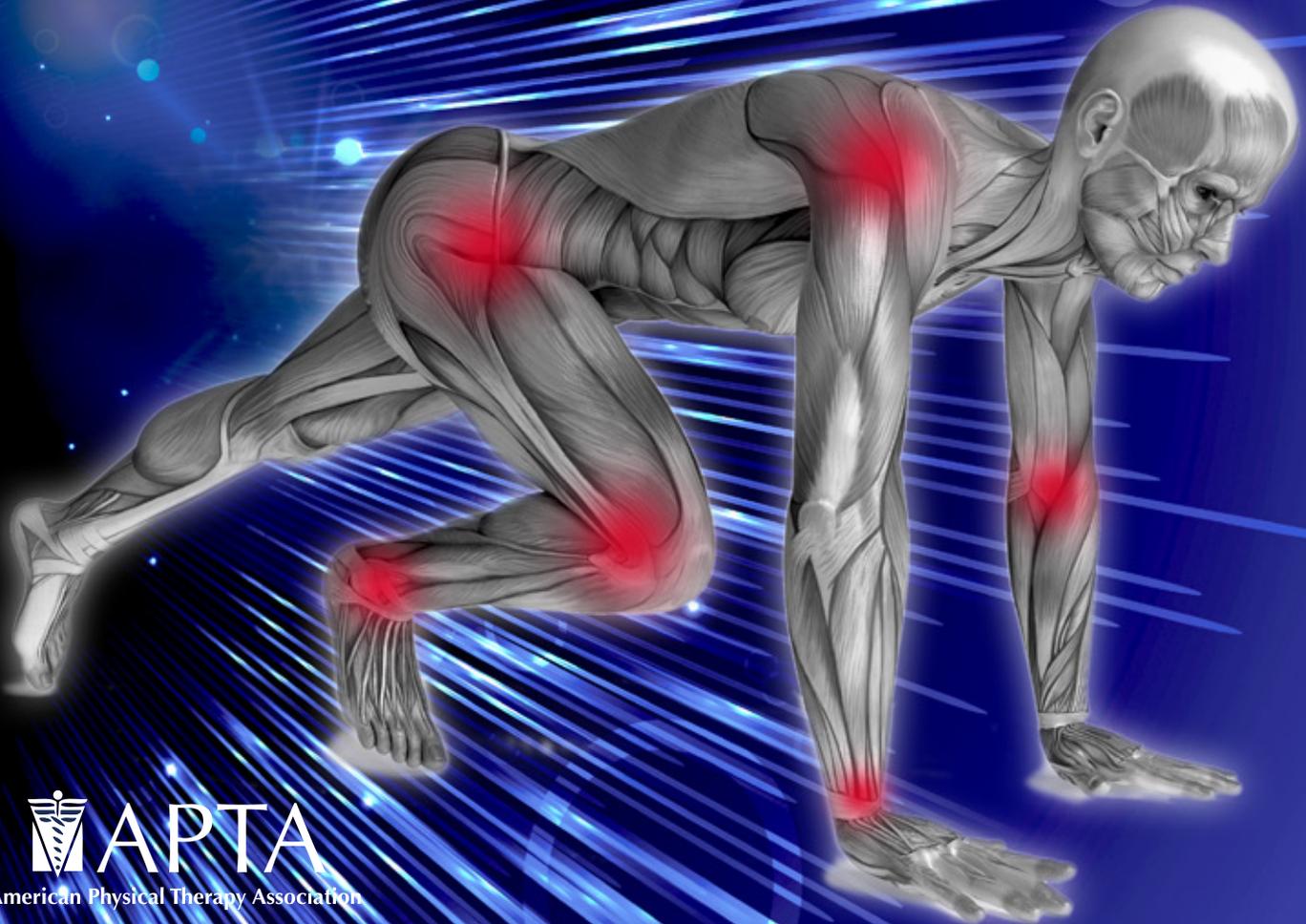
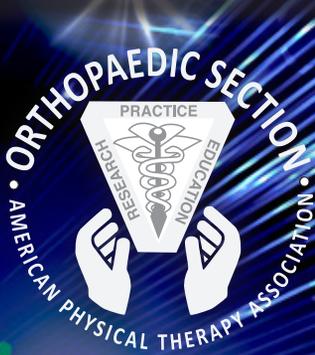


