Intercostal Neuritis Masquerading as Acute Appendicitis: A Case Report

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Abstract

Abdominal pain is a common complaint among Emergency Department (ED) patients and accounts for approximately 10% of all visits. While some presentations are classic, making diagnosis and treatment expeditious, other presentations require time-intensive work-ups that yield no etiology in nearly 25%. The Emergency Physician (EP) is tasked to maintain a broad differential while ruling out surgical conditions such as acute appendicitis. Within this differential is abdominal wall pathology. We present a case of a 28 year-old female who presented with right lower quadrant pain, was diagnosed with intercostal neuritis and discharged with a non-steroidal anti-inflammatory drug (NSAID) and appendicitis precautions. Ultimately, timely diagnosis of these less emergent pathologies can improve patient satisfaction, prevent unnecessary tests and provide targeted treatment modalities.

Keywords: Appendicitis; Intercostal neuritis; Neuropathic pain; Right lower quadrant pain

Abbreviations:
ED: Emergency Department; NSAID: Non-Steroidal Anti-Inflammatory Drug; EP: Emergency Physician; CT: Computed Tomography

Introduction

The differential diagnosis of abdominal pain is extensive. The Emergency Physician (EP) must give thought to a variety of organ systems in order to tailor the work-up and arrive at a reasonable diagnosis. The potential causes of acute right lower quadrant pain include but are not limited to appendicitis, mesenteric adenitis, Meckel’s diverticulitis, cecal diverticulitis, aortic aneurysm, ectopic pregnancy, ovarian torsion, ovarian cyst rupture, pelvic inflammatory disease, tubo-ovarian abscess, endometriosis, ureteral calculi, incarcerated or strangulated hernia, and urinary tract infection. Apart from these important intra-abdominal pathologies, there are many important extra-abdominopelvic causes of abdominal pain. These include thoracic disease (myocardial infarction, pneumonia); infections (streptococcal pharyngitis, mononucleosis); systemic illness (diabetic ketoacidosis, porphyria, vasculitides, sickle cell crisis); toxins and abdominal wall pathology (hematoma, neuropathic, muscle spasm) [1]. While abdominal wall etiologies are often a diagnosis of exclusion, certain pathology including rectus sheath hematomas can require emergency intervention [2,3]. Similarly, intercostal neuralgia or neuropathies have been shown to cause acute and chronic abdominal pain. These diagnoses are rarely made in the acute setting of an ED, but it is important to keep them in mind, especially in patients who have had a complete work-up with no identified cause to their pain.

Case Report

A 28-year-old female presented to the Emergency Department (ED) with complaints of right lower quadrant abdominal pain that began seven hours prior to arrival and five episodes of non-bloody and non-bilious emesis. The abdominal pain was sharp, severe at times, constant and non-radiating. On review of symptoms, she reported myalgias, lightheadedness, intermittent shortness of breath, sore throat, rhinorrhea, congestion and a couple episodes of loose stools over the course of the week. She denied fevers, chills, sick contacts, recent travel, dysuria, frequency, vaginal discharge, history of sexually transmitted infections, melena, hematochezia, or cough. She had no past medical and surgical history and took no medications. She denied tobacco use and reported occasional alcohol use.

On physical exam, the patient appeared well-nourished but was in distress with intermittent retching. She was lying supine on the gurney with minimal movement. Her vital signs included heart rate of 94 beats/minute, blood pressure of 135/73 mm Hg, temperature of 36.3 degrees Celsius, respiratory rate of 18 breaths/minute, and SpO2 of 97% on room air. Her mucous membranes were moist and her capillary refill was less than three seconds. Heart and lung exams were normal. On abdominal exam, there was no rash and she appeared well-nourished with normal bowel sounds. She was tender to palpation in the right lower quadrant near McBurney’s with guarding, but no rebound. She did not have costovertebral angle tenderness to percussion. The remainder of her abdominal exam was unremarkable. Pelvic exam did not reveal malodorous discharge, cervical motion tenderness or adnexal tenderness.

Initial actions included intravenous fluids, antiemetics and pain control. Labs included a complete metabolic panel, lipase, complete blood count, urinalysis, and urine pregnancy test. All were negative and unremarkable. Despite other nonspecific symptoms, the patient’s concerning serial abdominal exams prompted the ordering of appendix and pelvic ultrasounds.
Ten of the 11 laparotomies in patients with a positive abdominal wall tenderness test were negative but one was positive for appendicitis. The other 13 patients with a positive test were observed and discharged without complication [7,8].

Clinical features

Patients with neuropathic abdominal pain often describe their pain as dull and well localized with occasional radiation horizontally [9]. If due to nerve entrapment, the pain may radiate with twisting, bending or sitting [9]. Similar to other peripheral neuropathies, the pain may be associated with paresthesias and may radiate along the length of the nerve. History may reveal trauma to the ribs or trunk, surgery, viral syndromes, vitamin deficiencies, diabetes, family history or metastatic carcinoma [4,10]. On physical exam, light touch causes intense pain which is carefully differentiated from pain with light and deep palpation.

Management and disposition

Neuropathic pain is considered frequently in patients with chronic abdominal pain and in those with multiple ED presentations. However, acute viral neuritis can present with acute abdominal pain. It is important to evaluate patients with abdominal pain thoroughly, making sure to assume the most serious conditions first. Once those conditions (e.g. ovarian torsion or appendicitis in our case) are evaluated and excluded, other less common etiologies should be considered. Neuropathic abdominal pain must be considered early on for these patients, as appropriate diagnosis can ensure proper treatment, prevent recurrent presentations to acute care settings and unnecessary imaging studies.

Managing abdominal wall pain is tailored to the condition and may require outpatient referral. This is often the case in intercostal neuralgia, neuritis or abdominal cutaneous nerve entrapment syndrome. Management options include local anesthetic, referral to pain specialists for pain modulating medications, heat application, muscle relaxants or rarely nerve excision [8,10]. Important to all of this is patient education. Education is provided to encourage patients with complex pain syndromes to learn to cope with their pain and provide important return precautions for pain that may be caused by other pathology.

Conclusion

Emergency physicians (EPs) have an incredibly challenging job. Diagnosing and treating emergent medical conditions in patients presenting with acute abdominal pain is paramount. A careful history and thorough physical exam can help exclude emergent conditions and often identify rare disease processes like neuropathic pain. A good patient story coupled with the exam finding of intense pain with light touch can help the physician differentiate abdominal wall pathology from intra-abdominal processes. Ultimately, this diagnosis is an important consideration as these patients often go undiagnosed for extended periods of time. They may find benefit from NSAIDs in acute flares or local injections, pain modulating agents and referral to pain specialists. Early diagnosis can also obviate further medical expense and patient dissatisfaction [11-17]. While our patient was ultimately lost to follow-up and did not have the gold standard CT study in the ED to definitively identify intra-abdominal pathology, this case serves as a great reminder to all EPs to keep the differential broad in complex patient complaints such as abdominal pain.
Authors’ Contributions

BL and LG participated in the caring for the patient in the emergency department. Both authors drafted and read the final manuscript for publication.

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BL is a second year emergency medicine resident at Stanford University in Palo Alto, California.

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