Pain Physician 2016; 19:181-188 • ISSN 1533-3159

Literature Review

The Best-Laid Plans of "Back Mice" and Men: A Case Report and Literature Review of Episacroiliac Lipoma

Mark C. Bicket, MD[1], Courtney Simmons, MD[2], and Yi Zheng, MD, PhD[2]

From: [1]John Hopkins University, Baltimore, MD; [2]Massachusetts General Hospital, Boston, MA

Address Correspondence:
Mark C. Bicket, MD
600 N. Wolfe St.
Baltimore, MD 21287
John Hopkins University,
Baltimore, MD
E-mail:
Mark.bicket@gmail.com

Disclaimer: There was no external funding in the preparation of this manuscript. Conflict of interest: Each author certifies that he or she, or a member of his or her immediate family, has no commercial association (i.e., consultancies, stock ownership, equity interest, patent/licensing arrangements, etc.) that might pose a conflict of interest in connection with the submitted manuscript.

Manuscript received: 04-24-2015
Revised manuscript received: 08-24-2015
Accepted for publication: 09-28-2015

Free full manuscript:
www.painphysicianjournal.com

Background: Back mice, or episacroiliac lipoma, represent a potentially treatable cause of low back pain that may be under-recognized in clinical practice. Despite being well characterized based on clinical history and physical examination findings, implementation of appropriate treatment may be delayed or missed based on a lack of familiarity with the diagnosis.

Objectives: In this case report and literature review, we describe a 47-year-old woman with history of persistent low back pain who presented with a pain exacerbation consistent with a back mouse. The history, epidemiology, clinical characteristics, differential diagnosis, potential mechanisms for pain, and treatment options for back mice were then reviewed.

Study Design: Case report and literature review.

Setting: Academic university-based pain management center.

Results: Studies included one randomized clinical trial, 4 cross-sectional studies, 8 case reports or series, and 16 other publications prior to 1967.

Limitations: A single case report.

Conclusions: Firm, rubbery, mobile nodules that are located in characteristic regions of the sacroiliac, posterior superior iliac, and the lumbar paraspinal regions may represent fatty tissue that has herniated through fascial layers. When painful, these back mice may be confused with other causes of low back pain. In particular, the presence of point tenderness may mimic myofascial pain, and reports of radicular pain may imitate herniated nucleus pulposus. However, back mice may be distinguished from other entities based on findings from the history and physical examination such as absence of neurological deficit. Treatment consisting of injection of local anesthetic into the nodule with or without corticosteroid followed by repeated, direct needling has been reported to relieve pain in many case reports. The one clinical trial comparing injection of local anesthetic to normal saline, which did not include repeated needling, found only mild and transient benefit in the treatment group.

Key words: Low back pain, back mice, back mouse, episacroiliac lipoma, lumbar subcutaneous nodules, multifidus triangle syndrome, subcutaneous fatty nodes, case report, review

Pain Physician 2016; 19:181-188

Low back pain represents a common, costly, and disabling condition for which patients often present to primary care physicians, pain specialists, and surgeons (1). Low back pain constitutes the highest cause of disability globally, with recent estimates suggesting an annual and lifetime prevalence of 10% and 40%, respectively (1,2). Estimates of the significant financial burden attribute more than $100 billion dollars in yearly medical expenses to low back pain (3). To help manage this problem, multispecialty

guidelines for the diagnosis and treatment of low back pain recommend that physicians categorize patients into one of 3 broad cohorts, which include nonspecific low back pain, back pain associated with radiculopathy/spinal stenosis, and back pain associated with another specific spinal cause (4). Appropriate recognition of treatable causes of back pain, even for a small number of cases, has the potential to ensure patients avoid a delay or inappropriate diagnosis and consequently receive timely treatment. This case report and literature review describes one potentially treatable cause of back pain.

"Back mice," which are palpable, freely moveable, fatty tissue nodules found commonly in the sacroiliac region, represent a clinical entity that has received various monikers over time, the most common of which is "episacroiliac lipoma" (Table 1). Sutro's (5) first description of back mice as a cause of low back pain dates to 1935. Cadaveric work in the late 1930s and 1940s characterized their distinct pattern of occurrence, with nodules located in areas where fatty tissue herniates through overlying fascial layers (6-9). The lumbar paraspinal musculature, sacroiliac area, and posterior superior iliac crest constitute the most commonly affected areas in the low back, but thoracic back mice have been described as well (Fig. 1A) (7). The sobriquet of back mice developed out of the need to communicate with patients about the mobile nature of the nodule, the

