CLINICAL VIGNETTE

Rectal Pain Caused by Levator Ani Syndrome

Yoon Kyung Lee, Jason Hove, MD and Michelle Sangalang, MD

Introduction

Although primary care physicians commonly encounter patients with anorectal pain, presentations of functional anorectal pain may be difficult to distinguish from structural anorectal pain. In particular, levator ani syndrome is a type of functional anorectal pain that is often overlooked due to overlapping features with other anorectal conditions. We present a case of levator ani syndrome to help elucidate its distinguishing features.

Case Report

A 33-year old female with history of epilepsy presents to the office with acute worsening rectal pain that started at three AM. The pain has presented intermittently for three months, coming and going and often lasting for an hour. The pain does not radiate. She had a bowel movement that morning which was painful but without blood. She tried taking acetaminophen and Ibuprofen without relief. A warm water bath only provided mild relief. On exam, vital signs included: blood pressure 114/78, pulse 81, and weight 172 lbs. Exam of the anus showed showed no redness, mass or external hemorrhoids. There was tenderness to palpation of puborectalis on digital rectal exam. Labs included, CBC, CMP, ESR, CRP, CK, B12, and folate which were all within normal limits. The patient was prescribed cyclobenzaprine without alleviation of her pain, and she was referred to a colorectal specialist, who diagnosed patient with levator ani syndrome and started baclofen with immediate pain relief. She remained on baclofen for the next 3 weeks and was referred for pelvic floor therapy with continuous improvement.

Discussion

Levator ani syndrome (LAS) is a chronic hypertonia of the pelvic floor muscles, often with consequential anorectal pain, that cannot be explained by structural pathology. Thus, it is considered a type of functional anorectal discomfort. LAS may also be referred to as chronic proctalgia, chronic anorectal pain, pelvic tension myalgia, and piriformis syndrome, puborectalis syndrome.

Demographic and Risk Factors

A 1990 population-based survey of 5,430 United States household reported 6.6% prevalence of LAS, 5.7% in men and 7.4% in women.[1] LAS commonly manifests in ages 30-60 years.[2] Risk factors for LAS include prior pelvic, anal or spinal surgery as well as psychological components such as anxiety and depression, often as stress a trigger for symptom onset.[3]

Etiology

Sustained pelvic floor muscle spasm, or an inability to relax the pelvic floor muscle with increased anal resting pressure, has been largely suspected as the etiology of LAS.[2,4–6] A randomized controlled study reported patients with highly likely LAS had alleviated symptoms with biofeedback therapy typically used for dyssynergic defecation, suggesting the pathology behind LAS may also be associated with the uncoordinated contraction of the puborectalis at the anorectal junction (pelvic floor muscles) during defecation.[6,7]

Symptoms

LAS most commonly includes dull anorectal pain or pressure, often aggravating with sitting. The pain may be constant or episodic, with episodes lasting for 30 minutes or longer. The pain typically remains at the rectum, with possible radiation to the vagina, thigh, and gluteus.[3] A key distinguishing feature of LAS compared to other functional anorectal disorders is patients with LAS, have tenderness to palpation of the levator ani muscle, specifically the puborectalis, on digital rectal exam (DRE).[2] Pain may be triggered by prolonged sitting, stress, sexual intercourse, defecation, childbirth, and surgery.[2] Patients typically do not have urinary or sexual dysfunction.[2] Patients often report psychosocial stressors such as depression or anxiety.[2]

Differential Diagnosis

Anorectal pain has a broad differential that can be subdivided into functional and nonfunctional anorectal conditions. Nonfunctional anorectal conditions with anorectal symptoms overlapping with LAS include[3,5]:

- anal fissure
- anal abscess
- cryptitis
- thrombosed hemorrhoids
- recto-anal prolapse
- prostatitis
- anal cancer
- coccygodynia
- rectal ulcer

To exclude these structural conditions, diagnostic evaluation includes endoscopy/anoscopy, sigmoidoscopy, ultrasonography, imaging such as pelvic magnetic resonance imaging (MRI) as well as special anorectal testing including manometry, balloon expulsion test, or rectal evacuation imaging to identify any defecatory disorders, especially in patients with constipation.[2,5]

After exclusion of a structural component to anorectal pain, diagnosis is most likely to be functional. Functional anorectal conditions are sub-divided into chronic proctalgia and proctalgia fugax based on duration and tenderness to palpation. If the pain is chronic with episodes lasting at least 30 minutes, then the diagnosis is either levator ani syndrome or unspecified functional anorectal pain. Levator ani syndrome has tenderness to palpation of the levator ani, with absence of tenderness to palpation suggesting unspecified functional anorectal pain. If the episodes of anorectal pain last less than 30 minutes, the diagnosis is most likely proctalgia fugax.

