Research

Management of Non-cardiac Chest Pain With Chiropractic Care: A Case Report and Brief Review

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ABSTRACT

Objective: The purpose of this report is to discuss the outcome of a patient with non-cardiac chest pain treated with chiropractic spinal manipulation combined with instrument-assisted soft tissue mobilization.

Introduction: Chest pain is the fourth most common presentation in emergency rooms in the United States. The direct and indirect costs of chest pain are high in terms of disability, medication, repeated hospital admissions and physician visits, and costly diagnostic procedures.

Clinical features: The case of a 45 year-old male presenting to a chiropractic clinic with complaints of chest pain is discussed. Although the source of this chest pain was likely non-cardiac, cardiac risk factors were present and were addressed as well.

Intervention and outcome: The patient was treated with manual thoracic spinal manipulation and instrument-assisted soft tissue mobilization with complete resolution of chest pain at 3 weeks and no chest pain at 1 month and 3 month follow-up visits. Conservative cardiac prevention approaches were encouraged with good outcome.

Conclusion: This case points out the promising role the combination of chiropractic manipulation and instrument-assisted soft tissue mobilization may have in the management of non-cardiac chest pain arising from musculoskeletal dysfunction.
INTRODUCTION

Chest pain is the fourth most common presentation in emergency rooms in the United States. The direct and indirect costs of chest pain are high in terms of disability, medication, repeated hospital admissions and physician visits, and costly diagnostic procedures.

This condition is troubling, and sometimes confounding, for both the patient and the physician. Although myocardial infarction (MI) and cardiac chest pain must be the first consideration, a substantial number of cases of chest pain are sometimes called non-cardiac chest pain, pseudoangina, or atypical chest pain. Non-cardiac chest pain is defined as chest pain with no history or findings of cardiac disease or of unknown etiology. In a retrospective case-control study, Blacklock found that in 50% of the cases of chest pain, the origin was undetermined 6 months post-follow up.

Non-cardiac chest pain presents in a similar manner to cardiac chest pain but is often of indeterminate origin, much to the chagrin of the physician and patient. Locke et al found that 23% of American adults aged 25-74 years had non-cardiac chest pain. Eslick and Talley reported similar findings in Australia. Baldi and Ferrarini noted that, “between 10 and 50% of patients with anginal pain who are referred for arteriography are found to have normal coronary arteries.” These studies demonstrate significant medical resources being allocated toward non-cardiac chest pain. Further, Smith et al state,

“Current techniques for accurately evaluating and triaging chest pain presenters are inadequate, and risk-driven liberal administration policies contribute substantially to an estimated cost of $10 to $13 billion per year to rule out MI in low-risk patients...”

Non-cardiac chest pain not only impacts hospital resources, but also severely impacts the quality of life of sufferers. Eslick et al reported that 36% of non-cardiac chest pain sufferers indicated they had a much lower quality of life.

Many possible etiologies have been suggested for non-cardiac chest pain such as gastroesophageal origin, psychiatric origin, musculoskeletal or biomechanical origin and drug abuse.

Chest pain may be a sequel to psychiatric conditions such as anxiety disorders, somatoform disorders, affective disorders, and depressive episodes. Of the implicated anxiety disorders, panic appears to be the most prevalent.

Some disagreement remains regarding the most frequent cause of non-cardiac chest pain. Some authors maintain gastroesophageal reflux disease (GERD) is the most common cause of non-cardiac chest pain, whereas others lean toward musculoskeletal causes.
However unlike GERD, which is a singular condition, musculoskeletal involvement is a group of conditions that may lead to non-cardiac chest pain. Conditions included in the musculoskeletal group are intercostal myalgia, bruising, fractured rib, sprain/strain, costochondritis, chest wall syndromes, thoracosternal subluxation, myofascial pain, among others.  

Musculoskeletal origin non-cardiac chest pain is a relatively common occurrence. Svaavarsdottir and coworkers studied 186 patients entering a health care center with chest pain. They found that 48.9% of patients were diagnosed with musculoskeletal pain, 17.9% with heart disease, and 9.5% had undiagnosed chest pain. Triano et al discuss anatomical and neurological mechanisms leading to non-cardiac chest pain. They state, “…anterior chest pain…forms the bulk of any referred pain associated with these articulations [costovertebral joints]. Disorders affecting the first and second CV joints may result in accompanying arm pain conveyed via Kuntz’s nerve…which reflects a linkage with the brachial plexus from the first and/or second intercostal nerve.”