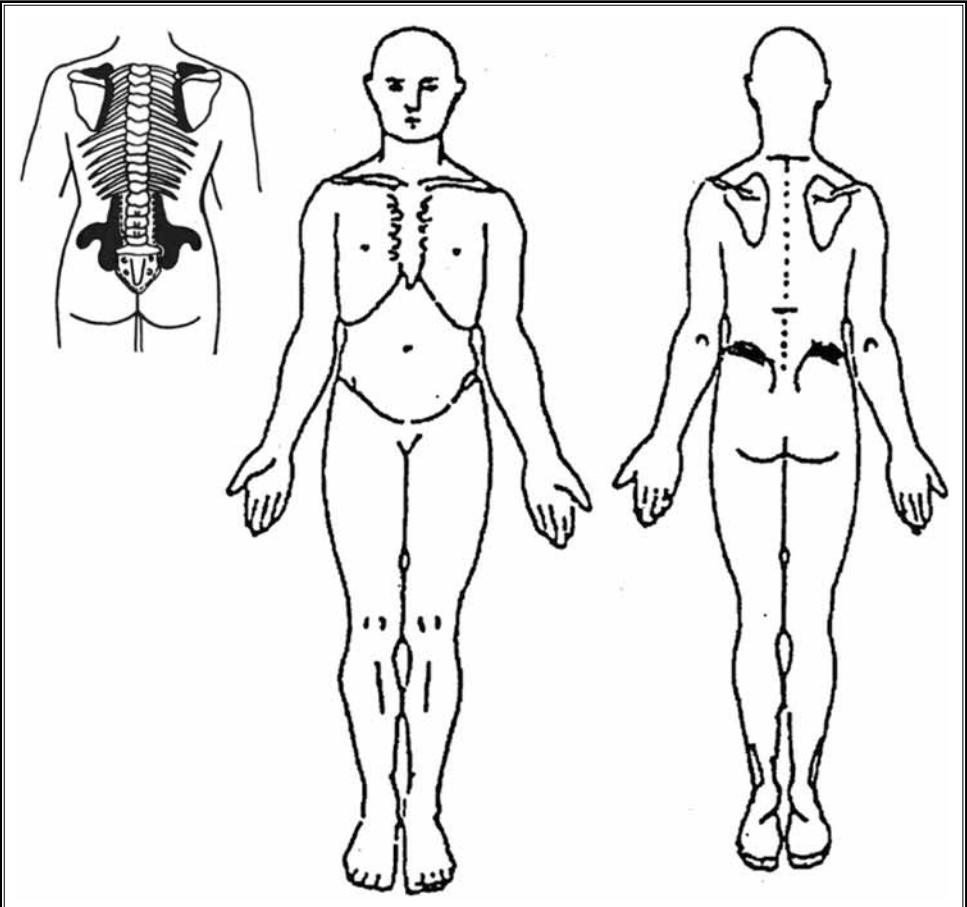

Fig. 1. *The pattern of pain associated with back mice has been previously noted to correspond to a characteristic distribution in the lumbar and lumbosacral area (A). In comparison, the patient described in this case report marked a very similar area of pain on the patient intake sheet (B) when answering the question "Where is your pain? Please shade the areas of your pain in the diagrams below." Fig. 1A reprinted with permission from the Journal of the Florida Medical Association (24).*

Table 1. *Alternative names for back mice or episacroiliac lipoma.*

Episacral lipoma
Sacroiliac lipomata
Subcutaneous fatty nodes
Lumbar subcutaneous nodule
Tender rheumatic nodule
Fibrositis nodule
Fibrofatty nodule
Multifidus triangle syndrome
Iliac crest pain syndrome

rubbery consistency, and ability to change size over time (10,11). The purpose of this report was to emphasize the importance of considering back mice as a cause of low back pain and to review existing literature, including treatment options.

Case Report

A 47-year-old woman with a 2-year history of persistent axial low back pain without involvement of the lower extremities presented to an outpatient pain clinic for further evaluation of a 2-week low back pain exacerbation. No imaging studies were available at the time of initial visit. The patient noted no readily identifiable trauma or inciting event. She described an intermittent sharp pain localized to the bilateral low back area adjacent to the posterior superior iliac crest (Fig. 1B). Associated symptoms included intermittent numbness with occasional muscle cramps of the bilateral posterior thighs. Pain triggers included twisting and walking, while alleviating factors included resting and lying down. Prior use of heat, ice, and naproxen 220 mg twice daily provided minimal relief. Physical examination revealed 2 mildly tender, distinctly palpable, and freely movable nodules, with one nodule overlying each side of the lumbar paraspinal musculature measuring 4 cm x 2 cm x 3 cm. Deep palpation of these lesions reproduced the patient's sensations of pain in the low back as well as numbness in the posterior thigh. The rest of her physical exam proved benign with a negative straight leg raise test, negative Patrick's test, and no findings of neurologic deficits or sensory changes. The patient was scheduled for injection of the palpable nodules with local anesthetic and corticosteroid under ultrasound visualization at the next available appointment.

