

Chronic Right Iliac Fossa Pain Relieved by Appendicectomy? A Fact or Myth?

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Abstract

Background: Although chronic right iliac fossa (RIF) abdominal pain is a common clinical condition, the diagnosis and treatment are still under debate. In spite of literature evidence, the existence of recurrent or chronic appendicitis continues to be debated especially, whether chronic appendicitis really exists and whether it can explain the persistent or chronic RIF abdominal pain.

Aim: The aim of the study was to study the undiagnosed chronic RIF pain, in which the ultrasonogram and computerized tomography scan showed no definite findings and whether those subset of patients will be relieved after elective laparoscopic appendicectomy.

Methods: A total of 60 patients, 12–60 years of age, with undiagnosed chronic RIF abdominal pain underwent diagnostic laparoscopy and appendicectomy. 10 patients were excluded from the final analysis because of the presence of an obvious associated non-appendicular pathology also. Patients were followed up for 6 months at regular intervals (1, 3, and 6 months) and were assessed for pain relief. The association between clinical outcome and the histopathological outcome was studied.

Results: The histopathological examination of appendices revealed appendicitis in all patients. Intra-operative evidences of chronic appendicitis were seen in 42 (84%) patients. 47 (94%) patients were completely pain-free on follow up, and only 3 (6%) patients had persistence of pain.

Conclusions: Patients with chronic RIF abdominal pain (without an obvious diagnosis on preoperative evaluation) can safely undergo exploratory laparoscopy and appendicectomy. Chronic appendicitis is a diagnosis of exclusion with intraoperative and histopathological evidence. Patients with RIF abdominal pain and RIF tenderness with otherwise normal findings on sonology are having chronic or recurrent inflammation of the vermiform appendix and are fully curable by laparoscopic appendicectomy.

Key words: Appendicectomy, Laparoscopy, Right iliac fossa pain

INTRODUCTION

Recently, chronic right iliac fossa (RIF) abdominal pain has drawn more attention because of its high incidence, significant morbidity and significant costs to health care. Patients often complain of pain in the RIF of the

abdomen or months to year's duration for which various diagnostic and therapeutic interventions were carried out with no relief. The vermiform appendix is one of the most common sites of inflammatory pathology in the abdomen.^[1] Traditionally, the only well documented and clinically significant one among the inflammations of the appendix has been the "acute appendicitis." However, the lack of objectivity in the diagnostic algorithms in case of appendicitis, in general, has led to many clinical confusions and increased patient morbidity. On the one hand, there is a huge number of cases which are underdiagnosed and on the other, a significant series of cases with a high negative appendicectomy rate (NAR). In this context, we believe, that the basic fact about the

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inflammatory disorders of the appendix is that these can present with a spectrum of character and severity,^[2,3] so that, the accurate positive diagnosis of appendicitis cannot be defined just by traditional parameters such as tachycardia, rebound tenderness, leukocytosis, the Alvarado scoring system, ultrasonogram (USG), or even by computerized tomography (CT) of the abdomen. Here, we present a series of pathologically proven chronic or recurrent inflammation of the vermiform appendix, all of which presented with chronic RIF abdominal pain, without the traditionally relied on clinical features and sonological evidence to support, but with an excellent cure rate following laparoscopic appendicectomy.

Aim

The aim of the study was to study the undiagnosed chronic RIF pain, in which the USG and CT scan showed no definite findings and whether those subset of patients will be relieved after elective laparoscopic appendicectomy.

METHODS

It was a prospective interventional study, carried out from June 2016 to June 2017. Patients with RIF abdominal pain ranging from 6 weeks to 5 years in duration, which remained undiagnosed, were chosen for the study. Inclusion criteria: Patients aged 12–60 years, suffering from chronic or recurrent RIF abdominal pain for more than 6 weeks who had been treated conservatively by antibiotics and analgesics without the classical clinical and/or sonological features of acute appendicitis. Exclusion criteria: Patients with chronic RIF abdominal pain but also with a history of chronic back pain (previous spine surgery and diagnosed disc prolapse), previous abdominal surgery (except diagnostic laparoscopy or laparoscopic sterilization), gynecological diseases (pelvic inflammatory disease), and known urological diseases (renal stones and ureteric stones). 10 patients were excluded postoperatively as they had associated uterine and/or adnexal lesions as well. All patients were preoperatively subjected to hemogram, renal function test, random blood sugar, urine routine examination, abdominal USG, and chest radiography. All patients were subjected to CT scan abdomen to rule out other pathology. All 60 patients underwent thorough diagnostic laparoscopy and those with obvious non-appendicular pathology, which could interfere with final analysis, were excluded. All specimens were subjected to histopathological examination. All patients were followed up in the outpatient department for up to 6 months (1, 2, and 6 months). Patients were scored for pain as completely relieved and pain persistent/increased. The clinical outcome was studied in relation to pathological reports.