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Constipation and Low Back Pain in an Athlete: A Case Report

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ABSTRACT

Background and Purpose: Physical therapists need to be informed that low back pain in an athlete may originate from a gastrointestinal dysfunction such as constipation. A 21-year-old Caucasian American male basketball player was referred to physical therapy with intermittent back and hip pain. The athlete had recurrent bouts of lower back and hip pain since he was in high school. However, the athlete reported no specific incident where he injured his lower back or hips, but included periodic constipation on his medical history. The purpose of this case report was to describe how an athlete with nonspecific low back pain was evaluated for a gastrointestinal dysfunction as a potential source of pain. **Methods and Findings:** A review of the literature was conducted to find the latest treatment strategies for an athlete with low back pain originating from constipation. **Clinical Relevance:** The key step in managing constipation should be to rule out secondary causes of constipation, such as anatomical lesions, endocrine disorders, neurologic diseases, or medication side effects. **Conclusion:** A young athlete with a history of lower back and hip pain without a specific mechanical cause or injury should be carefully evaluated to rule out a gastrointestinal dysfunction.

Key Words: athletic performance, back pain, gastrointestinal dysfunction, lumbar dysfunction

INTRODUCTION

Any type of gastrointestinal (GI) dysfunction, such as constipation, diarrhea, irritable bowel syndrome, can significantly alter athletic performance in a negative way. The GI system should be thoroughly examined as a part of a comprehensive physical evaluation. A GI dysfunction may cause referred pain, cramping, and tightness, which could be implicated as the primary cause of a patient's complaints of pain. To this author's knowledge, peer-reviewed evidence supporting physical therapy assessment and management of a basketball player with back and hip pain that may be due to a GI dysfunction is absent in the literature. The purpose of this case report was to describe how an athlete

with nonspecific low back and hip pain and recurrent constipation was evaluated for GI dysfunction as a potential source of pain.

OVERVIEW OF CONSTIPATION

Constipation affects between 2% and 27% of the population in Western countries.¹ Moreover, constipation affects daily life with 13.7 million days of restricted activity.² Additionally, 60% of those affected by constipation have an impaired ability to work and 12% missed work or school.^{2,3}

Constipation may be due to stress, irregular or disordered eating habits, inadequate hydration, habits from childhood, inappropriate supplement use (such as antacids with calcium carbonate), inappropriate over-the-counter product use (such as laxatives), or an undiagnosed medical condition, such as depression.⁴⁻⁷ Physical therapists should be familiar with the diagnostic criteria^{8,9} (Table 1) and potential causes^{10,11} (Table 2) of constipation in order to perform a thorough medical history and avoid missing signs and symptoms that may suggest GI system dysfunction. Individuals with back pain may develop constipation due to muscle splinting and muscle guarding due to reduced bowel motility. Furthermore, constipation may result from decreased abdominal effort due to back pain.¹²

CASE DESCRIPTION

History

A 21-year-old Caucasian American male basketball player was referred to physical therapy from his family physician with a diagnosis of back pain. The athlete had intermittent bouts of lower back and hip pain since he was in high school. He attributed his lower back and hip pain to aggressive basketball training and his intense conditioning program so he could try out for a collegiate basketball team as a walk-on player. However, the athlete reported no specific incident where he injured his lower back or hips. This finding was viewed as a need to proceed with caution (yellow flag) during the rest of the evaluation.

