



A Retrospective Study on Atypical Presentations of Uncomplicated Appendicitis in a Tertiary Centre with Emphasis on Management Strategy

Authors

Tarun D. Rochlani¹, Pratik S. Shaparia², Harsh P. Trivedi³, Tosha J. Desai⁴

Abstract

Background: Acute appendicitis is one of the most common surgical emergencies encountered routinely. The classic symptoms occur in just over half of patients with acute appendicitis therefore, an accurate and timely diagnosis of atypical appendicitis remains clinically challenging.

Aim: The aim of this study was to determine the incidence of atypical presentations among patients diagnosed with appendicitis, to investigate which atypical features are the strongest positive predictors for appendicitis among patients being evaluated for appendicitis and to determine whether atypical presentation has any role in modifying conventional management strategies.

Materials and Methods: Case files of 100 patients admitted and treated in a tertiary referral centre from January 2016 to January 2018 with confirmed diagnosis of appendicitis were retrospectively analysed for the variability in their clinical presentation and the data was correlated with intra-operative findings. The management strategy employed for each patient was studied with emphasis on any modification employed for atypical cases.

Summary: 34% of patients in study population had features of atypical appendicitis. The most common age-group with atypical cases were 11-20 (24%). The most common symptom in atypical cases was pain(100%) followed by nausea/vomiting(41%), fever(35%), urinary symptoms(35%), diarrhoea (12%) and vaginal discharge(6%). The most common sign on abdominal examination in atypical cases was localised tenderness(30%) followed by localised guarding/rigidity(12%), rovsing's sign(6%), psoas sign(6%) and obturator sign(6%). Diagnostic accuracy of ultrasound and CT abdomen in atypical cases was very high being 82% and 100% respectively. Despite the atypical presentations the treatment in majority cases remained operative with laparoscopic appendicetomy (59%) being most common followed by standard appendicectomy(12%), while 29% of patients were treated with conservative management.

Conclusion: Knowledge about the variable presentations of atypical uncomplicated appendicitis, a very common condition can aid in timely and confident diagnosis and intra-operative location of appendix can be presumed. However, the management in such cases is not dependent on clinical presentation in uncomplicated cases but depends on patient's comorbidities and surgeon's discretion.

Keywords: Atypical appendicitis, acute appendicitis, management.

Introduction

Acute appendicitis is the most common cause of an 'acute abdomen' in young adults and when it manifests in its classic form, it is easily diagnosed

and treated. Murphy's triad- pain, vomiting and fever, these classic symptoms unfortunately occur in just over half of patients.¹ Pain is typically diffusely centered in epigastrium, moderate and steady migrating to RIF within 1-12 hours. Fever is low

grade without chills and vomiting though present in over 75% of cases is rarely the prominent symptom.² Furthermore, the consequence of missing appendicitis, leading to perforation, significantly increases morbidity and prolongs hospitalization. In an age accustomed to early and accurate preoperative diagnosis, acute appendicitis remains an enigmatic challenge and a reminder of the art of surgical diagnosis.³

Ultrasonography and CT scan are often resorted to in cases of diagnostic dilemma.⁴ Though fairly sensitive and specific, it is imperative that a clinician is well versed with atypical presentation of a very common condition to save precious time and money.

The presentation of appendicitis is also confounded by complications such as abscess, perforation and peritonitis, in which cases typical features are masked and the signs and symptoms of peritonitis prevail.

Table 1 Unusual presentations can be related to the position of distal end of appendix⁵-

Position of appendix	Associated symptoms	Signs
Retrocecal/Retro-ileal	-Back and flank pain -walk with exaggerated lumbar lordosis -testicular pain	-Cope's psoas sign -Rovsing's sign -Baldwing's sign -rigidity over loin
pelvic	-suprapubic pain -urinary frequency -pyuria -diarrhoea	-pain on rectal examination (in rectum or supra-pubic area) -Obturator sign -no rigidity of anterior abdominal wall
postileal	-non-shifting pain, -diarrhoea, -retching	-right para-umbilical tenderness
Paracaecal	-flank pain -diarrhoea, vomiting	-rigidity over right iliac fossa

Table 2 Appendicitis in presence of other illnesses or physiological state⁶:

Illness/physiological state	Features
Infants	-delayed diagnosis -early development of diffuse peritonitis
Children	-symptoms mimicking GI upset, septic arthritis of hip, psoas abscess
Elderly	-longer duration of symptoms -increased co-morbidities
Pregnancy	-nausea, vomiting common in early pregnancy -upward migration and deflection of appendix with advancing gestation and failure of omental containment of infection.
Obesity	-obscuration of clinical findings.
Immunocompromised/ neutropenic	-delayed diagnosis

(leukemia, diabetes mellitus, crohn's disease)	
AIDS	-abdominal pain and gastrointestinal symptoms mimicking opportunistic infections
Situs inversus/ malrotation of gut	-pain on left side of abdomen

Aims and Objectives

- To determine the incidence of atypical presentations among patients diagnosed with appendicitis.
- To investigate which atypical features are the strongest positive predictors for appendicitis among patients being evaluated for appendicitis.
- To study the different modes of presentation, investigations in such patients and their management.

Materials and Methods

This is a retrospective study of 100 cases diagnosed to have uncomplicated appendicitis admitted in the Department of Surgery of tertiary care hospital in the period between January 2016 to January 2018.

A specially designed proforma was filled in for each patient case record which included detailed records of case history, past and family history, clinical examination, investigations including biochemical and radiological such as X-rays, ultrasonography, CT scan and treatment (conservative or operative) as well as histopathology reports of operated patients. All these case records were studied, tabulated and analysed. On histological basis, cases were charted into acute, chronic, acute or chronic and subacute appendicitis as per reports issued from department of pathology in the institute.

