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Chiropractic care of a 70-year-old female patient with hip osteoarthritis

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Abstract

Objective: The purpose of this case report is to describe the response to chiropractic care of a geriatric patient with left hip pain, a history of repetitive falls, poor balance, myofascial dysfunction, and hip osteoarthritis.

Clinical Features: A 70-year-old, white, female patient presented for chiropractic care with a chief complaint of left hip pain of 1 year's duration and a history of 2 falls within the past 5 years. The patient's initial Lower Extremity Functional Index score was 42%. Important initial examination findings include a body mass index of 45.0, a One Leg Standing Test of 4 seconds, a Timed Up and Go test of 17 seconds, decreased active range of motion findings, and degenerative radiological findings of the left hip joint.

Intervention and Outcome: Chiropractic treatment primarily consisted of hip and spinal manipulation, mobilization, and passive stretching. The patient was seen 16 times over a 12-week period. After 12 weeks of care, the patient had a significant decrease on the Lower Extremity Functional Index and had demonstrated improvements in left hip internal rotation and in Timed Up and Go and One Leg Standing Test times. The Patient Global Impression of Change scale indicated that the patient was "very much better."

Conclusion: This case illustrates a patient who had increased range of motion, improved balance and gait speed, and decreased disability after a 12-week course of chiropractic care.

Introduction

Hip osteoarthritis (OA) is a common musculoskeletal problem in older adults, with prevalence estimates ranging from 3% to 7.4%.[1-3] It also is a frequent cause of disability and results in nearly 200 000 total hip replacements per year in the United States.[4,5] Chiropractic care or manual therapy for hip OA consists of manipulation/mobilization and muscle stretching, which, according to a few studies, show a beneficial effect.[6-11] A controlled, prospective pilot study reported that 3 weeks of chiropractic care had a beneficial effect over sham treatment in the short term

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in a group of patients with hip OA.[6] The positive effects of chiropractic care on hip OA were also shown in a case report of 2 patients.[7] In other case reports and a case series, it was found that manual therapy with strengthening exercises offered beneficial results in hip OA patients.[8-10] Furthermore, a randomized controlled trial on the conservative treatment of hip OA found that the patients in the manual therapy treatment group (manipulation and mobilization) had better outcomes on pain, stiffness, hip function, and range of motion (ROM) than the patients in the exercise therapy program.[11]

Like hip OA, poor balance and falls in older adults are major problems as seen by the high frequency of falls in those individuals older than 65 years.[12] Falls are a leading cause of nonfatal injury in older adults and account for two thirds of all unintentional injury deaths in this population.[13] The cause of falls is a complex issue consisting of many factors, but impairments in balance and gait represent some of the most important modifiable risk factors.[14-16] Clinical research shows a potential link between pain/dysfunction of the neuromusculoskeletal system and poor postural control/balance and gait.[17,18] In a recent randomized controlled trial, improved gait (as measured by walking speed) was seen in hip OA patients after 5 weeks of manual therapy.[11] Improved balance and walking speed were seen in a case report where manual therapy was combined with exercise.[10]

The effect of chiropractic care on poor balance, gait, and chronic pain has some preliminary research; but more research is needed to determine the different conditions/patients that might respond to chiropractic care with improved balance and gait.[19-23] The purpose of this case report is to describe the response to chiropractic care of a geriatric patient with left hip pain, a history of repetitive falls, and examination findings of poor balance and gait, hip OA, and myofascial dysfunction.

Case report

A 70-year-old, white, female patient presented for chiropractic care with a chief complaint of insidious left hip pain of 1 year's duration. The patient localized the hip pain to the left greater trochanter area and described it as deep and achy. According to the numeric pain scale, the patient's pain was 3/10 on average, 0/10 at best, and 7/10 at worst. The numeric pain scale is commonly used and has shown to be reliable and valid.[24,25] The patient's hip pain was temporarily decreased with ice, Tylenol, and non–weight-bearing activities of daily living (ADLs) and made worse with weight-bearing ADLs. She used a cane to help her ambulate in her ADLs. The patient's initial Lower Extremity Functional Index (LEFI) score was 42%, indicating a severe level of disability. The LEFI, which measures the patient's ability to perform common activities of daily living by self-report (walking etc), was abstracted and modified from a complete upper, lower, and trunk neuromuscular index. It is reported to be reliable as a general index for lower extremity disorders.[26] Her medical history revealed that she was taking several medications for cardiovascular health (4), depression (1), and irritable bowel syndrome (1). Her medical history also revealed she has had recurrent low back pain and 2 falls within the past 5 years. One of her falls occurred 4 months before her initial visit to our clinic; and the other occurred when she was 65 years old, with both requiring either emergency care or physical assistance.