Past Medical and Family History

Past medical history included GI disturbance due to lactose intolerance, gastroesophageal reflux disease (GERD), right

ankle sprain, and a fracture of the right radius when he was a teenager. The athlete indicated he did not smoke or consume alcohol. He lived on a college campus and attended school full-time. His exercise history included full-body strength training 3 days per week for one hour, cardiovascular conditioning 2 times a week for 60 minutes, and basketball drills 5 days per week for 45 minutes.

Signs and Symptoms

The athlete described his pain as a cramping, tightness type of pain in his left greater than right lower abdomen and dull, low back pain. He indicated pain periodically radiated to the front of his hips and groin region. The athlete indicated his bilateral hip pain ranged from a low of 0 to a high of 7 out of 10 on a visual numeric pain scale. Similarly, his back pain ranged from 0 to 5 on a visual numeric pain scale. The athlete also reported some difficulty with sleep due to the anxiety from his college coursework and trying to compete at the collegiate level. The athlete did not have any constitutional symptoms, such as fever, diaphoresis, sweats, nausea, vomiting, diarrhea, pallor, dizziness/syncope, fatigue, or weight loss.¹²

Risk Factors

The only risk factors identified for low back and hip pain in this athlete were that he sat for prolonged periods during studying and participated in a high intensity sport. Specifically, had the athlete been sitting with poor or slumped posture for prolonged periods this may have been a potential cause of low back pain. Furthermore, prolonged sitting may create tightness in the hip flexor muscles and would need to be assessed during the physical examination.

Systems Review

A systems review identified the following clusters of signs and symptoms during the initial subjective screening¹²:

- musculoskeletal/neurologic—dull low back pain and radiating pain into the front of the hips and groin,
- psychologic—sleep disturbance, and
- gastrointestinal—abdominal pain, constipation.

Table 1. Diagnostic Criteria for Functional Constipation*

Must include two or more of the following^a:

- Straining during at least 25% of defecations
- Lumpy or hard stools in at least 25% of defecations
- Sensation of incomplete evacuation for at least 25% of defecations
- Sensation of anorectal obstruction/blockage for at least 25% of defecations
- Manual maneuvers to facilitate at least 25% of defecations (for example, digital evacuation or support of the pelvic floor)
- Fewer than 3 defecations per week

*Criteria fulfilled for the last 3 months with symptom onset at least 6 months prior to diagnosis

Table 2. Some Potential Causes of Constipation

- Anxiety
- Chronic back pain
- Depression
- Hypercalcemia
- Hypothyroidism
- Inactivity (perhaps due to an illness or injury)
- Inadequate dietary fiber
- Malnutrition
- Medications (such as anticholinergics, antidepressants, antiemetics, calcium channel blockers, or opiates)
- Multiple sclerosis
- Parkinson's disease
- Pathological lesions of the bowel (such as diverticular disease, hemorrhoids, or obstructions due to incarcerated hernias, adhesions, or tumors)
- Potassium depletion
- Scleroderma
- Situational stress
- Thiamine (also known as Vitamin B1) deficiency

Red Flags

Red flags, as identified by Goodman and Snyder,¹² are areas in an individual's medical history and clinical examination that may be associated with a high risk of serious disorders, such as cancer, fracture, infection, or inflammation. Red flags require immediate attention for either further screening or an appropriate referral. For this athlete, the red flags included the following:

- intermittent low back pain without any known cause of injury and
- symptoms did not fit expected mechanical or neuromuscular patterns.

Pharmacology

The athlete's medication list included the use of a nonsteroidal anti-inflammatory drug (ibuprofen) for pain as needed several times a week. He also used famotidine (antacid) several times a week for an upset stomach

and GERD. The adverse reactions and side effects of ibuprofen in the GI system include constipation, GI bleeding, hepatitis, dyspepsia, nausea, vomiting, and abdominal discomfort. The adverse reactions of famotidine include constipation, diarrhea, and nausea.¹³ The athlete indicated he was not taking nutritional supplements for the past year since he had previously experienced GI disturbances.