The, 2016 Rome IV criteria diagnostic criteria for LAS include[5]:

- Chronic or recurring rectal pain or aches
- 30 min or longer episodes
- Tenderness to palpation of the levator ani muscle
- Exclusion of other structural causes of anorectal pain

The criteria must be fulfilled for the prior 3 months with symptom onset at least 6 months before diagnosis.

As LAS's most distinctive feature is tenderness to palpation of the levator ani muscles, the most prominent diagnostic examination is the DRE. Not only does the DRE affirm LAS by eliciting pain on palpation of the levator ani muscle, DRE also assists in exclude other anal conditions such as anal fissures and hemorrhoids. Having the patient strain as if to defecate during DRE further assists to identify possible rectal prolapse or paradoxical contraction of the puborectalis suggesting dyssynergia.[3]

Treatment

Treatment of LAS is focused on relaxing the pelvic floor muscles. Conservative measures include massage, sitz baths, and heating pads, with a historical study reporting 68% of 316 patients with LAS showing improvements with a combination of massage, sitz baths, muscle relaxants including benzodiazepines and diathermy.[8] However, over the years, newer techniques emerged to provide more long-term treatment options, without the addictive risk of benzodiazepines.

The most promising new treatment for LAS is biofeedback therapy, also known as pelvic floor retraining. In a 2010 controlled trial, 157 patients with chronic proctalgia were randomly assigned to receive electrical stimulation, or digital massage of the levator ani and warm sitz baths, or pelvic floor biofeedback with psychological counseling. Eighty-seven percent of patients with tenderness to palpation of the pelvic floor muscles during DRE reported relief of rectal pain after biofeedback therapy, 45% after electrical stimulation, and 22% after massage, with improvement maintained for 12 months.[7] The 2014 American College of Gastroenterology (ACG) Clinical Guideline for Management of Benign Anorectal Disorders, recommends biofeedback therapy as the preferred treatment for LAS.[9] Although less effective than biofeedback therapy, electrogalvanic stimulation (EGS) is another treatment option, involving a rectal probe to provide low electrical stimulation to stop levator ani spasms, it was reported to be more effective than digital massage in the 2014 ACG Clinical Guideline.[9]

Another electrical form of treatment is sacral nerve stimulation (SNS), which involves the implantation of a pulse generator to electrically stimulate the sacral nerve roots, often used as treatment for fecal incontinence, with gradual considerations for use in LAS. SNS's potential for decreasing pain was initially reported in a small 2010 retrospective study of 9 patients.[10] However, a 2013 study involving 10 patients with chronic idiopathic anal pain refractory to conservative management, reported only 1 with good pain control.[11] Existing, research on SNS for LAS treatments is limited to very small studies and further exploration is needed.

Botox injections have also been considered for treatment. However, in a 2009 randomized controlled trial, 12 patients with LAS received anal sphincter injections of 100 units botulinum toxin A or placebo at 90-day intervals. Although botox injection into the anal sphincter was safe, it did not show improvement in anorectal pain as compared to placebo.[12] Botox injections also include contraindications such as local infection, hypersensitivity to botox, and neuromuscular disorders.[6]

A 2020 retrospective study compared outcomes from EGS and botox treatment in 120 patients with medically refractory LAS, 102 of whom received botox and 18 received EGS. Although botox and EGS showed no different in treatment response, patients with botox BTX were more likely to report a short-term benefit in treatment than the patients who had EGS. However, neither treatment provided sustained long term benefit.[13]

Tri-cyclic antidepressants (TCAs) are another medication approach to treatment. Analgesic properties may be particularly useful as well as potential treatment for concomitant depression or anxiety. Further research is needed to test the efficacy of TCAs in LAS.

Conclusion

Levator ani syndrome (LAS) is condition of chronic functional anorectal pain, most commonly reported in middle aged females. This condition typically presents with a dull anorectal ache, in episodes 30 minutes or longer, with its most distinguishing feature tenderness to palpation of the puborectalis on DRE. Supported hypotheses for the etiology of LAS involve levator ani muscle spasms with possible association with

uncoordinated contractions of the pelvic floor muscles, and treatment targets relaxation of these muscles. Biofeedback therapy is highly recommended as treatment for LAS, with management of any psychosocial stressors that may trigger anorectal pain. Other treatment options such as SNS or TCAs pose areas of further research.

