Improvement in gastrointestinal symptoms concomitant with Knee Chest Upper Cervical Chiropractic care: A Case Report

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Background: A 39-year-old male IT engineer presented with a five-year history of gastro-oesophageal reflux, gastritis, and bloating, alongside a co-existing medical diagnosis of cardiac ectopy, despite prior medical investigation and treatment including endoscopy, antacid therapy, and dietary modification. Examination revealed postural asymmetry, restricted cervical range of motion, a weight-bearing asymmetry, a functionally short leg that corrected with cervical rotation, and position-specific upper limb weakness.

Intervention: The patient underwent a course of Knee Chest Upper Cervical (KCUC) Chiropractic care, with correction of a C1-right listing identified using postural, weight-bearing, and thermographic assessment and confirmed radiographically.

Outcomes: Serial reassessment showed normalisation of postural, weight-bearing, and cervical range-of-motion asymmetries, alongside a reduction in paraspinal thermographic asymmetry. The patient reported substantial improvement in bloating, digestion, and general wellbeing, corroborated by a recorded patient testimonial. His co-existing cardiac ectopy was not reassessed as part of this report.

Conclusion: This case adds to a small body of literature linking upper cervical and vagal function to gastrointestinal symptoms, and supports further research into upper cervical chiropractic care as a component of management for treatment-resistant gastrointestinal presentations.

Indexing Terms: Chiropractic; Subluxation; gastro-oesophageal reflux; Knee Chest Upper Cervical; vagus nerve.

Background

Gastro-oesophageal reflux disease (GERD) and functional dyspepsia are highly prevalent gastrointestinal conditions, and a substantial proportion of affected patients continue to report bloating, postprandial

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discomfort, and sleep disturbance despite acid-suppressive therapy and dietary modification. The vagus nerve is the principal parasympathetic conduit of the gut-brain axis, modulating gastric motility, secretion, and visceral sensation, and disruption of vago-vagal reflex signalling has been implicated in functional gastrointestinal disorders such as functional dyspepsia, in which patients demonstrate altered vagal afferent processing of gastric distension and impaired gastric accommodation. (1, 2)



Anatomically, the vagus nerve exits the jugular foramen and travels through the neck in close proximity to the upper cervical spine before descending through the thorax to the abdominal viscera, and vagal outflow originates from brainstem nuclei situated immediately adjacent to the atlanto-occipital junction. In an experimental model of functional dyspepsia, altered vagal afferent signalling from the stomach was shown to drive both visceral hypersensitivity and associated affective symptoms, implicating vagal dysregulation as a contributor to functional gastrointestinal symptoms. (2) This anatomical and physiological relationship raises the possibility that upper cervical dysfunction, situated close to the upper spinal cord and brainstem origin of the vagus nerve, could plausibly influence gastrointestinal symptoms in some patients, though this remains a hypothesis rather than an established mechanism.

A separate body of chiropractic literature has examined the relationship between cervical adjustment and autonomic nervous system activity. Adjustment of the cervical spine has been associated with a measurable parasympathetic shift in healthy volunteers, attributed to the proximity of the upper cervical segments to brainstem autonomic centres. (3) Case reports have also described improvement in gastrointestinal symptoms, including cyclic vomiting and gastro-oesophageal reflux, concomitant with upper cervical or cervical chiropractic care, though this literature remains limited to isolated cases. (4, 5) We report a case of longstanding, treatment-resistant gastro-oesophageal reflux and gastritis, in a patient with a co-existing diagnosis of cardiac ectopy, who underwent a course of KCUC chiropractic care. Written informed consent was obtained from the patient for publication of this case report, including a recorded video testimonial quoted herein.

Patient information

A 39-year-old male information technology engineer presented for Chiropractic consultation in September 2020 with a five-year history of gastro-oesophageal reflux and associated symptoms.

History of presenting complaint

The patient's symptoms began approximately five years prior to presentation with gastro-oesophageal reflux. The condition was initially marked by an episode of blood in the stool, prompting endoscopic investigation and a course of medication; rectal bleeding resolved, but the patient continued to experience torso pain, for which antacid therapy was recommended. Bloating and abdominal pain persisted despite this management. Symptoms were reported as somewhat better with salad-based meals, self-massage of the abdomen, and sleeping on a firm mattress, and worse with rapid ingestion of large volumes of water, at bedtime, during periods of

anxiety, with poor posture or prolonged desk-based work, and when lying supine; specific food triggers were inconsistent and difficult for the patient to identify.