RESULTS

A total 60 patients were included in the study. 10 patients were excluded after diagnostic laparoscopy due to coexisting PID/ovarian cyst. Of the 50 patients who were finally included, 32 (64%) were male and 18 (46%) were female. All patients had various degrees of RIF tenderness. None had tachycardia or leukocytosis. USG abdomen detected probe tenderness in 36% patients and these three patients had sonologically visible appendix of 6–10 mm diameter. 88.8% patients showed features of chronic appendicitis such as pale, narrow, and fibrosed appendix with periappendicular adhesions to various extents. At the end of 6 months, 47 (94%) patients were completely pain-free. There were 3 (6%) patients with pain remaining even after 6 months. There was no patient whose pain was worse than before. NAR in this series is zero. 37 patients had histopathological proof of chronic inflammation of the appendix. 13 patients showed pathological changes suggestive of acute on chronic appendicitis.

DISCUSSION

Consensus regarding a chronic inflammatory process in the vermiform appendix as a cause of chronic RIF abdominal pain is lacking. Hitherto, the only well-recognized form of inflammation of the appendix is the acute appendicitis.^[4] Even though it is widely accepted that the diagnosis of acute appendicitis is largely clinical, the low confidence level for this particular diagnosis for any given clinician has led to unnecessary dependence on investigative modalities such as USG or CT scan, a state which has led to a huge percentage of under-diagnosis and under-treatment, thereby constituting an unacceptable level of morbidity in patients suffering from RIF pain. The recurrence rate in suboptimally treated (by intervention other than surgical) appendicitis is of great concern too.

There is a divergence of opinion regarding the clinical entity of chronic appendicitis, as a cause of recurrent pain in the RIF. These patients may not present with the traditionally accepted clinical features of an inflamed appendix. Instead, they complain of months to years of RIF abdominal pain. They may have had multiple medical evaluations and conservative treatment in the past for this pain. The patients may describe an initial episode with more classic symptoms of acute appendicitis, for which no treatment was received or treated conservatively. The diagnosis of chronic appendicitis can be difficult, as hematology and radiological studies are typically normal. HPE evaluation confirms the diagnosis of chronic inflammation.^[2,3] As the diagnosis is often uncertain preoperatively, laparoscopy can be a useful tool to allow exploration of the abdomen.^[5]

Recurrent appendicitis refers to a pattern of symptoms with mild, self-limited attacks of RIF pain that typically last for hours before resolving spontaneously with histological evidence of appendicitis.

Chronic appendicitis refers to constant well-localized RIF abdominal pain and tenderness with no other identifiable pelvic or abdominal disease. If appendicectomy completely relieves the pain and pathologic findings include chronic inflammation of the appendix, then the diagnosis of chronic appendicitis is confirmed.^[6,7]

In our study, pain abdomen was the universal complaint in all 60 patients (100%). Anorexia and nausea/vomiting were present in 10% patients. The recurrence rate in suboptimally treated (by interventions other than surgical) acute appendicitis (due to failure to confirm the diagnosis) and the suffering due to undiagnosed chronic RIF abdominal pain are unacceptably high. Overemphasis on clinical parameters such as tachycardia, rebound tenderness, and laboratory parameters such as leukocytosis and sonological evidence has eventually led to a doubtful diagnosis and a harmful increase in resorting to CT scan of the abdomen, at the end of all, the patient remains undiagnosed and untreated for elusive appendicitis. While relying too much on the traditionally overemphasized clinical and investigative parameters to make a diagnosis of an inflammatory process in the appendix, we tend to forget that any inflammation can present with varying degrees of severity and character, so that the clinical and laboratory interpretation must not be restricted by too rigid and dogmatic concepts.

In our series of 60 patients who presented with chronic RIF abdominal pain, the only clinical sign of a probable inflammatory process in the RIF was a varying degree of RIF tenderness. None of them had tachycardia (as defined by a resting heart rate of more than 100 beats/min), rebound tenderness or elevated body temperature. No patients showed leukocytosis (as defined by a total leukocyte count of more than 11000 cells/mm³). All 60 patients underwent exploratory laparoscopy. 10 patients had a demonstrable non-appendicular pathology also in and around the pelvis. All others had an otherwise normal abdomen as for as laparoscopy could demonstrate, except for the fact that 88.8% of patients had features of the chronic inflammatory process in and around the appendix as described by a narrowed, pale, and fibrosed appendix with periappendiceal adhesions of varying degrees. Histopathological analysis of the appendicular specimen proved that all appendices were pathological and so the NAR is zero. 94% of patients had the complete cure of RIF abdominal pain. 6% had persistent pain presumably due to stump appendicitis.