REFERENCES

1. **Drossman DA, Li Z, Andruzzi E, Temple RD, Talley NJ, Thompson WG, Whitehead WE, Janssens J, Funch-Jensen P, Corazziari E, et al**. U.S. householder survey of functional gastrointestinal disorders. Prevalence, sociodemography, and health impact. *Dig Dis Sci*. 1993 Sep;38(9):1569-80. doi: 10.1007/BF01303162. PMID: 8359066.
2. **Bharucha AE, Lee TH**. Anorectal and Pelvic Pain. *Mayo Clin Proc*. 2016 Oct;91(10):1471-1486. doi: 10.1016/j.mayocp.2016.08.011. PMID: 27712641; PMCID: PMC5123821.
3. **Carrington EV, Popa SL, Chiarioni G**. Proctalgia Syndromes: Update in Diagnosis and Management. *Curr Gastroenterol Rep*. 2020 Jun 9;22(7):35. doi: 10.1007/s11894-020-00768-0. PMID: 32519087.
4. **Grimaud JC, Bouvier M, Naudy B, Guien C, Salducci J.** Manometric and radiologic investigations and biofeedback treatment of chronic idiopathic anal pain. *Dis Colon Rectum*. 1991 Aug;34(8):690-5. doi: 10.1007/BF02050352. PMID: 1855425.
5. **Rao SS, Bharucha AE, Chiarioni G, Felt-Bersma R, Knowles C, Malcolm A, Wald A**. Functional Anorectal Disorders. *Gastroenterology*. 2016 Mar 25:S0016-5085(16)00175-X 10.1053/j.gastro.2016.02.009. doi: 10.1053/j.gastro.2016.02.009. Epub ahead of print. PMID: 27144630; PMCID: PMC5035713.
6. **Bolshinsky V, Gurland B, Hull TL, Zutshi M.** Levator ani syndrome: transperineal botox injections. *Tech Coloproctol*. 2018 Jun;22(6):465-466. doi: 10.1007/s10151-018-1801-6. Epub 2018 May 31. PMID: 29850943.
7. **Chiarioni G, Nardo A, Vantini I, Romito A, Whitehead WE**. Biofeedback is superior to electrogalvanic stimulation and massage for treatment of levator ani syndrome. *Gastroenterology*. 2010 Apr;138(4):1321-9. doi: 10.1053/j.gastro.2009.12.040. Epub 2010 Jan 4. PMID: 20044997; PMCID: PMC2847007.
8. **Grant SR, Salvati EP, Rubin RJ**. Levator syndrome: an analysis of 316 cases. *Dis Colon Rectum*. 1975 Mar;18(2):161-3. doi: 10.1007/BF02587168. PMID: 1120448.
9. **Wald A, Bharucha AE, Cosman BC, Whitehead WE.** ACG clinical guideline: management of benign anorectal disorders. *Am J Gastroenterol*. 2014 Aug;109(8):1141-57; (Quiz) 1058. doi: 10.1038/ajg.2014.190. Epub 2014 Jul 15. PMID: 25022811.
10. **Govaert B, Melenhorst J, van Kleef M, van Gemert WG, Baeten CG**. Sacral neuromodulation for the treatment of chronic functional anorectal pain: a single center experience. *Pain Pract*. 2010 Jan-Feb;10(1):49-53. doi: 10.1111/j.1533-2500.2009.00318.x. Epub 2009 Sep 3. PMID: 19735362.
11. **Dudding TC, Thomas GP, Hollingshead JR, George AT, Stern J, Vaizey CJ**. Sacral nerve stimulation: an effective treatment for chronic functional anal pain? *Colorectal Dis*. 2013 Sep;15(9):1140-4. doi: 10.1111/codi.12277. PMID: 23692279.
12. **Rao SS, Paulson J, Mata M, Zimmerman B**. Clinical trial: effects of botulinum toxin on Levator ani syndrome--a double-blind, placebo-controlled study. *Aliment Pharmacol Ther*. 2009 May 1;29(9):985-91. doi: 10.1111/j.1365-2036.2009.03964.x. Epub 2009 Feb 13. PMID: 19222415; PMCID: PMC2730637.
13. **Nugent E, Beal M, Sun G, Zutshi M.** Botulinum toxin A versus electrogalvanic stimulation for levator ani syndrome: is one a more effective therapy? *Tech Coloproctol*. 2020 Jun;24(6):545-551. doi: 10.1007/s10151-019-02103-w. Epub 2019 Oct 31. PMID: 31673883.