CLINICAL VIGNETTE

Inpatient Management of Chronic Abdominal Pain: A Case Report and Discussion

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Introduction

Chronic abdominal pain without a clear organic precipitant is a frequent cause of recurrent emergency department visits and hospital admissions. It can be attributed to a variety of clinical syndromes which present similarly, including irritable bowel syndrome (IBS), functional dyspepsia, and functional abdominal pain syndrome. Given overlap between syndromes and non-specific nature of many presentations, it can be difficult to approach treatment in an evidence-based manner.

We present a 45-year-old female with chronic gastrointestinal symptoms, most notably pain, who has undergone extensive prior evaluation with difficulty managing symptoms despite a multi-modality therapeutic approach. We review some of the most common syndromes associated with a presentation of chronic abdominal pain, touching on diagnostic parameters and the most validated therapeutic approaches.

Case Report

A 45-year-old female with past medical history of anxiety as well as chronic abdominal pain without clear diagnostic precipitant presented to the emergency room with several weeks of progressive gastrointestinal symptoms culminating in more acute worsening over 3-4 days, resulting in intractable pain and inability to function at home.

The patient's GI history dated back several years by her report, beginning with development of left mid-abdominal chronic discomfort after a particularly severe bout of food poisoning. This pain was dull and crampy, and associated with chronic frequent stools. Starting around that time, the patient settled into a rhythm of several daily bowel movements, starting very loose and becoming somewhat softer as the day progressed and associated with significant worsening of her chronic pain with each movement.

The patient had undergone multiple prior diagnostic evaluations, including computerized tomography and ultrasound. No acute pathologies had been identified to explain her symptoms. Likewise, blood testing was not indicative of acute pathology, with negative infectious and rheumatologic testing. Over the ensuing years the patient was seen by gastroenterology who noted unremarkable findings on upper endoscopy. She was treated several times for possible small intestinal bacterial overgrowth, including with a trial course of rifaximin, without appreciable relief. She additionally tried multiple other modalities for symptom control, including dicyclomine, hyoscyamine, naltrexone, and several herbal remedies without significant relief.

Several months prior to the current presentation the patient had targeted massage to the area of pain, which she states initially helped. However, the initial relief was followed by a perceived migration of her pain to a locus lower in the abdomen, particularly in the left lower quadrant. The pain was of similar quality, but began to become increasingly severe and difficult to tolerate.

Over the 3 weeks prior to presentation the patient presented to numerous outside hospital emergency departments. Repeated imaging on these visits continued to show no clear correlate for the pain, but was suggestive of some element of constipation with increased stool burden. She was discharged home from each visit, on two occasions with prescriptions for small supplies of oxycodone/acetaminophen and hydrocodone/acetaminophen. While these agents offered some short-term relief from her pain, they also led to decreased stool frequency, which exacerbated pain and she stopped taking them.

The patient established care with a new primary care provider one week prior to presentation, and was started on duloxetine. She saw gastroenterology the day prior to presentation and was started on a trial of chlordiazepoxide/clidinium. Ultimately the patient was referred to the emergency room by her new PCP given continued symptoms with increasing severity.

On arrival to the emergency room she was afebrile and hemodynamically stable. Initial labs were unremarkable, including normal ESR and CRP. The patient was admitted for further management.

During a one-week hospitalization the patient was seen by hospitalist internal medicine as well as by gastroenterology and pain management consultations. She underwent a bowel cleanout, as it was posited that some element of chronic constipation with overflow stooling was exacerbating the chronic pain. She did thereafter note less severe pain with episodes of bowel movement. She was initiated on multiple pharmacologic modalities, including gabapentin, standing acetaminophen, continued duloxetine, topical lidocaine, and methocarbamol and hydromorphone as needed. A brief trial of ketamine was attempted by the pain management, but was

aborted after four hours due to side effects. The patient also underwent left splanchnic nerve block by pain management, and felt that it did offer some improved pain control. She intended to follow up as an outpatient for possible right-sided intervention.

Ultimately with some measure of improved symptom control the patient ultimately was felt to be ready for discharge home by hospital day 7. She was referred to her PCP, gastroenterology, pain management, and East/West medicine clinic on discharge. Psychiatry referral was also discussed with her extensively, as it was felt that anxiety and possibly depression were contributing to her chronic (and acute-on-chronic) symptoms. She was receptive to this, but deferred to further discussion with her PCP.

In the several months following her hospitalization, she has continued to have chronic symptoms, and has been re-admitted to the hospital once. Multiple additional pharmacologic modalities have been tried, without achievement of optimal symptom control as yet.