Sleep was affected by abdominal discomfort that was worse at bedtime and in the supine position, with symptoms improving only after approximately eight hours of sleep. The patient also carried a separate medical diagnosis of cardiac ectopy (premature ventricular contractions), for which he attended regular cardiology follow-up and had previously used an ambulatory cardiac monitor; this diagnosis is reported here as relevant medical history and was not formally reassessed as part of chiropractic care. Gastrointestinal symptoms were reported to respond partially to garlic and ginger supplementation.

> At presentation, the patient's goals were improved sleep quality, more consistent tolerance of food, and general improvement in wellbeing; he described feeling frustrated by the persistence of his symptoms and motivated to address them.

The patient's working medical diagnoses, established by his treating gastroenterologist and cardiologist respectively, were gastro-oesophageal reflux disease, gastritis, and cardiac ectopy. He reported no relevant prior surgery, and no current medication (previously prescribed antacid therapy had been discontinued). Prior management consisted of medication, dietary elimination, and self-massage of the abdomen, with only partial and inconsistent relief. No relevant familial or hereditary conditions were reported. The patient denied tobacco, alcohol, or substance use. He was physically active, weight training and cycling three times per week.

Physical examination

Postural assessment revealed a low right shoulder and anterior head carriage. Cervical range of motion was restricted in left lateral flexion, extension, and left rotation, without associated pain. Cervical distraction and cervical compression testing were both negative. Static bilateral weight-bearing assessment showed a 4.1 kg side-to-side discrepancy (39.8 kg left, 35.7 kg right). Blood pressure was 128/100 mmHg with a pulse of 83 beats per minute. Prone leg length assessment showed a functionally short left leg of approximately 1.5 cm that normalised with right cervical rotation, suggesting a cervical rather than structural origin.

Upper cervical manual muscle testing demonstrated weakness on shoulder abduction specifically when the head was turned right in combined rotation and extension (looking up), with no weakness elicited in other head positions; this position-specific pattern, together with the corrected leg length and absence of pain on orthopaedic provocation testing, comprised the objective examination findings, which were assessed and recorded as a single grouped set of clinical indicators. No focal neurological deficit was identified.

Diagnostic imaging

Upper cervical radiographs (lateral cervical, base posterior, and anteroposterior open-mouth views in neutral and left/right lateral flexion) were obtained on 23 September 2020 (Figures 1 -

5). Radiologist interpretation reported loss of the normal cervical lordosis with straightening of the cervical spine and mild osteophytosis of the vertebral bodies, without loss of vertebral height or significant narrowing of the disc spaces. Computerised infrared paraspinal thermographic scanning was also performed at baseline as part of standard KCUC workup (Figure 6).

Thermographic findings showed asymmetric thermal patterns in the upper cervical paraspinal region, consistent with underlying nerve irritation; together with the postural, weight-bearing, and leg length findings described above, these clinical indicators identified the upper cervical listing, which was subsequently confirmed by radiographic analysis (C1 on the right). No magnetic resonance or computed tomography imaging was obtained; the patient's gastrointestinal and cardiac symptoms had already been medically investigated and organically excluded by his treating gastroenterologist (via endoscopy) and cardiologist (via ambulatory cardiac monitoring) prior to chiropractic consultation, and no red-flag features were present to warrant central nervous system imaging at the time.

Figure 1: Lateral cervical radiograph showing loss of the normal cervical lordosis with straightening of the cervical spine. Date of imaging: 23 September 2020.

