ORIGINAL RESEARCH PAPER

Volume-8 | Issue-5 | May-2019 | PRINT ISSN No 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

PREVALENCE OF FECOLITH IN CLINICALLY SUSPECTED CASES OF ACUTE APPENDICITIS.

Anatomy

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ABSTRACT

In this study we wanted to find out the alliance between the presence of fecolith and appendicitis. The present study was conducted on 100 patients all having an initial clinical diagnosis of acute appendicitis. 96 out of 100 patients were operated on. 4 patients were treated non-operatively. Out of 96 patients operated, 75 had confirmed histopathological diagnosis of acute appendicitis. Fecolith was found in 44% acute appendicitis cases and in 17.6% cases histologically normal appendix, which proves that the presence of fecolith is not characteristic of appendicitis. Gangrenous and perforated cases were more frequently associated with fecolith showing that it plays an aggressive role in the pathophysiology of the disease. Additional line of research on the subject matter is suggested.

KEYWORDS

Appendicitis, Fecolith, Appendiceal perforation

INTRODUCTION

Vermiform appendix has been a point of interest and dilemma in the history of medical science. In Spite of the organ being considered vestigial functionally its importance lies in the fact that its pathological affection is the commonest cause of acute abdomen that requires surgical treatment.[1] Obstruction of the appendiceal lumen is believed to be a major cause of acute appendicitis. The mucosal folds and a sphincter like orientation of muscle fibers at the appendiceal orifice make the appendix susceptible to obstruction.[2]

The obstruction usually results from a fecolith. Fecolith has a well ordered laminated structure composed of inspissated fecal material, bacteria, epithelial debris, calcium and magnesium phosphate and rarely a foreign body.[3] Fecolith may be visible on plain radiograph in normal population, in patients with acute abdominal pain and their presence indicates a high risk of appendicitis being present.

Closed loop obstruction of the appendiceal lumen contributes to bacterial overgrowth. Continued secretion of mucus leads to intraluminal distention and increased wall pressure. Dilatation of the lumen of the appendix by mucinous secretions is called mucocele of the appendix.[4] Subsequent impairment of lymphatics and venous drainage leads to ischaemia. The inflammatory reaction transforms the normal glistening serosa into a dull, granular, red membrane; this transformation signifies early acute appendicitis.

Microscopical changes range from minimal focal inflammation to total necrosis of the appendiceal wall.[5] In early cases, the appendix may appear normal externally or may merely show hyperemia. Catarrhal appendicitis is the stage of initial mucosal and submucosal inflammation. At a later stage a prominent neutrophilic exudate generates a fibrino-purulent reaction over the serosa known as phlegmonous appendicitis.

As the inflammatory process worsens, there is abscess formation, hemorrhagic ulcerations and gangrenous necrosis within the wall extending to the serosa, creating acute gangrenous appendicitis. There is development of focal defects in the appendiceal wall with subsequent perforation, resulting in periappendiceal abscess and suppurative peritonitis. Subsequently omentum or small-bowel loops adhere to it, forming a palpable appendicular lump. The present work was intended to study the prevalence of fecolith in clinically suspected cases of acute appendicitis.

MATERIALS AND METHOD

This prospective study was conducted for a period of 1 year on 100 clinically suspected and diagnosed cases of acute appendicitis.[6] All of those patients at first presented with acute pain in the right lower quadrant of the abdomen and were first diagnosed as acute appendicitis. Most of them had fever, nausea and vomiting as associated symptoms. The cases were consecutive and unselected.

During the laparotomies the appendix was palpated in a standard fashion.[7] The base of the appendix was gently grasped to avoid inadvertent milking of fecaliths into the cecum. Specimens for macroscopic and histopathological study were collected from those undergoing appendectomy. As drainage of an exudate into the appendix from a focus of infection in a higher level of bowel or inflammation of any other periappendiceal structure may induce some neutrophilic infiltration in the mucosa, evidence of inflammation within the muscularis was considered criteria for diagnosis. The presence or absence of fecoliths as obstructing lesions was noted.

RESULTS AND ANALYSIS

In this study out of 100 patients of acute appendicitis 96 had undergone operative treatment. The remaining 4 had non-operative treatment. 3 of them had a distinct appendicular lump on palpation and were treated by conservative (Ochsner- Sherren) regimen. 1 of those patients was found to have right ureteric stone by straight x-ray abdomen.