Erwin et al investigated the musculoskeletal mechanisms previously reported and conclude, “The anatomic findings of this study suggest that the costovertexral joint is a likely, although perhaps often unrecognized, candidate that may be responsible for the generation of atypical chest pain…” Further, they state that failure to recognize this condition may lead to unnecessary costs and distress on the part of the patient.

One of the treatments showing promise for non-cardiac chest pain of musculoskeletal origin is chiropractic manipulation. In fact, Mennell reported on the treatment of chest pain by manipulation as early as 1948. Recent case studies suggest that manipulative therapies will be an important area of research in the future of treatment for musculoskeletal atypical chest pain.

A promising adjunct to spinal manipulation is instrument-assisted soft tissue mobilization (IASTM). Little research has investigated the combination of spinal manipulation and IASTM although it is feasible that accelerated healing and decreased treatment visits might be possible with this approach.

The purpose of this report is to discuss the outcome of a patient with non-cardiac chest pain treated with chiropractic spinal manipulation combined with instrument-assisted soft tissue mobilization.

Clinical Features

A 45 year-old healthy-appearing male reported to a chiropractic clinic with primary complaint of chest pain. He described this as pain and tightness in the left side of the chest with radiation of pain into his left arm. His pain started insidiously two months earlier with no history of prior
similar episodes and no recent trauma. His pain was described as constant low-grade pain with intermittent episodes of much sharper pain and tightness. He stated that he was active, running two times per week (1 to 2 miles) and did state that he had done some house painting around the time that his chest pain began but did not feel that it was definitely directly related to the onset of chest pain. The patient expressed significant concern that his pain was related to a cardiac cause as his father had died suddenly at age 68 due to myocardial infarction. The patient has never smoked and his other history was non-contributory to the current episode.

The patient was concerned about the possibility of a cardiac condition and had consulted a cardiologist, at the recommendation of his primary care physician. His lipid profile demonstrated elevated total cholesterol with moderately elevated LDL and decreased HDL subfractions. His triglycerides were within normal range. He was evaluated with ECG and stress echocardiogram, which was considered normal. He was referred for a multislice computed tomography exam of his heart that demonstrated the presence of calcium, which was defined as medium risk. He had no history of hypertension so his cardiologist recommended a 3-month trial of dietary changes along with a recommendation to add additional days of exercise. His cardiologist told him he would likely need to start statin therapy to reduce his cardiac risk if the dietary changes and exercise were not adequately helpful.

Physical exam revealed no neurologic deficit and the patient appeared healthy but slightly overweight (206 lbs; 6 feet tall) with a BMI of 28. His waist circumference was 38 inches. His blood pressure was within normal range (128/80) but his pulse was elevated at rest (88/minute). The lungs were clear and the pulse was regular. Exam of the abdomen was unremarkable. Palpation of the thoracic spine revealed passive joint restriction and marked tenderness at T6, T8 and T 12. Manual pressure near the inferior angle of the left scapula along the course of the latissimus dorsi muscle and the teres minor muscle as both muscles attach to the humerus appeared to provoke the chest pain and provoked apparent referral of pain down the left arm in the ulnar distribution. The patient stated this pain was consistent with the “chest” pain he was feeling during the last two months.

The impression was that the chest pain was primarily non-cardiac in origin and a trial of chiropractic care was planned. The patient consented to a short trial of chiropractic care after an explanation of the proposed treatment, possible risks and other treatment options were explored.

**Intervention and Outcome**

The patient was treated with manual spinal thoracic manipulation and instrument-assisted soft tissue mobilization. He was seen twice per week for 3 weeks with significant improvement after 3 visits and full resolution of his chest pain at the 6th visit. He was seen for a follow-up visit 1 month later with continued resolution of chest pain and was seen 2 months later with no complaints of chest or arm pain.
At the third visit, the patient asked about his cardiac risk factors and what would be recommended from a chiropractor. The chiropractor encouraged the patient to try to be more active, getting some exercise for at least 30 minutes every day and to cut down on carbohydrates and eat more vegetables and fruits. The patient stated that he was motivated to do this as he had witnessed his father die prematurely due to cardiac disease. At the one month follow-up visit, the patient had lost 6 pounds. He was given encouragement to continue with his exercise and dietary recommendations. At 3 months, there was slight improvement in his lipid profile such that his cardiologist told him he would allow him 3 more months to assess further changes associated with his lifestyle modification. Additional outcomes are not available at this time.

**Conclusion**

This case points out the promising role the combination of chiropractic manipulation and instrument-assisted soft tissue mobilization may have in the management of non-cardiac chest pain arising from musculoskeletal dysfunction. Additionally this case highlights the role a chiropractor can play in conservative primary and secondary prevention of cardiac disease.

**References**


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