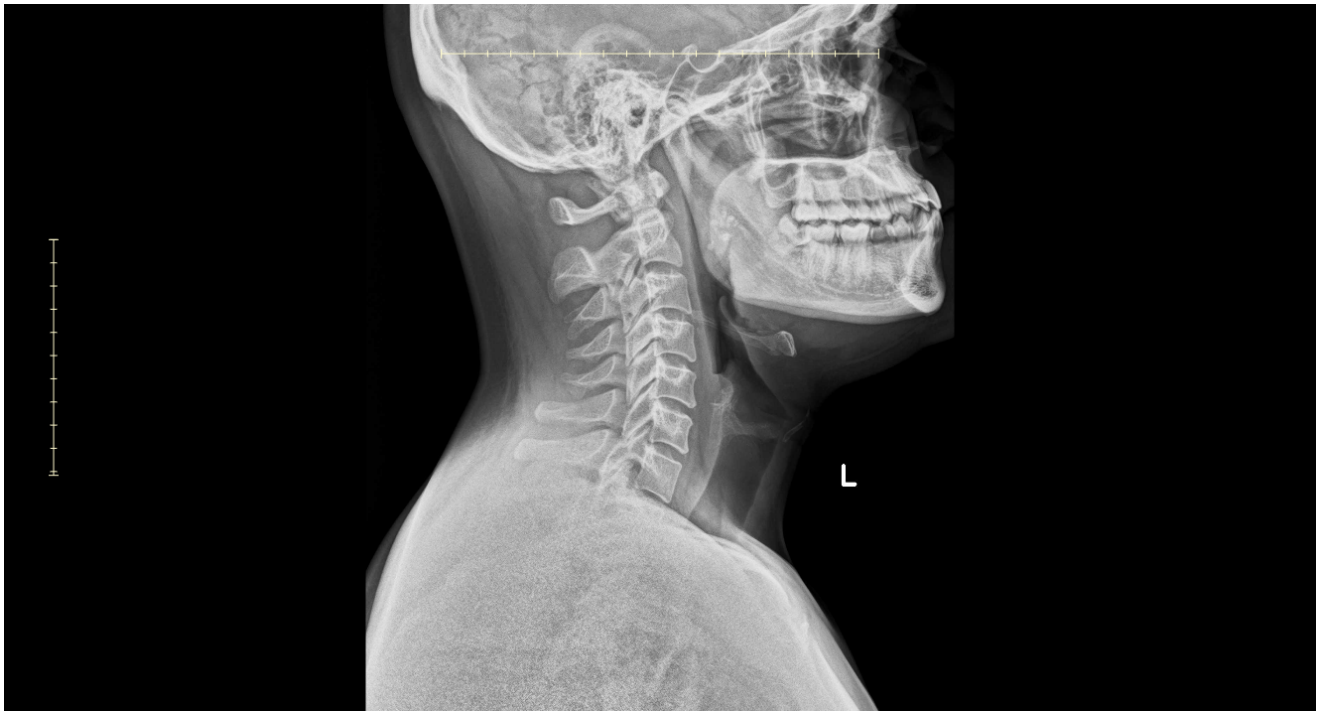


Figure 2: Base posterior radiograph of the upper cervical spine. Date of imaging: 23 September 2020.



Figure 3: Anteroposterior open-mouth (APOM) radiograph, neutral position. Date of imaging: 23 September 2020.