The patient's physical examination revealed her height as 5′9.5″ and weight at 309 lb (body mass index = 45.0). The result of her neurological examination was unremarkable. Examination of hip active ROM showed decreased internal and external rotation of the left hip with internal rotation more pronounced than external (Table 1). Active ROM of the hip joints was measured by a 2-arm plastic goniometer that has been shown to have very good reliability in healthy patients and has been reported to have the same intrarater reliability as the inclinometer in measuring hip movements.[27,28] Active internal and external ROMs were the 2 planes measured because of their role in diagnosing hip OA. The patient's balance

Table 1 Patient outcomes at baseline and follow-up intervals

	Baseline	4 wk	12 wk
LEFI (%)	42	24	20
TUG (s)	17	13	12
OLST (s)[a]	4	8	5
Int rot AROM–left (°)	22	30	33
Int rot AROM–right (°)	30	32	40
Ext rot AROM–left (°)	32	33	37
Ext rot AROM–right (°)	36	36	36

LEFI, Lower Extremity Functional Index (the percentage disability score is out of 100): higher scores indicate greater disability; *TUG test*, Timed Up and Go test: higher times indicate lower functioning; *OLST*, One Leg Standing Test: higher times indicate higher functioning. *Int rot AROM*, Internal rotation active range of motion; *Ext rot AROM*, external rotation active range of motion (degrees using a goniometer instrument).

[a] Averaged time between left and right legs.

was measured by the One Leg Standing Test (OLST), which measures the length of time a patient can stand on one leg. Her average OLST (for both legs) was timed at 4 seconds, indicating a low level of balance function. The OLST has been shown to have good interrater reliability and to be sensitive to clinical interventions.[29-31] The Timed Up and Go (TUG) test, which measures the time it takes a patient to stand, walk 3 m and back, and sit down, was timed at 17 seconds. The TUG test has been reported to be highly reliable and a sensitive and specific measure to assess risk of falls, with older adults taking greater than 14 seconds being at risk.[32-34] Sharp pain of the left greater trochanter was produced during the Iliac Compression test. Other significant findings included mild loss of passive left hip flexion, loss of passive left hip internal rotation, and hypertonicity of the hip flexors. Evaluation of accessory joint movements of the left hip demonstrated decreased motion in posterior to anterior (P-A) glide, long-axis distraction, and internal rotation. Accessory joint motion evaluation is used to determine the presence of joint dysfunction in the hip joints.[35] Plain film radiographs of the left hip and anteroposterior pelvis showed left acetabular osteophyte formation and mild to moderate superior joint space narrowing (greater in left hip vs right) of the left femoral acetabular joint. The radiographs were reviewed by a local medical radiologist. Because of her history (1-year history of left hip joint pain), physical examination findings such as decreased active and passive internal left hip joint rotation, and the degenerative radiological findings, her diagnosis was hip OA with associated myofascial/capsular dysfunction.

The hip treatment consisted of manipulation, mobilization, and passive stretching focused on improving the loss of hip motion found on the examination and subsequent visits.[35,36] Because the patient was taking the blood thinner warfarin (Coumadin) 20 mg/wk, a conservative, low-force approach was applied with the goal of maximizing recovery while also ensuring safety. Gentle, prone P-A manipulation[35] of the left hip using drop table technique and instrument-assisted spinal manipulation were performed at each visit. Flexion, internal rotation stretches/mobilization,[36] and long-axis distraction mobilization[35] were performed on most of the visits (15 visits). Long-axis distraction, flexion, and internal rotation were gentle, low-velocity maneuvers where the end range position was typically held for 10 seconds. On average, the P-A drop manipulation was usually performed 3 times per visit, whereas the other flexion, internal rotation, and long axis distraction stretches/mobilizations were usually done 3 to 5 times per visit. Flexion distraction technique[35] was performed on 5 visits to the lower lumbar spine when the patient had increased low back pain. In addition to the treatment, the patient was counseled at the beginning of care on the benefits of weight loss and was given dietary and exercise recommendations based on the results of a physical activity and nutrition questionnaire completed on the initial examination visit. The recommendations included reducing or eliminating daily soda and weekly fast food intake, increasing daily fruit and vegetable intake to 3 serving per day, and increasing exercise frequency to tolerance up to 5 times per week. All treatment and counseling were performed at a chiropractic college health clinic by a chiropractic intern who was trained in the treatment techniques before beginning care. The patient signed an informed consent form giving us permission to publish the patient's information.

The LEFI, TUG, OLST, and active hip internal and external ROM were administered at follow-up intervals of 4 and 12 weeks.