At follow-up, the patient noted no change in her pain pattern. After obtaining informed consent and prone positioning, 2 points of tenderness were identified by manual palpation as tender nodules located on each side of the lumbar spine. Ultrasound visualization demonstrated the nodules (Fig. 2A, B). Follow-

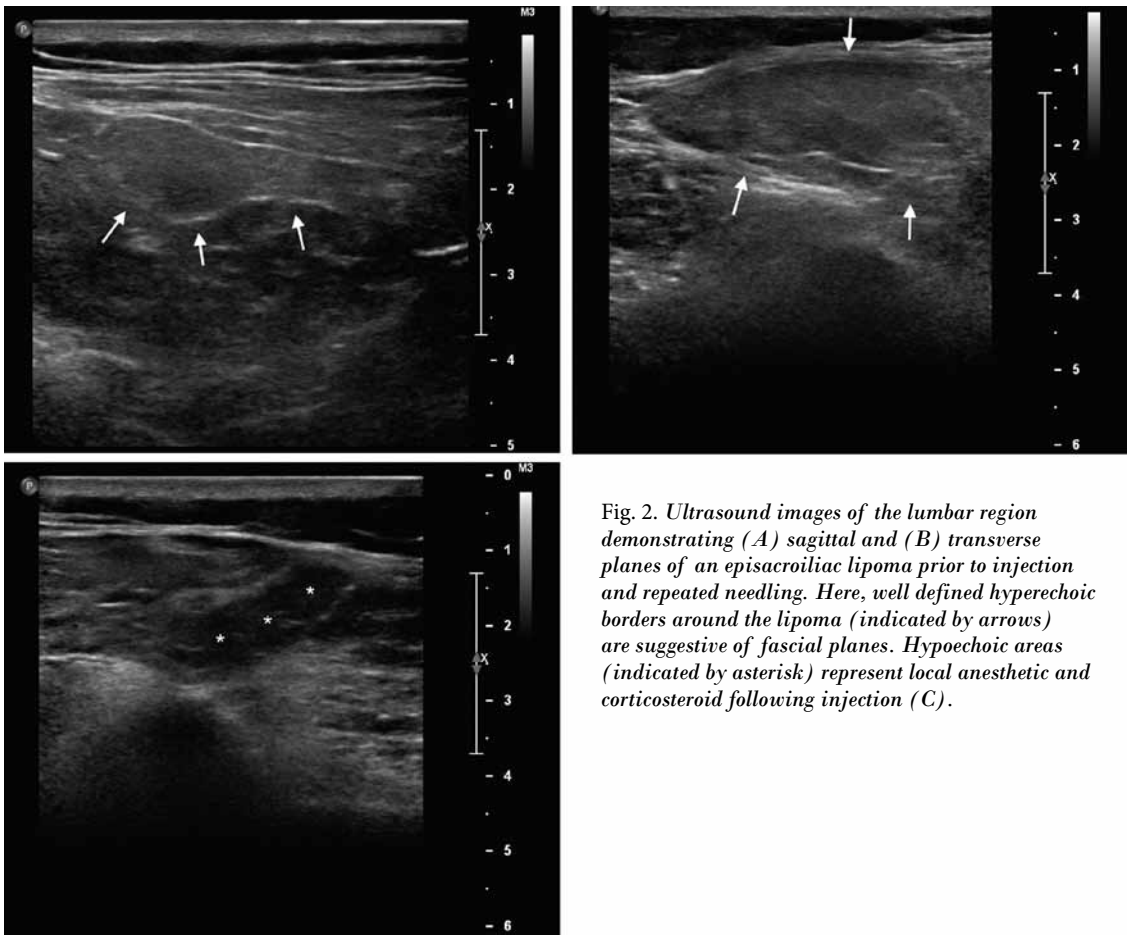

Fig. 2. *Ultrasound images of the lumbar region demonstrating (A) sagittal and (B) transverse planes of an episacroiliac lipoma prior to injection and repeated needling. Here, well defined hyperechoic borders around the lipoma (indicated by arrows) are suggestive of fascial planes. Hypoechoic areas (indicated by asterisk) represent local anesthetic and corticosteroid following injection (C).*