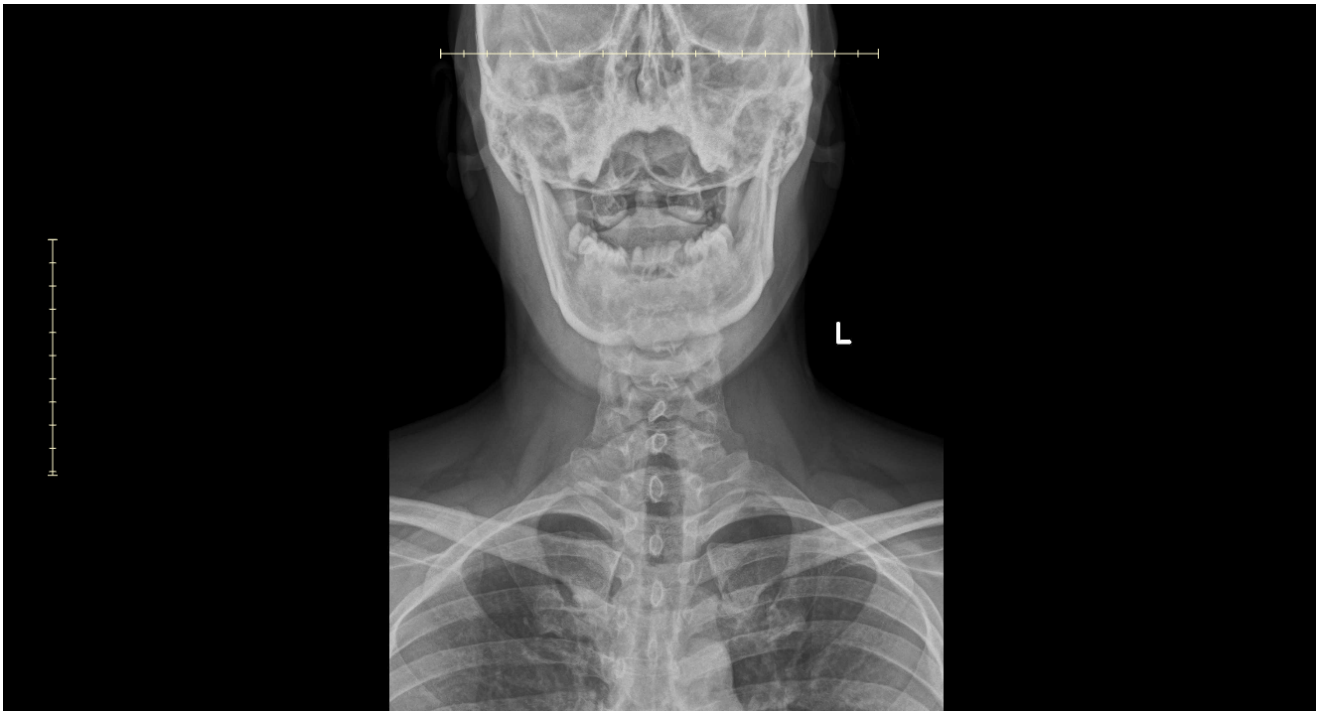


Figure 4: Anteroposterior open-mouth (APOM) radiograph, right lateral flexion. Date of imaging: 23 September 2020.

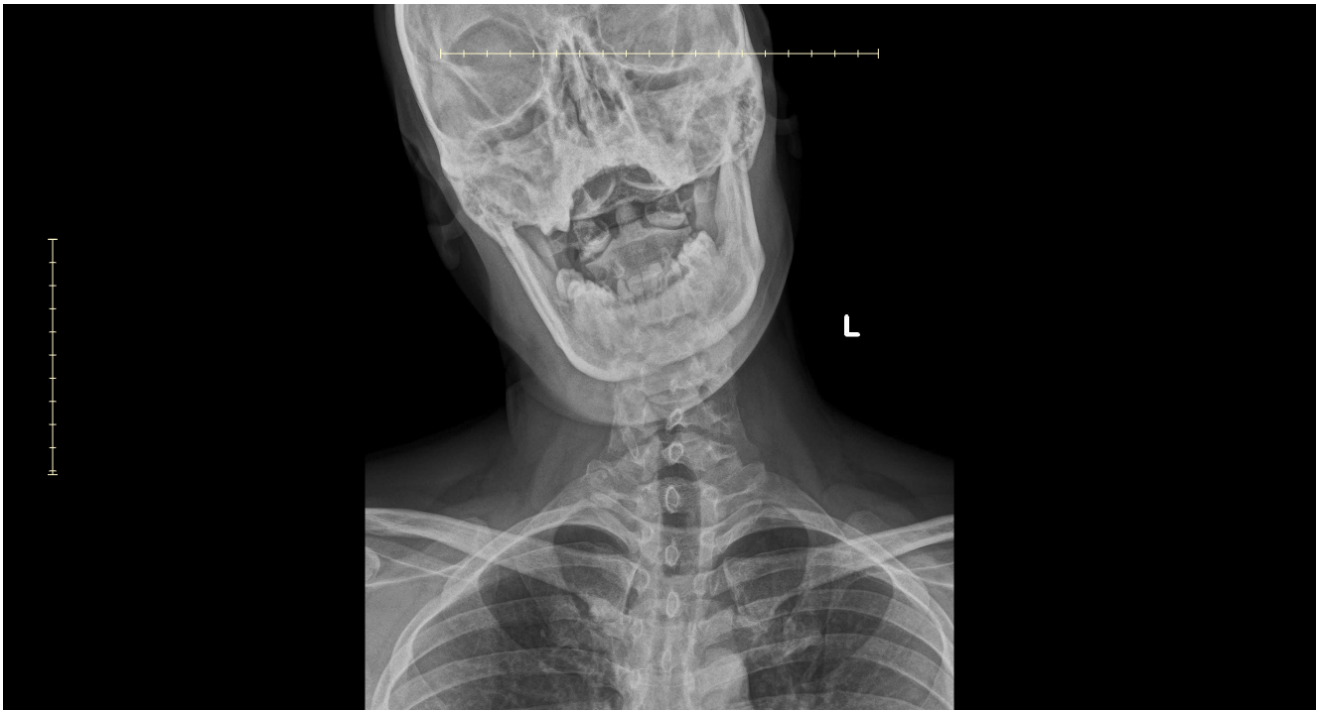
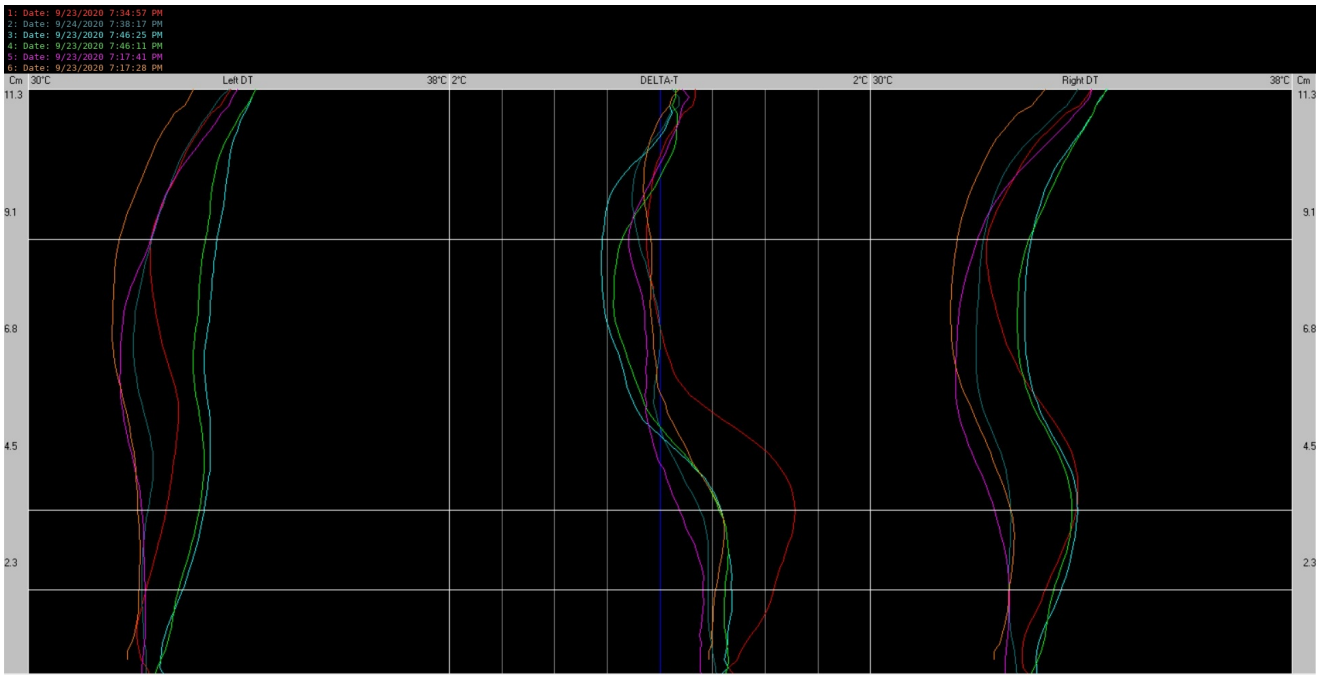