Discussion

There is a myriad of potential causes of chronic abdominal pain in adult patients. Initial diagnostic steps include ruling out acute, life-threatening disorders and other organic causes via laboratory evaluation and imaging, with referral to specialty consultation to ascertain need for potential advanced diagnostic testing such as endoscopy. As in our patient, a common situation involves history of extensive prior workup indicating no clear organic etiology of chronic symptoms, but with ongoing complaints precipitating clinic and hospital presentations. We restrict this discussion to several of the most common possible causes, – irritable bowel syndrome (IBS), functional dyspepsia, and functional abdominal pain syndrome – and the most validated clinical approaches.

Irritable bowel syndrome (IBS), which involves chronic abdominal pain and altered bowel habits, is probably the most common and most studied chronic abdominal pain syndromes. Prevalence has been estimated at between 10-15% in North American studies.[1] A 2002 trial estimated a national prevalence of 15 million patients, with annual healthcare costs totaling around $1.6 billion.[2] According to the Rome IV criteria, diagnosis of IBS requires chronic abdominal pain, at least 1 day weekly for 3 or more months associated with two or more factors: relation to defecation, association with a change in stool form, and association with a change in stool frequency.[3] If possible, patients are further sub-divided into constipation-predominant, diarrhea-predominant, and mixed bowel habits categories depending upon their symptomatology.[1]

Functional dyspepsia, involves chronic abdominal pain with some relation to oral intake, is estimated to have a worldwide prevalence of about 10%.[4] Rome IV criteria define functional dyspepsia as "the presence of one or more of the following symptoms: postprandial fullness, early satiation, epigastric pain or epigastric burning, and no evidence of structural disease, including at upper endoscopy to explain the symptoms," with symptoms present for at least 3 months, and diagnosis at least 6 months after symptom onset.[5,6] Clearly these criteria are quite broad, and proposed pathophysiology of the syndrome can involve several mechanisms, including disordered gastric motility, increased visceral sensitivity, altered gut microbiome.[5] There is substantial association of functional dyspepsia with mood and anxiety disorders.[7]

Functional abdominal pain syndrome (FAPS) involves chronic abdominal pain without any clear relation to oral intake or defecation. It is difficult to fully distinguish from IBS and functional dyspepsia, but is believed to be somewhat less prevalent.[8] Diagnosis requires that a patient meet all of the following criteria: continuous or nearly continuous abdominal pain, no or only occasional relationship of pain with physiological events, such as eating or defecation, some loss of daily functioning, no evidence of malingering, and insufficient symptoms to meet criteria for another functional disorder.[8] It is commonly associated with other forms of chronic pain including related to gynecologic or genitourinary systems, and would itself qualify as a somatoform pain disorder by DSM-IV criteria.[8]

As is clear by a review of diagnostic criteria, it can be quite difficult to cleanly diagnose an individual patient within a single category. Our patient herself matched IBS criteria most closely, but also exhibited some features of functional dyspepsia, and had increasing chronicity of pain somewhat characteristic of FAPS. This perceived overlap can make the approach to treatment somewhat daunting. Likewise, it also limits creation of rigorous prospective trials to evaluate investigative treatments.

Irritable bowel syndrome is probably the best-studied of the functional gastrointestinal disorders in terms of treatment approach. Initial intervention for IBS patients of all categories includes discussion of dietary modifications aimed at limiting gas-producing foods, termed a low-FODMAP (fermentable oligo-, di-, and monosaccharides and polyols) diet. A small randomized trial of 75 patients exhibited subjective improvements in symptom scores when compared to no dietary change.[9] Additional dietary adjustments for IBS which could be considered given lack of deleterious effects are lactose restriction, gluten restriction, and addition of fiber supplementation most notably when patient has constipation-predominant symptoms.[10]

Initial pharmacologic treatment of irritable bowel syndrome is guided by predominant bowel symptoms, constipation vs. diarrhea. For constipation-predominant IBS, the osmotic laxative polyethylene glycol has been shown in randomized controlled trials to relieve constipation, but without significant improvement in perceived pain or bloating.[11] For those refractory to osmotic laxatives, guanylate cyclase antagonists linaclotide and plecanatide have been shown in randomized trial to effectively reduce both constipation and abdominal pain,

limited mostly by diarrhea as a side effect.[10,12] For diarrhea-predominant IBS, only the antidiarrheal loperamide has been validated as an antidiarrheal agent via controlled trial.[10] For patients refractory to loperamide, use of bile acid sequestrants has been proposed, as idiopathic bile acid malabsorption is common in this subset of patients, ranging up to one third of IBS-D on one review.[13]

An initial strategy to treat pain and spasm associated with IBS, often includes anti-spasmodics, including hyoscyamine or dicyclomine. A 2011 Cochrane review suggested substantial relief of abdominal pain, with number needed to treat of 7.[14] Antidepressant medications have also been shown to have modest benefit with overall symptom scores in IBS patients.[14] Tricyclic antidepressants can be especially effective in diarrhea-predominant cases given their anticholinergic effects.[10,14] Evidence is more mixed for selective serotonin reuptake inhibitors and serotonin norepinephrine reuptake inhibitors.[10,14] While many other treatment approaches have been proposed, including antibiotics, probiotics, anxiolytics, no substantial clinical evidence exists to support other pharmacologic intervention specifically for IBS.