ing skin cleaning with chloroprep and sterile draping techniques, each tender point was approximated and elevated in the direction away from the body. A 3.5 inch 25 gauge needle with tip bent to prevent deep penetration was then inserted into each point. Approximately one cubic centimeter of a 10 mL injectate made up of 1 mL triamcinolone 40 mg/mL with 4.5 mL lidocaine 1%, and 4.5 mL bupivacaine 0.5% was delivered to the trigger point during each needle pass, followed by dry needling for 5 seconds (Fig. 2C). This process was repeated 5 times at each trigger point site. The patient tolerated the procedure well. Visual analog scale (VAS) pain ratings prior to and following the procedure were 5/10 and 0/10, respectively.

At one month follow-up, the patient noted sustained absence of both pain and paresthesias, with VAS score of 0/10. Oral analgesic medication consumption was no longer necessary. The patient reported enhanced sleep and improved functional status in the form of increased mobility, with plans to start a new exercise regimen due to lack of back pain. No procedural complications were detected. She declined to schedule a follow-up visit given resolution of symptoms.

Literature Review Results

Back mice, or episacroiliac lipomas, represent a defined and potentially treatable cause of low back pain. Articles included in this review were selected by searches of the PubMed, OVID, and CINHAL database from inception to January 2014 with the assistance of a librarian using search terms "back mouse," "back mice," "episacroiliac lipoma," "fibrositis," "multifidus triangle syndrome," and "fibrofatty nodule." Case reports, review articles, abstracts, and controlled trials were all considered for inclusion with an English language restriction. The reference lists of articles were searched for relevant references that were missed during the initial screening. Studies included one randomized clinical trial, 4 cross-sectional studies, 8 case reports or series, and 12 other publications prior to 1967 (Table 2) (5-8,10,11,13-35). Because a series of 5 publications by the same author appeared to describe the same cohort of patients (19-21,24,26), only the final study was included in this review (26). One non-randomized trial of "iliolumbar syndrome" was not included given pain production with hip flexion and Patrick tests (12).

Discussion

The prevalence of nodules associated with back mice varies based on the clinical setting (Table 3). Historical estimates of painful nodules in hospitalized patients ranged from 9% to 12% (5,8). More recently, examination of patients presenting to a rheumatology clinic found 26% had subcutaneous nodules, of which 6% were painful (13). A later estimate from a family practice setting reported 61% of patients to have back mice, though the number of painful nodules was not noted (14). Among ambulatory patients with low back pain who seek treatment, estimates of back mice range from 33% to 58% (15,16). However, only 2 studies reported basic elements of physical examination for the reproduction of back pain but did not include palpation of nodules (15,16), making estimates of painful back mice less clear to today's clinician.

Back mice often present as isolated nodules, but descriptions of 2 or more nodules are not uncommon (10,11,13,17). The pain pattern and physical examination findings help distinguish back mice from other etiologies of low back pain. Pain with twisting, flexion, and extension of the lumbar spine is commonly reported (18). Palpation of a discrete, reproducible tender spot in the lumbar spine requires an ability to differentiate between back mice and myofascial pain. In comparison to myofascial trigger points, back mice lie superficial to muscle bands, may be moved independently of muscle, and often demonstrate a consistency like rubber (11). Pain radiating into the lower extremities may also suggest the presence of herniated nuclesus pulsosus, spinal stenosis, or sacral lipoma. Historical descriptions suggest that back mice pain often radiates down the lateral thigh to above the knee (18). However, back mice may present with radicular pains below the knee in posterior or patchy distributions, as seen in 37% of patients in a recent case series (11). Physical examination findings such as absence of neurologic deficit, intact reflexes, lack of sensory findings, and negative straight leg raise help to distinguish back mice from other entities causing radicular pain (11,18). Referred pains to other areas of the body may occur, such as bilateral hip pains and abdominal pain that reportedly resolved with treatment of back mice (17).

