Original Article

PTRS Physical Therapy Rehabilitation Science

https://doi.org/10.14474/ptrs.2023.12.4.413
eISSN 2287-7584
pISSN 2287-7576

Phys Ther Rehabil Sci
2023, 12(4), 413-418
www.jptrs.org

Episacroiliac Lipomas: A Possible Undetected Cause of Non-specific Low Back Pain

Michele Felice Rovaris[a], Joshua Mark Prall[b*]

[a]Department of Physical Therapy, University of Scrantion
[b]Department of Physical Therapy, Lebanon Valley College

Background: Episacroiliac lipomas may be an undetected cause of low back pain with a high incidence in the general population. To date, research on these lipomas as a cause of non-specific low-back pain is limited. Therefore, the purpose of this case series is to describe the presentation and treatment of three patients who presented with non-specific low back pain where episacroiliac lipomas were observed. This could increase awareness in the identification of this condition and promote research into a more effective approach in the treatment of non-specific low back pain.

Design: Case series.

Methods: The first patient was a 66-year-old male who presented to physical therapy with chronic non-specific low back pain in the left sacroiliac joint region with associated radiculopathy. The second patient was a 22-year-old female who also presented to physical therapy with non-specific low back pain. The last patient was a 73-year-old male who presented with non-specific chronic low back pain with associated radiculopathy.

Results: Overall, the three patients showed improvements in pain levels when treatment specifically targeting the episacroiliac lipomas was initiated with deep tissue manual therapy localized to these lipomas.

Conclusions: Pressure applied at the location of these lipomas reproduces symptoms experienced by the patients. This finding may point to episacroiliac lipomas as major underlying cause of non-specific low back pain. Furthermore, most benefits were seen in patients while specifically targeting these lipomas. Traditional approaches to low back pain continue to be relatively ineffective and new options must be explored to determine more effective interventions.

Key Words: Episacroiliac Lipoma, Low back pain, Manual therapy, Sacroiliac joint.

Background and Purpose

Low back pain (LBP), described as pain experienced between the posterior aspects of the ribs and the buttocks, continues to be the leading cause of disability worldwide[1-3]. Despite constant improvements in modern day imaging, surgical procedures, and rehabilitation, the prevalence of this condition continues to increase while treatment effectiveness in the rehabilitation field seems to be at a standstill[4]. As of 2020, low back pain affected 619 million people globally and numbers are projected to increase to 843 million by 2050[2]. Since 1990, this condition has been the leading cause of years lived with disability and its prevalence among age groups continues to increase[3]. There are two major categories in which low back pain is divided: specific and non-specific[1]. LBP is defined as "specific" when the cause of this condition can be attributed to a specific pathology which includes, but it is not limited to, osteoporotic vertebral fracture, inflammatory spondyloarthropathies, and malignancy[3]. Non-specific, on the other hand, refers to when this condition cannot be attributed to a specific pathology[1]. While research is ongoing to

Received: Oct 3, 2023 **Revised:** Dec 13, 2023 **Accepted:** Dec 14, 2023
Corresponding author: Joshua Prall (**ORCID** https://orcid.org/0000-0002-0017-5316)
Department of Physical Therapy, Lebanon Valley College, 145 Heisey Road, Annville PA 17003
Tel: +5705615384 **Fax:** +5705615384 **E-mail:** prall@lvc.edu

determine pathologies and effective treatment methods, non-specific low back pain continues to account for about 90% of all LBP cases[2, 3].

Episacroiliac lipomas, also known as “back mice”, “sacroiliac fatty nodules”, and “iliac crest pain syndrome” may be an undetected cause of non-specific LBP with a high incidence in the general population. These lipomas, as the name suggests, are deeply tethered masses of fatty tissue that seem to herniate from deep fat pads located at the lumbosacral spine[5]. They are usually located at the site of the sacroiliac joint but can also be found around the lumbar spine or the iliac crest[5]. Their consistency resembles one of trigger points, however they are usually oval shaped, elastic, and moveable in nature and can be found either unilaterally or bilaterally[6-11]. While the exact nature of this condition is still unknown and its relationship with LBP is not clearly identified, palpation on the area usually reproduces the symptoms that patients complain of, which include radiculopathy radiating into the lateral and anterior thigh, and sometimes below the knee level into the calf [6]. Available research suggests that diagnosis of this condition can be confirmed by ultrasonography, percutaneous radio-frequency with a needle, as well as anesthetic injections on the location of the painful nodule. Furthermore, through clinical examination, palpation, and differential diagnosis, this condition can also be identified in the absence of imaging studies [5]. The research on episacroiliac lipomas is limited and dated, however, the relationship between the herniation of these fat pads and LBP has been consistently reported through the available research.