SCREENING QUESTIONS

According to Goodman and Snyder,¹² a positive finding in one area during a musculoskeletal evaluation could lead to further questioning in the following areas: integumentary, rheumatologic, cardiovascular, pulmonary, psychologic, gastrointestinal, hepatic/biliary, hematologic, genitourinary, gynecologic, endocrine, and immunologic. The medical history provided clues that some of the over-the-counter medications

the athlete was taking may be causing GI disturbances. The subjective history focused on additional questions. The checklist of additional questions included whether the athlete was experiencing nausea, vomiting, swallowing difficulties, indigestion and heartburn, food intolerances, and bowel and bladder dysfunctions (for example, constipation, diarrhea, or incontinence). The athlete indicated he had occasional indigestion, and he may have food intolerances to bread and pasta. The athlete indicated he had not mentioned his observed food intolerance to his physician.

As a part of the family physician's evaluation, the visual Bristol Stool Form Scale was used with the athlete.¹⁴ The Bristol Stool Form Scale ranges from Type 1 to Type 7 using descriptions expressed in everyday language. Type 1 is classified as a person having stools that are separate hard lumps like nuts, which may be indicative of constipation. Type 4 is classified as being stools that are like a sausage or snake, smooth and soft, and Type 5 as soft blobs with clear-cut edges. Both Type 4 and Type 5 may be thought of as normal or ideal stools. Finally, Type 7 is classified as stools being watery with no solid pieces, which may be indicative of diarrhea. The athlete was classified as a Type 1 on this scale, indicating constipation.

Diagnostic Procedures

The physician had ordered a blood test, which included a thyroid function test. The test result was negative for a thyroid dysfunction.

Diagnostic Imaging

The athlete did not undergo any diagnostic imaging. The referring physician indicated that this type of diagnostic testing of the GI system was not required until further conservative measures such as physical therapy were completed.

Examination/Evaluation

A physical examination was initiated with observation of the athlete while in the clinic waiting room. The athlete sat with slumped posture. However, his gait revealed no specific abnormalities. His posture revealed internally rotated shoulders, forward head, and moderate winging of the medial scapular border bilaterally. Standing pelvic alignment was normal. The athlete also had normal medial longitudinal arches and no unusual wear patterns on his athletic shoes. The athlete was observed to use a chest breathing strategy with mild use of the scalene muscles.

No atrophy of the arm or leg muscles was noted. Seated blood pressure on the right arm was 110/60 mm Hg. His pulse was 67 beats per minute at the right wrist, respiration at 14 breaths per minute, oxygen saturation at 98%, and oral temperature at 98.6°F. No jugular venous distension was noted.

Auscultation of the heart and the lungs did not appear to reveal abnormal sounds. Palpation of the chest revealed symmetrical and normal chest expansion. Percussion of the chest, back, and abdomen did not elicit pain or a dullness sound.

Lower extremity pulses, light touch sensation, and vibration sense were intact, with the deep tendon reflexes 2+ out of 4 and manual muscle testing 5 out of 5. Active trunk flexion, extension, sidebending, and rotation ranges of motion were full and painfree. Passive hip range of motion was noted to be full and painfree bilaterally. Supine leg length was normal. Patrick's test (FABER) was negative. Supine and sidelying hip compression and distraction did not elicit pain symptoms. Flexibility testing revealed mild tightness of the iliopsoas and rectus femoris bilaterally. Passive straight leg raise was approximately 80° bilaterally without pain. Functional testing consisting of single leg balance (30 seconds), stairclimbing, full squat, and standing multidirectional lunges were symmetrical and negative for pain.