Among the various treatment options for back mice, the limited evidence base suggests that repeated needling and injection therapy appear to be the best initial approach before consideration of more invasive treatments such as surgical excision. Historical studies prior to 1967 focused primarily on pain relief achieved via surgery (5,6-9,22,25-30), though descriptions of in-

Table 2. *Study characteristics. Summary of the study design, interventions, and results to evaluate analgesic response to injection therapies and surgery for 'back mice.'*

Author, year	Patient Population	Treatment	Control Group	Outcome Measures	Results	Comments
Randomized Controlled Trials						
Collée 1991 (34)	41 patients with 'iliac crest pain syndrome'	Single injection of Lidocaine 25 mg in 5 mL	Isotonic saline 5mL	Pain score (VAS), pain improvement compared to baseline	At 2 weeks, treatment group with lower pain score compared to control. No difference in pain improvement between groups.	No changes noted in other variables such as morning stiffness, hours of pain per 24 hours, or use of medication.
Cross-sectional Studies						
Earl 1995 (14)	100 patients at an outpatient family medicine clinic	-	-	Presence of 'back mice' on physical examination	'Back mice' were identified in 61/100 patients (61%). Among patients without history of back pain, 8/12 had 'back mice' (67%).	Physical examination technique not described.
Swezey 1991 (13)	126 patients at an outpatient rheumatology clinic	'Intra-nodular' injection with triamcinolone 1 mg	-	Prevalence of 'lumbar subcutaneous nodules'	'Lumbar subcutaneous nodules' were identified in 33/126 patients (26%). One tender nodule was found, with symptom relief following injection	No difference in prevalence of nodules among patients with fibromyalgia or lumbar spondylosis was found.
Collée 1991 (16)	204 ambulatory patients with low back pain.	-	-	Prevalence of 'iliac crest pain syndrome'	'Iliac crest pain syndrome' was identified in 43/100 patients (43%).	Three patient settings included general practice, occupational health service, and rheumatology clinic.
Collée 1990 (15)	100 patients with low back pain at rheumatology and orthopedic clinics	-	-	Prevalence of 'iliac crest pain syndrome'	'Iliac crest pain syndrome' was identified in 43/100 patients (43%).	
Case Series						
Motyka 2000 (11)	35 patients with 'back mice'	Injection with local anesthetic and corticosteroid (n = 33) or local anesthetic only (n = 2)	-	VAS pain score, care satisfaction, adverse events	26 patients underwent 1 injection, with 9 patients receiving >1 injection. Change in VAS reduction -5.2 (SD 3.2) immediately following injection. High satisfaction with care and absence of major adverse events were noted.	Retrospective measurement of subjective outcomes.
Pace & Henning 1972 (18)	4 patients with 'episacroiliac lipoma'	Surgical excision of fatty nodules	-	Not specified	At up to 48 months post-surgery, positive outcome ranging from no recurrence of sharp pains to 'good relief' for all patients.	
Singewald 1966 (30)	53 patients with 'lipomata' in the sacroiliac region	Surgical excision of fatty nodules (n = 37) Non-surgical injection (n = 16)	-	Not specified	Results were 'uniformly good' following surgery for all patients.	
Wollgast & Afeman 1955 (29)	4 patients with 'sacroiliac lipoma'	Injection with prilocaine followed by surgery	-	Not specified	After temporary relief from injection, pain relief with 'no recurrence' following surgery	
Bauwens & Coyer 1955 (28)	20 patients with pain located at the 'multifidus triangle'	Single injection of hydrocortisone 50 mg, procaine 30-40 mg, and hyaluronidase 1,000 units in 7-8 mL solution	-	Immediate improvement in symptoms, 'symptom-free' period	Immediate improvement in 20/20 patients (100%) At 1 week, no symptoms in 15/20 patients (75%). At 4 weeks, no symptoms in 20/20 patients (100%).	Unknown baseline patient characteristics. Two patients required repeat injection after 1 week.
Herz 1952 (26)	302 patients presenting with low back pain	Injection with local anesthetic Surgical removal of herniated fat	-	Not specified	At unclear intervals, relief in 92 patients following injection and 89 patients following surgery.	Number of patients receiving injections and criteria for surgery unclear.
Katz & Berk 1950 (25)	5 patients with 'episacroiliac lipoma'	Injection with prilocaine Surgical excision of fatty nodules	-	Not specified	Following injection, no (4/5) or slight benefit (1/5). Following surgery, 'prompt' pain relief in 5/5 patients.	