The purpose of this case series is to describe the clinical presentation and treatment of three patients who presented to physical therapy with complaints of non-specific LBP. In all three of these patients, episacroiliac fatty nodules were observed and palpation at the site of these nodules reproduced their exact symptoms of complaint. This case series may increase awareness in the identification of this condition and promote research for a more effective approach in the treatment of non-specific LBP.

Case Summaries

The first patient identified (Mr. MM) was a 66 y/o male who presented to physical therapy with a primary complaint of chronic non-specific low back pain with radiculopathy radiating down the left lower extremity. More specifically, his pain was localized to the left sacroiliac joint and lumbar spine, and was described as “dull and achy,” with complaints of radicular symptoms that traveled to the anterior thigh. The patient displayed limitations in lumbar spine active range of motion in all directions, as well as deficits in core and bilateral lower extremity strength. Episacroiliac lipomas were observed at his bilateral sacroiliac joints, and pressure on the left lipoma would reproduce the symptoms that the patient had complained of during his initial evaluation. The patient’s squat observation revealed decreased depth and valgus collapse of the left lower extremity. Repeated motion testing showed an improvement in symptoms with repeated flexion, while a worsening of symptoms with repeated extension. The patient reported that moving from supine to sit, rolling in bed, and lifting objects from the ground exacerbated the symptoms. He had no significant past medical history and was considered a good candidate for physical therapy services.

The second patient identified (Mr. KK) was a 73 y/o male who also presented to physical therapy with insidious onset of non-specific LBP and radiculopathy traveling down the right lower extremity. The patient reported that the pain started about 10 months prior to his initial evaluation. He described a “sharp” pain which was localized to the lumbar spine and right lower extremity, and also complained of numbness in the right anterior-lateral thigh. His initial evaluation showed limitations in hip active range of motion, with flexion and external rotation specifically limited by pain. Lumbar spine active range of motion was limited in all directions with mild weakness in bilateral lower extremities (right > left). Poor core strength and limited bilateral hamstring flexibility was also noted. A sacroiliac lipoma was observed at the right sacroiliac joint, and pressure applied to the area reproduced the symptoms of subjective complaints on his initial evaluation. Due to these impairments, the patient was limited in performing routine activities of daily living

without experiencing an exacerbation of symptoms. The patient had no significant past medical history and was also considered a good candidate for physical therapy services.

The last patient included in this case series (Ms. TW) was a 22 y/o female who presented to physical therapy approximately 9 months following a motor vehicle accident. This patient's primary complaints included "sharp and piercing" pain at the cervical and lumbar spine with occasional experience of radicular symptoms radiating toward both hips. The patient underwent a previous bout of physical therapy for the four months following the accident, but was unsuccessful. The patient reported that imaging revealed a herniated disc in the cervical spine, with no significant findings in the lumbar spine. Aggravating activities included standing for prolonged periods of time, bending, lifting, and sitting/standing with proper posture. Her initial valuation revealed poor postural awareness, active range of motion limitations at the lumbar spine secondary to pain, generalized lower extremity strength deficits, as well as extreme tenderness to palpation at the lumbar spine and bilateral sacroiliac joints. Episacroiliac lipomas were observed on bilateral sacroiliac joints, and pressure in those locations would reproduce pain and radicular symptoms experienced by the patient during initial evaluation. Straight leg raise test was negative at bilateral lower extremities. Ms. TW did not have a significant past medical history and was considered a good candidate for physical therapy.

Management and Outcomes

Physical therapy management began with a similar approach for all three patients, which included therapeutic exercises for core and lower extremity strengthening. Lumbar spine stabilization, therapeutic activities to restore functional ability, and manual therapy to manage symptoms and improve pain-free active range of motion were performed. Each session started with an active warm up on a recumbent bike, followed by therapeutic exercise on the table with functional activities, and ended with manual therapy which included soft tissue mobilization to the lumbar spine to reduce symptoms. Each intervention was progressed based on the individual patient's improvements and symptom intensity.

After approximately ten visits, none of the patients reported greater than 20% improvement since the start of care. Mr. KK and Mr. MM reported a slight decrease in the frequency of radicular symptoms, but still felt limited in most of their ADLs due to symptom intensity. Ms. TW did not note any improvements in symptoms of the lumbar spine and asked to be discharged about 2 weeks later (total visits = 14) due to ineffectiveness of the treatment for the lumbar spine. She also exhibited an increase in the intensity of symptoms following her physical therapy sessions. For Mr. MM, the treatment approach was kept the same for the following 5 months, with about 5-10% improvement noted at each re-evaluation (every 10 visits or 1 month). Mr. KK's approach was also kept the same for another two weeks.