The supine iliopsoas muscle test slightly increased left lower abdominal pain. This test, as described by Goodman and Snyder,¹² suggests a possible irritation of the psoas muscle due to an inflamed appendix or peritoneum. The authors describe the iliopsoas muscle test being performed in supine with the patient performing a straight leg raise and the therapist applying resistance to the distal end of the thigh as the patient tries to hold the leg up. The obturator muscle test, as described by Goodman and Snyder,¹² was negative. The authors describe the obturator muscle test as being performed in supine with active assisted hip flexion and 90° flexion at the knee, where the therapist holds the ankle and rotates the leg internally to stretch the obturator muscle.

Palpation of the sacrum and lumbar spine did not elicit pain symptoms. Since the patient had lower abdominal pain, palpation of this region was performed and revealed a mild tenderness on the left greater than right lower abdomen. Goodman and Snyder¹² indicate that clients with constipation and tender psoas trigger points may report anterior hip, groin, or thigh pain when the fecal bolus presses against the trigger points.

Special tests such as the pinch-an-inch test, Blumberg's sign, and McBurney's point in the lower abdomen were negative to palpation.¹² Palpation of the entire abdomen did not appear to reveal masses. Auscultation and percussion of the abdomen did not reveal abnormal sounds.

DIAGNOSIS/PROGNOSIS

The physician's diagnosis was low back pain ICD-9-CM 724.2, which was equivalent to the 2015 ICD-10-CM M54.5 low back pain. The physical therapy diagnosis was classified as hip and lumbar dysfunction.

PLAN OF CARE

Patient goals were to reduce low back and hip pain to a 0 to 2 out of 10 and determine if a food allergy may be contributing to his symptoms. Physical therapy goals were to decrease pain, teach techniques to help manage constipation, provide a home exercise program, and contact the physician regarding medical evaluation for food intolerances. The physical therapy plan of care included further assessment, patient education, manual therapy as indicated, and therapeutic exercise.

INTERVENTIONS

The athlete attended a total of two physical therapy sessions, including the initial evaluation. The following interventions were used:

1. Instructed the athlete to:
 - a. perform 15 diaphragmatic breaths in supine every morning before using the bathroom;
 - b. perform self-directed gentle abdominal massage in supine (10 clockwise strokes from right to left) after performing diaphragmatic breathing exercises;
 - c. use a step stool, small plastic wastebasket flipped on its side, or to consider purchasing a Squatty Potty toilet stool (see www.squattypotty.com) to be placed underneath the feet during a bowel movement; and
 - d. use perineal self-acupressure via patient education handouts.¹⁵
2. Recommended to the physician the potential need for further evaluation for gluten intolerance. The athlete was referred by the physician to a dietitian and placed on a

temporary elimination diet.

3. Discussed additional selected remedies for constipation¹⁶⁻³⁷ (Table 3).

OUTCOMES

A follow-up phone call with the athlete after 3 months revealed that he had continued to use the instructions (Table 3) provided in physical therapy on most days of the week and used the Squatty Potty on a daily basis. He also indicated that the elimination diet provided by the dietitian revealed he was sensitive to gluten; therefore, he had avoided it for the past two months. He rated himself as a Type 4 on the Bristol Stool Form Scale, which may be considered an ideal or normal stool. The athlete indicated he no longer had constipation and had not experienced any intermittent hip or back pain for the past two months.

DISCUSSION

The key step in managing constipation should be to rule out secondary causes of constipation, such as anatomical lesions, endocrine disorders, neurologic diseases, or medication side effects. Therefore, a comprehensive differential screening is indicated for individuals who have atypical symptoms. In this case study, it was found that the athlete did not have mechanical hip or back pain, but rather a GI dysfunction with constipation. Furthermore, gluten intolerance may have contributed to the athlete's symptoms and subsequent constipation. Further research in this area may be warranted and the effects of GI symptoms need to be further studied with a larger sample size to determine the prevalence of GI symptoms and constipation in individuals with hip and back pain.