Table 2 (cont.). *Study characteristics. Summary of the study design, interventions, and results to evaluate analgesic response to injection therapies and surgery for 'back mice.'*

Author, year	Patient Population	Treatment	Control Group	Outcome Measures	Results	Comments
Hittner 1949 (23)	50 patients with 'episacroiliac lipoma'	Surgical excision of fatty nodules	-	Not specified	Pain relief in 45/50 patients (90%). No follow up reported.	
Hucherson & Gandy 1948 (22)	32 patients with 'herniation of fascial fat'	After diagnostic Surgical excision of fascial fat	-	Not specified	Pain relief categorized as excellent in in 25/32 patients (78%) and fair to good in 5/32 patients (16%). Failure in 2/32 patients (6%) including one with undiagnosed metastatic disease.	Pain radiation in sciatic distribution, to testicles noted in some patients.
Copeman & Ackerman 1947 (8)	11 patients with lumbar and gluteal 'fibrositis'	Surgical excision of fatty nodules	-	Not specified	At unclear intervals including up to 6 weeks, positive outcomes ranged from lack of pain recurrence to 'cure' for all patients.	One incarcerated patient was included.
Copeman & Ackerman 1944 (7)	10 patients with 'fibrositis' of the back	Surgical excision of fatty nodules	-	Not specified	At up to 2 months post-surgery, positive outcomes ranged from lack of pain recurrence to 'cure' for all patients.	All patients were active duty military men.
Sutro 1935 (5)	4 patients with painful 'subcutaneous fatty nodules in the sacroliliac area'	Surgical excision of fatty nodules	-	Not specified	At unclear intervals up to 3 months post-surgery, positive outcomes ranged from relief of pain at surgical site to 'complete relief.'	First case report or series described in literature.
Case Reports						
Min Ko 2009 (33)	1 patient with buttock pain associated with a 'fibro-fatty nodule'	Injection with lidocaine 40 mg in 4 mL	-	Not specified	Pain relief noted immediately following injection. No follow up reported.	Nodule was associated with referred pain attributed to cluneal nerve entrapment
Bond 2004 (35)	1 patient with 'episcral lipoma'	Trigger point injection, ryodoraku acupuncture, and chiropractic manipulation	-	'Overall improvement'	At 4 weeks after various treatments, '90% improvement.'	Injectate composition not described. Number of injections unclear.
Curtis 2000 (17)	2 patients with 'fibro-fatty nodules (back mouse)'	Needling following injection of methylprednisolone 40 mg with 3 mL lidocaine	-	Not specified	Resolution of trochanteric bursitis pains up to 5 months (case 1) and abdominal pain up to 2 years (case 2).	Referred pain to areas besides low back pain was addressed.
Curtis 1993 (10)	2 patients with 'back mice'	Case 1: dry needling Case 2: needling following injection of lidocaine 20 mg in 2 mL	-	Not specified	Case 1 noted reduction in size of nodule at 4 weeks. Case 2 noted pain relief at 1 day.	Case 1 required repeat injection.
Fischer 1993 (32)	1 patient with 'back mice'	Needling following injection of lidocaine	-	Not specified	'Instantaneous relief' of pain. No follow up reported.	Described in letter to the editor
Faille 1978 (31)	3 patients with 'lumbar fat herniation'	Injection with local anesthetic, with radiofrequency lesioning for one case	-	Not specified	Following injection, immediate pain relief in 3 patients, with return of pain within 5-8 hours post injection in all. Then gradual resolution in 1 patient, resolution after second injection in 1 patient, and resolution after multiple injections and ablation in 1 patient.	Only case report of radiofrequency lesioning in the back mice population
Bonner 1954 (27)	1 patient with 'herniation of fat through lumbodorsal fascia'	Injection with procaine 100 mg in 10 mL Surgical excision of fatty nodules	-	Not specified	Following injection, 'hours' of pain relief At 6 months post-surgery, 'free of pain'	
Ries 1937 (6)	1 patient with 'episacroiliac lipoma'	Surgical excision of fatty nodules	-	Not specified	Following excision to 4 months post-surgery, 'absence of pain'	

RCT – randomized controlled trial; VAS – visual analog score; SD – standard deviation