Treatment of functional dyspepsia has much more limited experiential data for guidance. Patients should be tested for infectious with *Helicobacter pylori* and treated should it be found. This was validated by the HEROES clinical trial in 2011, which showed significant symptom relief with *H. pylori* eradication versus placebo.[15] The next step involves proton pump inhibition (PPI) or H2-receptor antagonism. A Cochrane review of PPI utility in functional dyspepsia indicated significant symptom relief, with a number needed to treat of 11.[16] A Cochrane review of H2-recent antagonists likewise showed symptom relief, with number needed to treat of 7.[17] A limited number of trials comparting PPI to H2-receptor antagonism showed no significant difference.[5]

For functional dyspepsia refractory to these initial measures, a validated next step is trial of tricyclic antidepressant. A systematic review suggested that tricyclic antidepressants, compared to placebo, led to significantly fewer patients with unimproved symptoms.[18] The same review showed no appreciable benefit from selective serotonin reuptake inhibitors. Smaller trials of mirtazapine have suggested some benefit, most notably with patients experiencing weight loss along with their pain symptoms.[19] A final option offering some validated symptom relief is pro-motility agents such as metoclopramide, though quality of evidence is overall lacking.[5]

Evidence for targeted pharmacologic intervention to address functional abdominal pain syndrome (FAPS) is even further limited. This limitation is driven by lower prevalence of the disease, with very few studies able to specifically evaluate FAPS. As such, treatment of FAPS is commonly guided by evidence investigating other overlapping syndromes. A reasonable initial approach would include tricyclic antidepressants, given their validated use in IBS and other chronic pain syndromes.[8] Selective serotonin reuptake inhibitors and serotonin norepinephrine reuptake inhibitors likewise are reasonable options given their recognized pain-reduction in other somatic pain syndromes, and because of substantial comorbidity between FAPS and mood/anxiety disorders.[8] Anticonvulsants, such as gabapentin, carbamazepine, and lamotrigine, have been used in chronic somatic pain disorders. However, none has been specifically evaluated in FAPS or chronic abdominal pain.[8] Given substantial psychiatric comorbidity, cognitive behavioral therapy and other psychotherapy approaches are viable parallel treatment pathways worth exploring, though specific data in FAPS is not available.[8]

Notably absent is presence of any validated literature supporting use of opiate pain relief medications. While these agents are commonly prescribed, at least for short-term use, in pain syndromes, significant caution should be exercised when using them for chronic abdominal pain. Most notably in IBS patients, introducing opiates can potentially exacerbate bowel-related difficulties and potentially exacerbate symptoms, as was seen with our patient prior to her presentation.

Conclusion

Chronic abdominal pain presents many diagnostic and therapeutic challenges, starting with the establishment of a specific diagnosis. While there is overlap of diagnostic categories, there is also overlap of therapeutic strategies that is often rooted in common-sense clinical applications. For patients with constipation, addressing bowel motility is important. Likewise, addressing diarrhea is important when it is present. Anti-spasmodics are reasonable to treat abdominal pain and spasm, with some proven clinical benefit. Proton pump inhibitors or H2-receptor antagonists are useful to treat dyspepsia. For refractory patients, tricyclic antidepressants, absent any contra-indication are a useful trial option to address all functional gastrointestinal disorders.

For patients refractory to the interventions discussed above, treatment pathways unfortunately are not yet clear. An individualized approach is commonly necessary, involving longitudinal primary care, gastroenterology, integrative pain management, and ideally psychiatry and psychology. Even with this multidisciplinary approach, achievement of optimal symptom control is often elusive.

For patients admitted with exacerbations of chronic symptoms, acute management options are not well validated. Involvement of gastroenterology and pain management is reasonable so as to limit polypharmacy and length of stay. The inpatient team can and should ensure that all available validated treatment measures have been considered or attempted, and potentially initiate one or several new evidence-guided modalities if possible. A reasonable goal is achievement of tolerable symptom control so as to allow resumption of longitudinal multidisciplinary approach.

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