A thorough pharmacological review was indicated in this case since nonprescription and prescription medications, as well as supplements, may provide clues to various dysfunctions. Ciccone³⁸ indicated that a person taking over-the-counter aluminum-containing antacids for an upset stomach may lead to constipation. Additionally, nonsteroidal anti-inflammatory drugs have been implicated in GI symptoms.^{9,39}

Seeing a physician is imperative if a person has chronic constipation as there might be a medical reason or medication side effect that needs to be addressed. The physician in this case ordered a thyroid function test for this athlete. Even though the test was negative, the physician was trying to rule out the thyroid as a source of the constipation. A cross-sectional study by Werhun and Hamilton⁴⁰ found that an abnormal thyroid-stimulating

Table 3. Selected Remedies for Constipation

- Ritualize bowel habits.¹⁶
- Don't ignore the urge to use the bathroom.¹⁷
- Don't be in a hurry when using the bathroom.¹⁸
- Get regular exercise.¹⁹
- Consider using a bidet to gently lubricate and stimulate the perineal area to help the anal sphincter relax during defecation.
- Do a gentle and slow abdominal massage.²⁰
- Lower your stress levels.²¹
- Eat probiotic and prebiotic foods.²²
- Avoid excess calcium.
- Eat prunes.²³
- Try eating a sweet potato.²⁴
- Avoid chocolate and unripe bananas until constipation symptoms have cleared.²⁵
- Drink enough fluids.²⁶
- Get enough fiber in your diet through vegetables, fruits, and whole grains.
- Use a safe breathing technique during a bowel movement. Learn diaphragmatic breathing techniques.^{6,27} Using a "huffing" type of breathing technique—breathing out with small breaths^{20,28} may help minimize stress to the heart and small blood vessels in the brain.²⁹⁻³¹
- See an acupuncturist to learn how to use the perineal self-acupressure point and other acupressure points.^{15,32}
- Try an aromatherapy massage with essential oils such as rosemary and lemon.³³
- Consider physical therapy for pelvic floor training,^{7,34} abdominal muscle training and massage,³⁵ visceral osteopathy,³⁶ and connective tissue manipulation³⁷ for reducing symptoms of constipation.

hormone test was associated with constipation. Additionally, prolonged use of over-the-counter laxatives without a physician's guidance may lead to chronic constipation. If a person has constipation only periodically, then the selected interventions such as those in Table 3 may be helpful. Finally, it has been argued that the Western style seated toilet is not the ideal position for a bowel movement⁴¹⁻⁴³ and therefore, the Squatty Potty toilet stool was recommended for the athlete. The Squatty Potty is a toilet stool which is either 7 inches or 9 inches in height, depending on the flexibility of the person and the size of the toilet, and is designed with a forward slant to ergonomically align the body for a complete and comfortable rectal elimination. It has been proposed that raising the feet with a stool along with trunk flexion while on the toilet²⁸ may help improve the optimum angle for rectal emptying. The rectoanal angle typically straightens with fully-flexed hips and this has been proposed to facilitate rectal emptying.⁴²

This case study demonstrates that physical therapists need to work with other clinicians when there are red flags or symptoms which go beyond the scope of physical therapy. Treating this athlete showed that all

symptoms need to be accounted for in order to establish the best intervention plan and outcome.

CONCLUSION

In conclusion, a young athlete with a history of lower back and hip pain without a specific mechanical cause or injury should be carefully evaluated to rule out a gastrointestinal dysfunction. A thorough medical history which accounts for all symptoms, over-the-counter products, and seemingly unrelated symptoms, such as stomach and gastroesophageal reflux, will guide a physical therapist during the evaluation and follow-up treatments. This case study presents a low-cost approach to intervention, due to the limited number of visits utilized and cost effective clinical recommendations, in helping an athlete resolve chronic symptoms of low back and hip pain. The case study also shows the importance of collaboration with other clinicians in evaluating and treating patients referred to physical therapy.

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