After a total of 60 visits for Mr. MM, and 15 visits for Mr. KK, deep tissue massage and mobilizations to the sacroiliac joints were introduced into the treatment plan as manual therapyin an effort to improve the effectiveness of treatment. Both patients were tested for possible leg length discrepancy due to sacroiliac joint malrotation using the standing flexion test and supine to sit test, with no significant findings. Grade 3-4 mobilizations in a posterior-anterior direction were applied at the symptomatic sacroiliac joint (right side for Mr. MM and left side for Mr. KK) for 5-10 minutes daily for a total of three sessions. Deep tissue massage, consisting of sustained deep pressure, using thumb over thumb technique, on the site of the symptomatic episacroiliac lipoma, was performed for 10 minutes at the end of each session. Pressure was consistently applied in 30-second bouts, with 10 seconds in between each bout. The amount of pressure was based on patient tolerance.Both patients reported a slight increase in symptoms following each manual therapy session. However, they also noted significant improvements in symptoms for two days following administration of manual treatment, as well as improvements in functionality between sessions. Therapeutic exercise and functional activities continued to focus on core stability, spinal mobility, posture, and balance. Bridges, thread the needle, open books, sit to stand

(with and without resistance), planks, and cable rows were performed throughout the whole program. Resistance was increased based on patient's status and observed improvements. Generally, 3 sets of 10 repetitions each were performed for these exercises. About 8 visits later, Mr. MM noted 85% improvement since the start of care and was discharged 4 visits later as he achieved all of his goals for physical therapy (total visits = 68). At his first re-evaluation, or fourth visit, Mr. KK reported a 50% improvement in symptoms which increased to 85% by the second re-evaluation, or 12thvisit, with visits totaling 27 since his initial evaluation.

Discussion

This case series described three individuals who presented to physical therapy with non-specific low back pain with radiculopathy where episacroiliac lipomas were observed on their initial evaluations. Despite two of the three patients displaying some improvement with traditional management of non-specific low back pain, this treatment was relatively ineffective considering the time and amount of visits required to achieve it. More significant improvements were seen when attention was shifted towards treating the sacroiliac joint and episacroiliac lipomas specifically, with the addition of manual therapy that includedsacroiliac joint mobilizations and deep tissue massage. This positive shift in treatment suggests that these lipomas may be contributing factors to the onset of non-specific low back pain for patients of varying age and clinical presentation.Because these lipomas seem to be herniations in the deep tissue fat pads located in the area, the success of this treatment approach could be attributed to a reduction in this herniation by "pushing" the fat tissue back into the original pad, ultimately reducing the size of the herniation. Furthermore, the resultant increase in blood flow resulting from tissue mobilization could promote healing, decrease inflammation in the area, and reduce symptom intensity[12].Lastly, improvements can also be attributed to an increase in core strength and spinal mobility, breaking the pain cycle, and ultimately resulting in return of function. In a study performed by Bicket et al[6], among ambulatory patients with low back pain who seek treatment, estimates of back mice ranged from 33% to 58%, highlighting the incidence of this condition in the general population. A narrative review performed by Canis Parera et al in 2016[5] reported the clinical signs commonly observed in the literature regarding episacroiliac lipomas. The clinical presentation described in the study matches that of the patients included in this case series, including nodule presence, chronology of symptoms, pain characteristics, palpation, referred pain patterns, as well as aggravating and relieving factors.

Confusion on the management of LBP has been well documented, and this case series identifies another possible cause of low back pain that needs to be addressed systematically within the research field of physical therapy[4, 13]. Extensive research on this condition was performed during the second half of the 1900s and was treated successfully with either corticosteroid injection at the site of the lipoma or surgical excision. Furthermore, there have been multiple instances in which these lipomas have been observed on other locations of the lumbar spine without complaints of radiculopathy. This suggests that these lipomas may not only originate at the sacroiliac joint, but also superiorly in the lumbar spine. Due to an increased reliance on modern imaging techniques and a shift of focus of the medical field to the spine and spinal cord, research on this matter has been scarce. Despite the amount of research and resources allocated towards identifying the etiology of LBP, about 85% of the cases cannot be attributed to a specific structural cause.