Figure 5: Anteroposterior open-mouth (APOM) radiograph, left lateral flexion. Date of imaging: 23 September 2020.



Figure 6: Baseline computerised infrared paraspinal thermographic scan sequence from the initial visit (23 September 2020), showing pre- and post-adjustment DELTA-T (left-right paraspinal thermal differential) tracings recorded during progressive listing correction.



Intervention

Based on the history, examination, and imaging findings, the Chiropractic working diagnosis was upper cervical dysfunction, in a patient carrying separate medical diagnoses of gastro-oesophageal reflux disease, gastritis, and cardiac ectopy made by his treating gastroenterologist and cardiologist respectively.

This Chiropractic impression was reached by a process of elimination: the patient had already pursued standard medical management for his gastrointestinal and cardiac symptoms without full resolution. The examination findings, including position-dependent upper limb weakness specific to combined right cervical rotation and extension, a functionally short leg that normalised with cervical rotation, and a weight-bearing asymmetry, were judged consistent with a cervical contribution to autonomic function. This impression was informed by the anatomical proximity of the upper cervical spine to the upper spinal cord and brainstem structures that give rise to the vagus nerve, the principal parasympathetic pathway influencing gastrointestinal motility and secretion. (1) This relationship is discussed further in the Conclusion below.

The Knee Chest Upper Cervical (KCUC) technique is a high-velocity, low-amplitude thrust adjustment used to correct upper cervical (atlanto-occipital and atlanto-axial) misalignment, delivered with the patient prone in a knee-chest position with the head rotated to one side. The patient underwent care using this technique, performed as per standard clinical procedure with no variation. The specific contact point (listing) corrected was C1 on the right, identified using postural, weight-bearing, and thermographic findings and confirmed by the initial upper cervical radiographic series, in accordance with standard KCUC protocol.

Visit frequency began at twice weekly, reducing to once weekly as reassessment findings indicated stabilisation. The patient completed 24 visits during the initial active care plan over approximately five months, followed by a further period of maintenance checkups (six visits over an additional five months). The patient subsequently continued checkups at intervals of approximately three weeks until 10 June 2021, after which he ceased attending; continued periodic checkups had been advocated by the clinic throughout this period.