Table 3. *Prevalence of 'back mice'.*

Study	Description	Patient population	Results		
			Total % (N)	Painful % (N)	Nonpainful % (N)
Earl 1995 (14)	Back mice	100 ambulatory patients at an academic family medicine clinic	61 (61)	-	-
Swezey 1991* (13)	Non-fibrotic lumbar subcutaneous nodules	126 ambulatory patients at an private practice rheumatology clinic	26 (33)	-	-
Collée 1991 (16)	Iliac crest pain syndrome	204 ambulatory patients with low back pain. Settings include: A general practice (n = 40) An occupational health service (n = 124) A rheumatology clinic (n = 40)	-	41 (85) 53 (21) 33 (41) 58 (23)	-
Collée 1990 (15)	Iliac crest pain syndrome	100 patients with low back pain at rheumatology and orthopedic clinics	-	43 (43)	-
Reis 1937 (6)	Episacroiliac lipoma	1000 hospitalized patients	32 (317)	15 (150)	17 (167)
Sutro 1935 (5)	Subcutaneous fatty nodes in the sacroiliac area	170 hospitalized patients	55 (94)	9 (16)	46 (78)

jection therapy were included in some early case series (6-8,25,26,30). A majority of the contemporary literature focuses on cases treated with repeated needling and injections of local anesthetic alone (10,31-33), local anesthesia with corticosteroid (11,17), or corticosteroid alone (13). These techniques of injection therapy represent the first line treatment in contemporary practice, and modern-day reports have primarily focused on repeated needling with multiple punctures of the nodule, where a needle is passed through the skin and into the nodule in a series of 10 passes (7,8,10). In cases of recurrent pain that is not responsive to repeated needling or injection therapy, surgical excision is a reasonable consideration. However, pain has been reported to persist despite excision for some patients (22,23,26). More advanced techniques such as radiofrequency lesioning or cryoablation may disrupt the adipose tissue, and only one study to date has examined these techniques applied to back mice. Fraille (31) describes the application of radiofrequency lesioning to back mice, which provided significant pain relief in one case that was refractory to multiple injection therapies with local anesthetic and steroid. Although the mechanisms for pain generation with back mice has not been fully clarified, relief from injection therapy has led past clinicians to suggest pressure, tension, or torsion as the etiology in back mice (10,11,33).

One randomized clinical trial compared the effect of injection therapy for back mice. Collee et al (34) randomized 41 patients with iliac crest pain syndrome to either a single injection with either local anesthetic (lidocaine 25 mg in 5 mL) or isotonic saline (5 mL). A mild and transient benefit with local anesthetic compared to isotonic saline was present at 2 weeks, with lower pain scores and more patients reporting improvement in the treatment group. However, no change was found for other variables including morning stiffness, hours of pain per 24 hours, or use of medication at that time. The single injection technique did not include repeated needling, which may have limited the analgesic response.

Conclusion

Back mice, or episacroiliac lipomas, represents a potentially treatable cause of low back pain that is readily identifiable by clinicians based on a proper history and physical examination. In the case described, injection of back mice with local anesthetic and corticosteroid with repeated needling resulted in alleviation of pain and improvement in functional status. This treatment avoided unnecessary diagnostic testing and inappropriate treatments. Clinicians should recognize back mice as a potential diagnosis associated with acute or chronic low back pain to ensure patients do not receive an incorrect diagnosis of non-specific low back pain.

Author Contributions

All authors had full access to all the data in the report and take responsibility for the integrity of the data and the accuracy of the analysis. All authors designed the case report, managed the literature searches and summaries of previous related work, and wrote the first draft of the manuscript, as well as provided revision for intellectual content and final approval of the manuscript.

Acknowledgments

All authors contributed to the writing and review of manuscript. Author 1 and author 2 performed the search and literature review. All authors had access to relevant studies. No authors have conflicts of interest to disclose. This publication had no sponsors.

