

Case Report

Appendicitis presenting as LUQ pain in an anatomically normal patient: a case study

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ABSTRACT

Appendicitis typically presents with right sided pain, but some patients present with left sided symptoms. This is most commonly due to anatomical abnormalities such as intestinal malrotation or Situs Inversus. In this case study I present a case where an anatomically normal patient presented with Left Upper Quadrant (LUQ) pain. I hypothesize that the reason for this is incorrect interpretation of visceral nociceptive afferents by the Central Nervous System (CNS). I review the literature in regard to the “visceral homunculus.” I also review the literature with regards to left sided abdominal pain and Appendicitis. This case highlights the importance of considering Appendicitis in LUQ pain.

Keywords: Appendicitis, Left upper quadrant, Mucocele

INTRODUCTION

Appendicitis is one of the most common causes of abdominal pain.¹ It most commonly presents with right sided abdominal pain, although it can rarely present with left sided pain, most commonly due to anatomical abnormalities such as situs inversus or malrotation.² Authors present a case of a patient who presented with left upper quadrant (LUQ) pain and Appendicitis, despite normal anatomy, and discuss my hypothesis for the mechanism of this.

CASE REPORT

A 27 yo F presented with acute onset LUQ squeezing pain associated with nausea vomiting. She had mild LUQ tenderness which settled with analgesia. She had a white cell count (WCC) of 16.7 with a neutrophilia. She had a history of urinary tract infection, but Urine microscopy was normal. A Computed Topography (CT) scan was ordered which revealed a mucocele of the appendix, with

several appendicoliths, and questionable surrounding stranding. Given the lack of right sided symptoms the patient was sent home with analgesia and Cephalexin for a presumed Urinary Tract Infection and planned for an outpatient colonoscopy to investigate the mucocele. Twenty-four hours later she represented with left and right lower quadrant pain and tenderness. Her WCC count had increased to 19.0. A decision was made to perform a laparoscopy. The patient then progressed to a Laparoscopic Stapled Appendectomy.

At laparoscopy she was found to have perforated appendicitis with four quadrant pus. After removal of the specimen, she had a four-quadrant washout, and a drain was placed. Post operatively she made an uneventful recovery and was discharged on oral antibiotics. Histology of the appendix showed acute suppurative appendicitis and peri appendicitis. There was no evidence of malignancy. Cytology of peritoneal fluid was also sent, which also showed no evidence of malignancy. Postoperatively she had a further three days of

intravenous antibiotics (Piperacillin+Tazobactam) and was subsequently discharged on oral Augmentin Duo Forte for five days.

DISCUSSION

Appendicitis is the most common reason for emergency abdominal surgery.³ Typical presentation is with right sided symptoms but left sided pain can occur. This is commonly believed to be as a result of congenital abnormalities. A review of 95 cases of patients with left-sided appendicitis showed 66 patients had situs inversus, 23 had intestinal malrotation (24%) and only 7 had normal anatomy (7.3%).⁴



Figure 1: CT at presentation.

Those with normal anatomy occasionally have a reason they present with LUQ pain. For example, in one case the patient had a hypermobile caecum, that was in the LUQ.⁵ However, there remains a subset of people such as the one in this case, with no obvious anatomical reason for her pain to be localised to the LUQ.

Authors hypothesize that the reason for this is incorrect interpretation of visceral nociceptive afferents by the Central Nervous System (CNS).

In opposition to somatic sensation, which is localized precisely to the site of origin, visceral sensation is vague, often referred to somatic structures and radiates to one or other side of the body.⁶ There are several hypotheses as to the reason for this difference including:

- Most visceral afferents synapse on spinal neurons that also receive projections from somatic afferents⁷
- Visceral afferents have a much greater rostrocaudal distribution within the spinal cord than somatic afferents⁸

- Different cortical processing that alters the perception of afferent inputs⁹

This difference is most clearly shown by the oesophagus, which retains both somatic and visceral innervation, due to its development.⁶ Upper third oesophageal pain is well localised to the upper chest in the midline, whereas lower third oesophageal pain is felt diffusely in the lower chest, some-times localising to one side. In a similar mechanism to this, the midgut is a visceral structure containing the appendix and continuing into the LUQ. Authors hypothesise that in rare cases the CNS interprets appendiceal pain as LUQ pain due to misinterpretation of visceral afferents from the midgut.

Research is emerging about a visceral homunculus and the sensory locations in the brain for each part of the gastrointestinal tract, and the many different afferent inputs, including nociception. Pain appears to be processed and thus perceived differently in the different sections of the GI tract.¹⁰

In addition to highlighting this interesting field of research, this case emphasizes the importance of considering Appendicitis in patients presenting with LUQ pain.

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