The patient was seen 16 times over a 12-week period. After 4 weeks of care, the LEFI score decreased to 24%, the TUG time improved to 13 seconds, and the OLST time doubled to 8 seconds. Furthermore, active internal rotation of the left hip joint showed the largest increase (8°) among all of the active ROMs (Table 1). After 12 weeks of care, the patient had a LEFI score of 20%, indicating a "minimal/moderate" functional disability rating, and had demonstrated a small increase in left hip active internal rotation. At the same assessment period, the patient's TUG time decreased to 12 seconds, and her OLST time decreased to 5 seconds (Table 1). The Patient Global Impression of Change scale (PGIC) indicated that the patient was "very much better" after 12 weeks of care. The PGIC is a self-reported 7-point Likert scale where patients assess their degree of change since starting treatment, ranging from very much better to very much worse. The PGIC has been well validated and has been commonly used by pain researchers as a standard outcome instrument.[37-40] Furthermore, the patient reported that she was able to ambulate better, was using her cane less often, and began shopping for herself. When asked about any new lifestyle modifications she made since she began care at our clinic, the patient stated she began to follow some of our initial recommendations such as reducing her fast food intake to 1 to 3 times a week, decreasing her weekly soda intake, and using meditation as a way to relax. The patient also reported no changes in exercise levels, no ergonomic changes either at work or home, and no

other treatment(s) from other health care providers during the 12-week period. The dietary changes may account for her 6-lb weight loss since beginning care especially because her aerobic exercise frequency did not change (0 times a week).

Discussion

The results of the assessments showed that the patient had reduced functional disability and increased hip ROM in internal rotation and improved balance and gait speed after a 12-week course of chiropractic care. The patient was initially scheduled to receive chiropractic care 2 times per week for 4 weeks, and then was scheduled for an additional 8 weeks. The frequency and duration of the treatment were chosen because of the patient's age, obesity, comorbidities, and 1-year history of symptoms before treatment. The literature reports that older age patients,[41] patients with comorbidities (eg, psychosocial issues), and patients with a long duration of symptoms (greater than 6 months) need more time to recover than patients without these factors.[41,42] Furthermore, studies not only have shown that obesity is a risk factor for hip OA[43-45]; but it has also been shown that obesity is a factor that is consistently associated with progression of OA (functional decline).[46-49]

It is difficult to identify which factors played the greatest role in our patient's recovery; but because of the patient's history and self-report on lifestyle changes and other treatments, we believe that a good part of our patient's reduced hip pain and increased function was due to the 12-week course of chiropractic care (manipulation, mobilization, and stretching). Because the patient reported not seeing other health care providers or participating in other types of self-care (strengthening/aerobic exercise), or making any ergonomic changes at work or at home during our care, it is more likely that chiropractic care was a significant factor in her recovery. Other factors that might have played an important role in the patient's recovery are her dietary changes and meditation,[50] the natural history of her OA, and her social interactions and confidence in her intern and the care.[51-53] Given that the natural history/course of hip OA is very variable between individuals,[1] consisting of exacerbation and remission periods, it is possible that our patient had a spontaneous remission during the same period the chiropractic care was administered.

To help minimize bias in diagnosing our patient, we confirmed the patient's diagnosis of hip OA using the combined clinical and radiographic diagnostic criteria as developed by the American College of Rheumatology. The presence of femoral and/or acetabular osteophytes and of superior hip joint space narrowing on radiographs, together with hip pain for most days of the prior month (found in this patient), has a high degree of validity in confirming hip OA (sensitivity, 89%; specificity, 91%).[54] Although not recorded at the required cutoff points, our patient also had decreased active and passive internal rotation of the affected hip that has been associated with hip OA.[54] Given the results of the examination, it is likely that this patient had pain-generating hip myofascial and/or joint capsule dysfunction with hip OA.

Limitations

One of the limitations of this case report was not having any long-term follow-up measurements. The results of this case report would have been more meaningful if the outcome assessments used were performed several weeks after the treatment ended to see if the results attained at 12 weeks would be similar over a longer period. Furthermore, the use of specific hip tests during the initial visit (eg, FABERE Test, measured passive ROM) would likely have strengthened the accuracy of the diagnosis and have provided additional valuable measurements. In addition, the use of the numerical pain rating scale at the 4- and 12-week follow-up assessments would have provided more quantitative information on the patient's level of pain during and after care. In our case, the patient could have improved through natural history, her social interactions with her intern, her dietary changes, her meditating, the biomechanical/neurological effects from the chiropractic care,[55,56] or a combination of all these factors. Because this was a single case report, it is not appropriate to generalize the effects from this patient to other patients with hip pain related to hip OA and balance problems. Further research with larger sample sizes is needed to determine what effects chiropractic care has on hip pain and balance problems in the geriatric population.

Conclusions

This case is important because it illustrates a patient who attained improved balance and gait speed after a 12-week course of chiropractic care. Hip OA, poor balance/gait, and falls in the elderly are common problems. More research is needed to examine the

relationship between chiropractic care and hip pain (hip OA and its associated myofascial dysfunction) and poor balance/gait and falls in the elderly population.

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