Laparoscopy is changing the approach toward chronic RIF abdominal pain. It is a diagnostic as well as a therapeutic tool. An exploratory and interventional (appendicectomy) study was conducted by Kolts *et al.* in 44 pediatric patients having recurrent RIF abdominal pain.^[8] 15 patients (34%) had abnormalities other than appendix during exploratory laparoscopy. Out of 44 patients, 32 (72.7%) were found to have histologic abnormalities in the appendix on 2 years follow-up, complete resolution of abdominal pain occurred in 25 (56.8%) patients, partial resolution in 6 patients (13.6%), and no response in 13 patients (29.6%). Hence, the conclusion of the study was that laparoscopic appendicectomy performed during exploratory laparoscopy is a useful treatment for chronic or recurrent RIF abdominal pain and can also be a good diagnostic tool for other diseases processes in the abdomen.

Another study was conducted by Roumen *et al.* for chronic RIF abdominal pain.^[9] It was a double-blinded randomized control trial. Of 40 patients, 18 patients underwent laparoscopic appendicectomy and 22 patients only diagnostic laparoscopy. Post-operative pain scores and histopathology of appendix were compared between the two groups. Out of 18 patients in the laparoscopic appendicectomy group, 7 appendices were found to be normal, and 11 showed signs of appendicopathy. At 6 months follow-up they observed that higher proportion of patients in the appendicectomy group had significant improvement in pain than the other. It was concluded that persistent or recurrent RIF pain can be treated successfully by elective laparoscopic appendicectomy in properly selected cases and there was no significant relationship between post-operative pain scores and the histopathology findings of the appendices.

Al-Araji performed appendicectomy in 58 patients with chronic or recurrent RIF pain of 3 months to 3 years duration.^[10] Out of 58 patients, 54 (93.1%) had gross changes of chronic inflammation in the appendix and surrounding tissues. Only 17 specimens were subjected to HPE, and 16 showed chronic inflammatory changes. On follow-up, 56 (96.5%) patients were completely pain-free.

In a study by Charles *et al.*, 10 patients underwent an elective appendicectomy for chronic RIF pain.^[11] No macroscopic abnormalities were seen during surgery. Histopathological analysis showed inflammatory changes in 8 out of 10 patients. The conclusion of the study was that significant reduction of pain can be achieved after an appendicectomy in all patients suffering from chronic RIF abdominal pain.

In a recent study on chronic RIF abdominal pain by Gedam *et al.* they performed laparoscopic appendicectomy in

30 patients.^[12] In this study, 22 (73.4%) out of 30 patients had recurrent appendicitis, and 26 (86.6%) patients had complete pain relief after appendicectomy at 6 months follow-up. The conclusion of the study was that laparoscopy is an invaluable tool in diagnosing conditions other than chronic appendicitis existing concurrently in patients with chronic RIF pain. There is no relation between the relief of pain and histopathology of the appendix. Nevertheless, chronic RIF abdominal pain can be relieved by performing laparoscopic appendicectomy.

Another study conducted by Popovic *et al.*, 41 out of 53 cases of chronic RIF abdominal pain underwent laparoscopic appendicectomy.^[13] The study concluded that long-term results are similar in both laparoscopic appendicectomy and without appendicectomy groups. There was no relationship between clinical improvement and histopathology of appendices. The study also mentioned that appendicectomy should be performed even though there is no macroscopically visible reason because of the intraluminal changes.

In another study by Charlesworth and Mahomed in the pediatric population, 16 children underwent laparoscopic appendicectomy for chronic RIF abdominal pain.^[14] There was an early improvement in 14/16 patients. This figure had improved to a 100% on extended follow-up. Median follow-up was 19 months (range 1–47). The conclusion of the study was that symptomatic improvement can be expected to be 88% immediately and up to 100% in the long term. The study supports laparoscopic appendicectomy in all patients presenting with chronic RIF pain in spite of negative hematological and radiological investigations.

CONCLUSION

The vermiform appendix is a common site of inflammatory disorder and is a major surgical cause of morbidity. Other than acute appendicitis, appendicular inflammation can also present with chronic or recurrent RIF abdominal pain of

milder degrees but without tachycardia, leukocytosis, and sonological evidence. The hematological and radiological studies do not contribute the diagnosis of chronic or recurrent appendicitis. However, intra-operative findings on laparoscopy and histopathology of the removed appendix confirm the diagnosis. The diagnosis of this entity is largely clinical and laparoscopic appendicectomy is curative.

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