The 96 cases had appendectomy and the appendices were sent for histopathological examination. 75 of them were proved to be acute appendicitis histopathologically. 3 cases were diagnosed as chronic appendicitis based on evidence of fibrosis and predominance of lymphocyte infiltration. 1 of them revealed to be an incidental case of mucocele of the appendix. The remaining 17 cases had no detectable histopathological changes of the vermiform appendix on microscopic examination and were proved to have normal appendix.

The macroscopic appearances of the appendices were noted. Amongst the 75 histopathologically proved acute appendicitis the morphological appearance of vermiform appendix was most commonly phlegmonous and catarrhal type was the second commonest. Gangrene and perforation was noted in 9 and 7 cases respectively. 2 cases presented with appendicular lump on laparotomy though no lump was palpable per abdomen. In 4 cases the appendices appeared normal morphologically though on histology had neutrophilic infiltration of muscularis propria.

96 cases underwent appendicectomy and their specimens were examined for the presence of fecolith. Overall incidence of fecolith was 39.58%, however in histologically proved cases fecolith was present in 44% cases. In histologically normal appendices fecolith was present in 17.6% cases. (Figure 1) Incidence of detection of fecolith was significantly higher in gangrenous and perforated cases being 66.67% and 71.42% cases respectively. (Table No. 1)

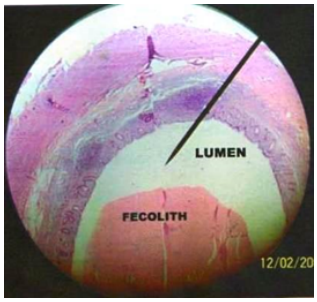

Figure 1: Showing fecolith within the lumen of a histologically normal appendix

Table No. 1: Incidence of fecoliths in 96 operated cases

Nature of appendix		Number of cases	Fecolith present	Fecolith present in % of cases
(A) Acute Appendicitis	TOTAL	75	33	44%
	1. Normal looking	4	1	25%
	2. Catarrhal	17	5	29.41%
	3. Phlegmonous	36	15	41.67%
	4. Gangrenous	9	6	66.67%
	5. Perforated	7	5	71.42%
	6. Lump	2	1	50%
(B) Chronic Appendicitis		3	2	66.67%
(C) Mucocele		1	0	–
(D) Normal appendix		17	3	17.6%
Total		96	38	39.58%

DISCUSSION

The luminal capacity of normal appendix is only 0.1 ml.[8] Secretion of even 0.5ml of fluid distal to an obstruction raises the intraluminal pressure to 60 cm of water. This distention stimulates nerve endings of visceral afferent stretch fibers producing dull, diffuse pain in the mid-abdomen. Distention continues from continued mucosal secretion and rapid multiplication of the resident bacteria. Severe intra-appendiceal pressure causes reflex nausea and vomiting.

As progressive distention encroaches upon the vascular pressure is exceeded, first the venous return and subsequently the arteriolar inflow are occluded, resulting in engorgement and congestion. The mucosa of the appendix is highly susceptible to impairment of blood supply, thus its integrity is compromised early in the process, allowing bacterial invasion. The inflammatory process soon involves the serosa of the appendix and in turn parietal peritoneum producing the characteristic shift in pain to the right lower quadrant. As distention, bacterial invasion, compromise of vascular supply and infarction progress, perforation occurs through one of the infarcted areas.

This sequence is not inevitable. Some episodes of acute appendicitis apparently subside spontaneously. Many patients who are found at operation to have acute appendicitis give a history of previous similar but less severe attacks of right lower quadrant pain. Pathologic examinations of the appendices removed from these patients often reveal thickening and scarring, suggesting old, healed acute inflammation. Most probably when soft fecolith is the cause of obstruction of the lumen it can be relieved spontaneously allowing the subsidence of the symptoms.

This study figures out that presence of fecolith is not pathognomonic of acute appendicitis. From the present study it is also seen that there is high prevalence of fecolith with gangrenous and perforated cases and this hints to its aggressive role in pathogenesis of the disease. Previous works on this spot concluded with supporting as well as differing views. [9-10]

CONCLUSION

The data we presented hints the association between the presence of a fecolith and acute appendicitis, but also show contradictory information whereby having a healthy appendix was also associated with the presence of a fecolith. Interestingly, there was high correspondence between gangrenous or perforated appendicitis and the presence of a fecolith. We conclude that the fecolith is not merely an incidental finding and is one of the primary causes of acute (non-perforated) or gangrenous (perforated) appendicitis and not merely an association. With many backing and contradictory views the only way forward is to encourage further research on the topic to bring firm conclusions to the table.

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