On the premise that the symptoms experienced by these patients could be reproduced with palpation of the nodules, as well as improved treatment effectiveness when targeting the specific lipomas, this case series suggests that more research on this condition is warranted. Due to the improvement with deep tissue palpation techniques exhibited, dry needling may be a possible treatment intervention to manage these lipomas, as the use of them in treating myofascial trigger points has been well documented at this time[14].

Conclusion

The vast difference of clinical presentations of patients that are affected by LBP continues to be a challenge for identifying possible underlying etiologies of the condition. Despite improvements and advancements in the rehabilitation field, recurrent non-specific LBP continues to be a major issue in healthcare today. This case series described three patients with non-specific LBP and differing histories, but presented with similar symptoms, including the presence of episacroiliac lipomas. Treatment effectiveness significantly improved in two patients where targeted manual therapy to the sacroiliac joint and deep tissue massage to the lipoma were performed. Further research on lipomas is warranted in order to determine their role in the etiology of non-specific low back pain and identify possible treatment techniques that could prove effective in treating this condition.

Acknowledgments

We have no acknowledgements.

Declaration of Interest

We declare no conflict of interest.

Ethical Statement

Written informed consent was obtained for all participants included in this study.

References

1. Hartvigsen J, Hancock MJ, Kongsted A, et al. What low back pain is and why we need to pay attention. Lancet. 2018;391(10137):2356-2367. doi:10.1016/S0140-6736(18)30480-X
2. Low Back Pain. World Health Organization. Updated June 19th, 2023. Accessed September 17th, 2023. https://www.who.int/news-room/fact-sheets/detail/low-back-pain#:~:text=It%20is%20non%2Dspecific%20in
3. The Global Burden of Low Back Pain. International Association For the Study of Pain. Published July 9th, 2021. Accessed September 17th, 2023. https://www.iasp-pain.org/resources/fact-sheets/the-global-burden-of-low-back-pain/
4. Jette AM. In Pursuit of the Ever-Expanding Shoreline. Phys Ther. 2016;96(2):134-136. doi:10.2522/ptj.2016.96.2.134
5. Cañis Parera M, Expósito Izquierdo M, Cabré Vila JJ. Historical Review of Studies on Sacroiliac Fatty Nodules (Recently Termed "Back Mice") as a Potential Cause of Low Back Pain. Pain Ther. 2021;10(2):1029-1050. doi:10.1007/s40122-021-00321-5
6. Dunning J, Butts R, Mourad F, Young I, Flannagan S, Perreault T. Dry needling: a literature review with implications for clinical practice guidelines. Phys Ther Rev. 2014;19(4):252-265. doi:10.1179/108331913X13844245102034
7. Motyka TM, Howes BR, Gwyther RE, Curtis P. Treatment of Low Back Pain Associated With Back Mice": A Case Series. J Clin Rheumatol. 2000;6(3):136-141. doi:10.1097/00124743-200006000-00004
8. Curtis P, Gibbons G, Price J. Fibro-Fatty Nodules and Low Back Pain. The Back Mouse Masquerade. J Fam Pract. 2000;49(4):345-348
9. Hayden JA, Ellis J, Ogilvie R, Malmivaara A, van Tulder MW. Exercise therapy for chronic low back pain. Cochrane Database Syst Rev. 2021;9(9):CD009790. Published 2021 Sep 28. doi:10.1002/14651858.CD009790.pub2
10. Wong CK, Mak RY, Kwok TS, et al. Prevalence, Incidence, and Factors Associated With Non-Specific Chronic Low Back Pain in Community-Dwelling Older Adults Aged 60 Years and Older: A Systematic Review and Meta-Analysis. J Pain. 2022;23(4):509-534. doi:10.1016/j.jpain.2021.07.012
11. Buchbinder R, van Tulder M, Öberg B, et al. Low Back Pain: A Call For Action. Lancet. 2018;391(10137):2384-2388. doi:10.1016/S0140-6736(18)30488-4
12. Waters-Banker C, Dupont-Versteegden EE, Kitzman PH, Butterfield TA. Investigating the mechanisms of massage efficacy: the role of mechanical immunomodulation. J Athl Train. 2014 Mar-Apr; 49(2):266-73. doi: 10.4085/1062-6050-49.2.25.

13. Bicket MC, Simmons C, Zheng Y. The Best-Laid Plans of "Back Mice" and Men: A Case Report and Literature Review of Episacroiliac Lipoma. Pain Physician. 2016;19(3):181-188.
14. Sizer PS Jr, Mauri MV, Learman K, et al. Should evidence or sound clinical reasoning dictate patient care?.J Man Manip Ther. 2016;24(3):117-119. doi:10.1080/10669817.2016.1185296