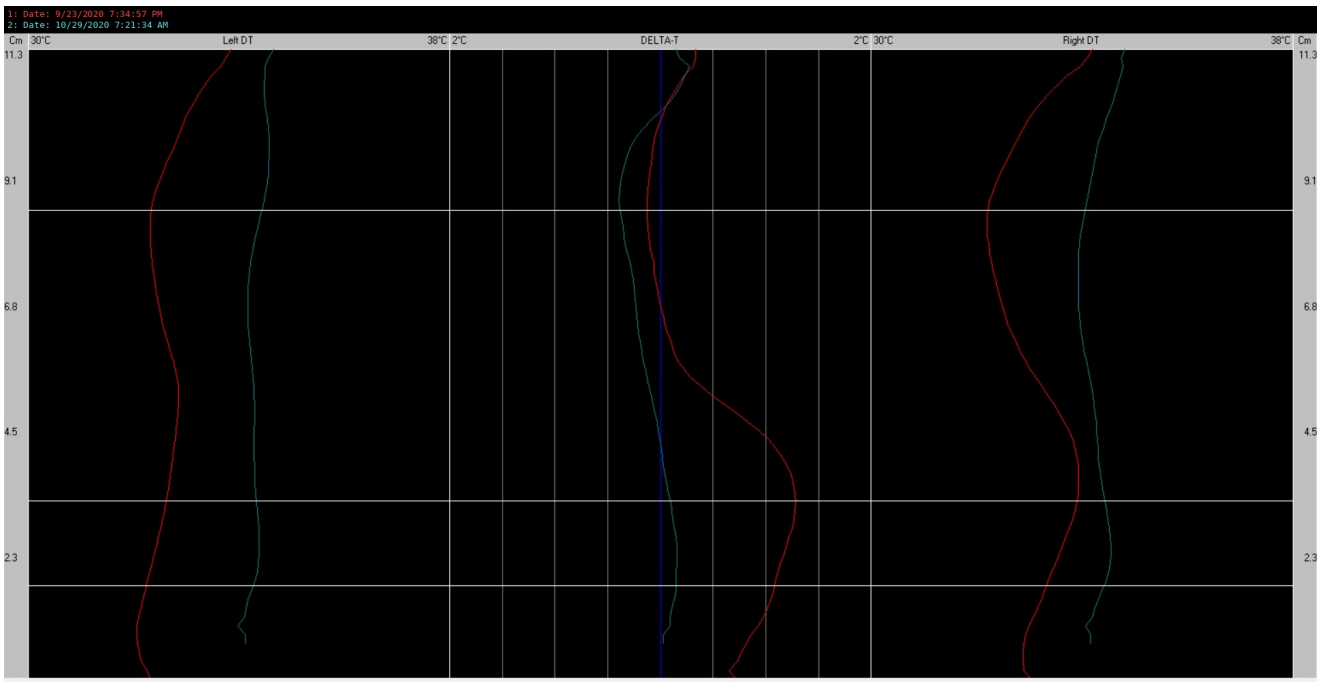
Outcomes

The Bournemouth Questionnaire (BQ), a validated seven-item patient-reported outcome measure assessing pain, disability, and cognitive/affective dimensions, was used to record baseline status. (6) Baseline BQ score at the initial consultation (23 September 2020) was 24/70. A discharge BQ score was not recorded; this is addressed as a limitation below.

First reassessment (29 October 2020)

Postural asymmetry persisted, with uneven shoulders still present. Weight-bearing scale readings were 40 kg on the left and 34 kg on the right (6 kg discrepancy). Arm and shoulder strength was now balanced, with no weak positions identified on manual muscle testing. Leg length was even. Cervical range of motion was normal except for persistent stiffness on left lateral flexion. Comparative thermographic scanning at this visit (Figure 7) showed the paraspinal DELTA-T tracing running closer to the zero-differential midline in the upper cervical region than at baseline, consistent with reduced thermal asymmetry. The patient reported improved digestion and that his neck moved better, despite having initially reported no neck complaints. He described his stomach as feeling better and less bloated, with improvement noted from around the time of his second adjustment.