References

1. Hoy D, March L, Brooks P, Blyth F, Woolf A, Bain C, Williams G, Smith E, Vos T, Barendregt J, Murray C, Burstein R, Buchbinder R. The global burden of low back pain: Estimates from the Global Burden of Disease 2010 study. *Ann Rheum Dis* 2014; 73:968-974.
2. Hoy D, Bain C, Williams G, March L, Brooks P, Blyth F, Woolf A, Vos T, Buchbinder R. A systematic review of the global prevalence of low back pain. *Arthritis Rheum* 2012; 64:2028-2037.
3. Martin BI, Deyo RA, Mirza SK, Turner JA, Comstock BA, Hollingworth W, Sullivan SD. Expenditures and health status among adults with back and neck problems. *JAMA* 2008; 299:656-664.
4. Chou R, Qaseem A, Snow V, Casey D, Cross JT Jr, Shekelle P, Owens DK. Diagnosis and treatment of low back pain: a joint clinical practice guideline from the American College of Physicians and the American Pain Society. *Ann Intern Med* 2007; 147:478-491.
5. Sutro CJ. Subcutaneous fatty nodes in the sacroiliac area. *Am J Med Sci* 1935; 190:833-837.
6. Ries E. Episacraliliac lipoma. *Am J Obstet Gynecol* 1937; 34:490-494.
7. Copeman W, Ackerman W. 'Fibrositis' of the back. *Q J Med* 1944; 13:37-52.
8. Copeman W, Ackerman W. Edema or herniations of fat lobules as a cause of lumbar and gluteal 'fibrositis.' *Arch Intern Med* 1947; 79:22-35.
9. Harman JB. Fibrositis and pain. *Ann Rheum Dis* 1940; 2:101-107.
10. Curtis P. In search of the 'back mouse.' *J Fam Pract* 1993; 36:657-659.
11. Motyka TM, Howes BR, Gwyther RE, Curtis P. Treatment of low back pain associated with "back mice": A case series. *J Clin Rheumatol* 2000; 6:136-141.
12. Naeim F, Froetscher L, Hirschberg GG. Treatment of the chronic iliolumbar syndrome by infiltration of the iliolumbar ligament. *West J Med* 1982; 136:372-374.
13. Swezey RL. Non-fibrositic lumbar subcutaneous nodules: Prevalence and clinical significance. *Br J Rheumatol* 1991; 30:376-378.
14. Earl DT, Lynn JC, Carlson JM. "Back mice" – a prevalence study. *J Tenn Med Assoc* 1995; 88:428-429.
15. Collée G, Dijkmans BA, Vandenbroucke JP, Rozing PM, Cats A. A clinical epidemiology study in low back pain. Description of two clinical syndromes. *Br J Rheumatol* 1990; 29:354-357.
16. Collée G, Dijkmans BA, Vandenbroucke JP, Cats A. Iliac crest pain syndrome in low back pain: Frequency and features. *J Rheumatol* 1991; 18:1064-1067.
17. Curtis P, Gibbons G, Price J. Fibro-fatty nodules and low back pain. The back mouse masquerade. *J Fam Pract* 2000; 49:345-348.
18. Pace JB, Henning C. Episacroiliac lipoma. *Am Fam Physician* 1972; 6:70-73.
19. Herz R. Herniations of fascial fat as a cause of low back pain. *JAMA* 1945; 129:921-924.
20. Herz R. Herniation of subfascial fat as a cause of low back pain: Report of thirty-seven cases treated surgically. *Ann Rheum Dis* 1946; 5:201-203.
21. Herz R. Herniation of subfascial fat as a cause of low back pain: Results of surgical treatment in thirty-one cases. *J Int Coll Surg* 1946; 9:339-347.
22. Hucherson DC, Gandy JR. Herniation of fascial fat. *Am J Surg* 1948; 76:605-609.
23. Hittner VJ. Episacroiliac lipomas. *Am J Surg* 1949; 78:382.
24. Herz R. Differential diagnosis of low back pain based on a study of two hundred and eighty-one cases. *J Fla Med Assoc* 1950; 37:289-292.
25. Katz KH, Berk MS. Episacroiliac lipoma as a cause of low-back pain. *N Engl J Med* 1950; 243:851-852.
26. Herz R. Subfascial fat herniation as a cause of low back pain: Differential diagnosis and incidence in 302 cases of backache. *Ann Rheum Dis* 1952; 11:30-35.
27. Bonner CD, Kasdon SC. Herniation of fat through lumbodorsal fascia as a cause of low-back pain. *N Engl J Med* 1954; 251:1102-1104.
28. Bauwens P, Coyer AB. The multifidus triangle syndrome as a cause of recurrent low-back pain. *Br Med J* 1955; 2:1306-1307.
29. Wollgast GF, Afeman CE. Sacoiliac (episacral) lipomas. *Arch Surg* 1961; 83:925-927.
30. Singewald ML. Another cause of low back pain: Lipomata in the sacroiliac region. *Trans Am Clin Climatol Assoc* 1966; 77:73-79.
31. Faille, RJ. Low back pain and lumbar fat herniation. *Am Surg* 1978; 44:359-361.
32. Fischer PM. "Back mouse." *J Fam Pract* 1993; 37:328.
33. Min Ko S, Ali RK, Chacko J, Ryu J. Superior cluneal nerve entrapment due to fibro-fatty nodule: A case report. *PM&R* 2009; 1:S176.
34. Collée G, Dijkmans BA, Vandenbroucke JP, Cats A. Iliac crest pain syndrome in low back pain. A double blind, randomized study of local injection therapy. *J Rheumatol* 1991; 18:1060-1063.
35. Bond, D. Chiropractic treatment of the back mouse. *Dynamic Chiropractic* 2004; 22:20.