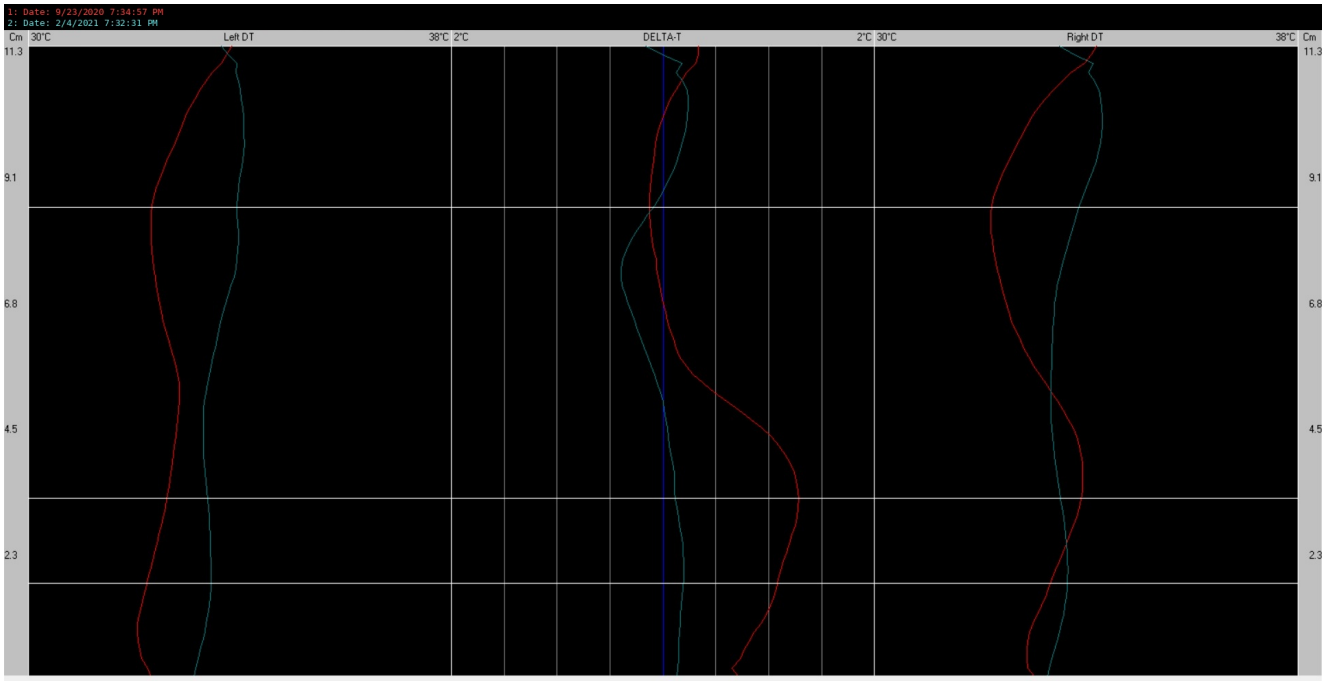
Figure 7: Comparative paraspinal thermographic scan: baseline (23 September 2020, red) versus first reassessment (29 October 2020, cyan).



Second reassessment (4 February 2021)

Shoulder posture was even. Weight-bearing scale readings were 35.3 kg on the left and 32.2 kg on the right (3.1 kg discrepancy). Arm and shoulder strength remained balanced with no weak positions. Leg length was even. Cervical range of motion was normal. Comparative thermographic scanning at this visit (Figure 8) continued to show the paraspinal DELTA-T tracing running close to the zero-differential midline, consistent with the postural and range-of-motion findings above. The patient reported that his stomach was doing well, describing himself as '80% better', with improved general wellbeing, better digestion and overall health, and a slight improvement in mood. He reported being able to start exercising more and was considering joining a gym.

Figure 8: Comparative paraspinal thermographic scan: baseline (23 September 2020, red) versus first reassessment (29 October 2020, cyan).



Patient-reported experience

In addition to the reassessment findings above, the patient recorded a video testimonial partway through his care, in which he stated:

> 'I am halfway through and I'm already seeing such great improvement'.

Later in the same recording, he described his bloating specifically:

> 'I used to get a lot of bloating in my stomach as well, so that's more or less gone, right. So it's almost like a complete 100% recovery on the bloating side'.

He went on to say:

> 'And generally, I feel like my stomach itself feels better. And something that I couldn't get in any other kind of treatment, right. It's only Chiropractic that has given me so much improvement'.

He further noted the absence of any concurrent medication:

> 'And this is happening without any kind of medication, that is very important for me'.

Adverse events

No adverse reactions or side effects related to Chiropractic care were reported at any point during the course of treatment.

Discharge and follow-up

No referrals were made during the course of Chiropractic care, as the patient had already been evaluated by his medical doctors prior to presentation. The patient continued periodic checkups, spaced progressively further apart, until 10 June 2021, at which point he ceased attending; the clinic continued to advocate for ongoing checkups throughout this period. The reason for discontinuation was not formally documented, though the patient may have relocated overseas.

Conclusion

This case describes significant improvement in gastrointestinal symptoms, bloating, digestion, and general wellbeing, concomitant with a course of KCUC Chiropractic care, alongside normalisation of postural, weight-bearing, and cervical range-of-motion asymmetries, in a patient with a five-year history of treatment-resistant gastro-oesophageal reflux, gastritis, and separately diagnosed cardiac ectopy. The patient's own account, corroborated by a recorded testimonial, described near-complete resolution of bloating and marked improvement in digestion without concurrent medication, alongside objective examination findings that moved in the same direction over the same period.

The vagus nerve is the principal parasympathetic mediator of the gut-brain axis, modulating gastric motility, secretion, and visceral sensation, and it exits the skull and travels through the neck in close anatomical proximity to the upper cervical spine before descending to the abdominal viscera. (1)

Experimental models of functional dyspepsia have demonstrated that altered vagal afferent signalling from the stomach can drive both visceral hypersensitivity and associated affective symptoms, implicating vagal dysregulation as a contributor to functional gastrointestinal symptoms of the kind described by this patient. (2) This offers a plausible rationale for why gastrointestinal symptoms improved concomitant with an intervention directed at upper cervical function. The patient's separately diagnosed cardiac ectopy is noted here as relevant medical background only: his cardiac symptoms were not formally reassessed during Chiropractic care, and no claim is made regarding any effect of care on his cardiac status.

This is consistent with a small body of Chiropractic literature suggesting that cervical spinal adjustment can produce measurable shifts in autonomic nervous system activity, with cervical adjustment associated with a parasympathetic-dominant response in healthy volunteers, attributed to the proximity of the upper cervical segments to brainstem autonomic centres. (3) Isolated case reports have also described improvement in gastrointestinal symptoms concomitant with upper cervical or cervical chiropractic care, including cessation of cyclic vomiting in a paediatric patient following upper cervical adjustment (4) and resolution of gastro-oesophageal reflux disease following correction of postural dysfunction in an adult patient. (5) This case adds to that literature.

An important feature of this case is that the patient's improvement occurred in a context where conventional medical management, endoscopy-guided treatment, antacid therapy, and dietary elimination, had already been pursued without full resolution of symptoms, and where Chiropractic care was undertaken without concurrent medication. This sequencing, together with the convergence of the patient's subjective report and the objective examination findings, supports a genuine treatment-related effect rather than a purely coincidental or natural-history explanation for the improvement.

> Practitioners seeing patients with treatment-resistant gastrointestinal symptoms should consider an upper cervical structural and functional assessment as part of a broader, medically co-managed approach.

This is a single case report, and the proposed vagal mechanism was not directly tested in this patient (for example, by heart rate variability testing); the examination findings described are consistent with, but not diagnostic of, this mechanism. A discharge Bournemouth Questionnaire score was not recorded, so outcome assessment in this report relies on serial clinical reassessment findings and the patient's own reported experience rather than a validated discharge score; the BQ itself was not developed or validated specifically for gastrointestinal symptoms.

Thermography was used as an adjunct clinical assessment tool to help identify and reassess the upper cervical listing; the trend toward reduced paraspinal thermal asymmetry on serial scanning (Figures 6 - 8) is reported descriptively rather than as evidence of clinical change in its own right. The patient's separately diagnosed cardiac ectopy was not formally reassessed during care, and no claim is made regarding any effect of chiropractic care on cardiac status. Central nervous system imaging (MRI/CT) was not obtained, as the patient's presentations had already been medically investigated and organic pathology addressed prior to chiropractic consultation.

What this report adds

This case report describes significant, sustained improvement in gastrointestinal symptoms and general wellbeing, alongside normalisation of objective upper cervical examination findings, in a patient with treatment-resistant, medically diagnosed gastro-oesophageal reflux disease and gastritis, concomitant with a course of Knee Chest Upper Cervical Chiropractic care undertaken without concurrent medication. Given the anatomical and physiological links between the upper cervical spine, the vagus nerve, and gastrointestinal function, this case report provides a rationale for further research into upper cervical Chiropractic care as part of the management of treatment-resistant gastrointestinal symptoms.

Consent

Written informed consent for publication of this case report, including clinical images and a recorded patient testimonial, was obtained from the patient using the clinic's in-house consent process.

Conflicts of interest

The author declares no conflicts of interest and received no funding for this work.

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