Inclusion Criteria

- Patients with a diagnosis of uncomplicated appendicitis who underwent treatment in the institute.
- Patients having co-morbidities such as obesity, diabetes, HIV, inflammatory bowel disease that were likely to impact on presentation.

Exclusion Criteria

- The patients who are diagnosed to have peroperative or histopathological pathology

other than appendicitis.

- Patients who were found to have complicated appendicitis per-operatively or on imaging.
- The patients admitted for interval appendectomy.

Observation and Analysis

Table 3: Percentage of patients with typical and atypical presentations

Presentation of patient	Percentage of patients
Typical	66
Atypical	34
Total	100

Figure 1: Age incidence in atypical patients

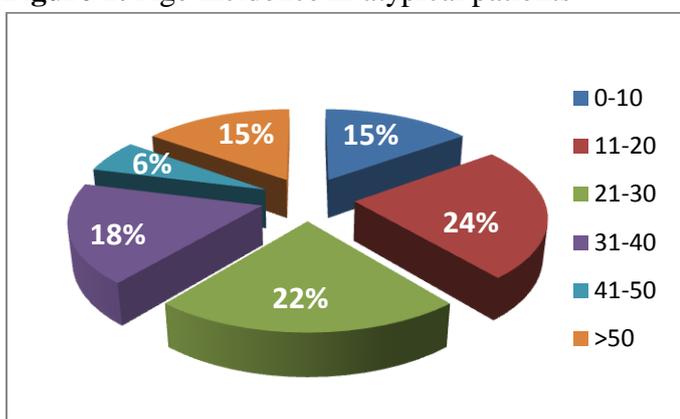


Table 4: Sex distribution in atypical cases

Sex	Number of patients
Male	59%
Female	41%

Table 5: Distribution of atypical and typical presentations in females

	Atypical	Typical
Pregnant	3	2
Non-pregnant	11	20

Table 6: Symptoms in typical and atypical cases

Symptoms	Atypical	Typical
Pain	100%	100%
Nausea/Vomiting	41%	85%
Anorexia	0%	50%
Fever	35%	28%
Diarrhoea	12%	0%
Urinary symptoms	35%	0%
Vaginal discharge	6%	0%
Abdominal distension	0%	0%

Table 7: Symptoms with relation to position of appendix

	Nausea/vomiting	Anorexia	Fever	Urinary symptoms	Diarrhoea	Vaginal discharge
Retrocecal	55%	60%	57%	10%	12%	0%
Pelvic	36%	32%	34%	72%	78%	100%
Paracecal	6%	5%	5%	12%	10%	0
Post-ileal	3%	3%	4%	6%	0%	0%

Table 8 Association with co-morbidities

Co-morbidity	Typical	Atypical
Diabetes mellitus	45%	55%
Obesity	58%	42%
Crohn's disease	35%	65%
AIDS	28%	72%

Figure 2: Location of pain in atypical cases

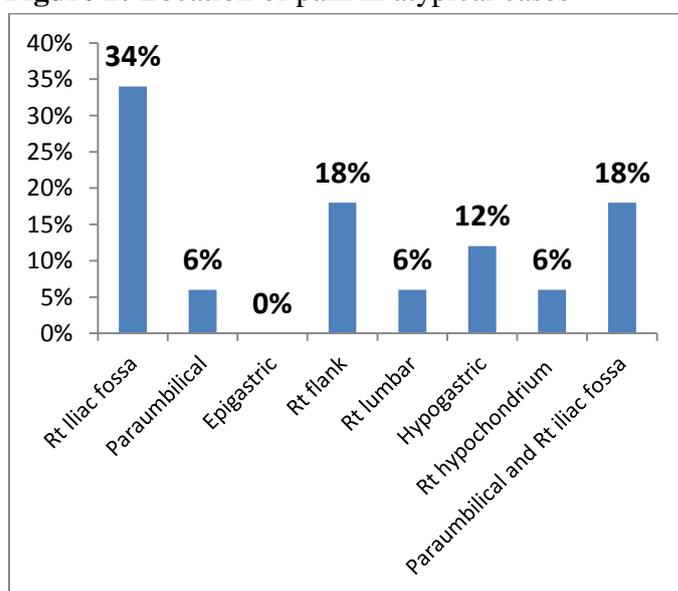


Figure 3: Abdominal examination in atypical cases

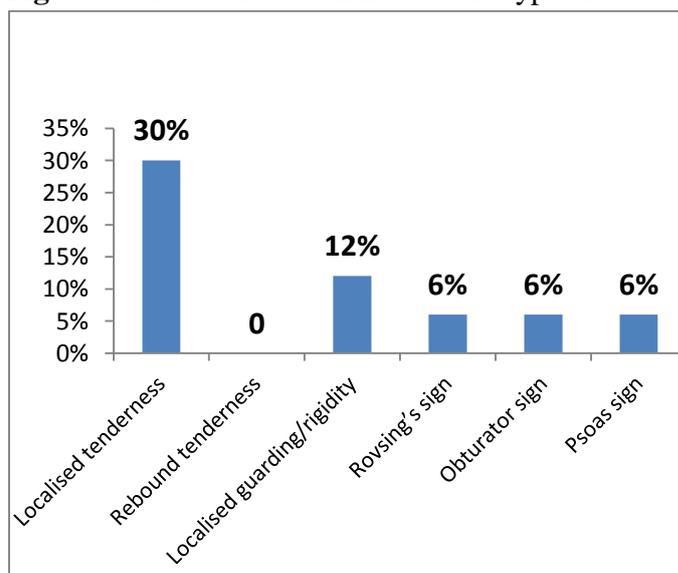


Figure 4: Site of tenderness in atypical cases

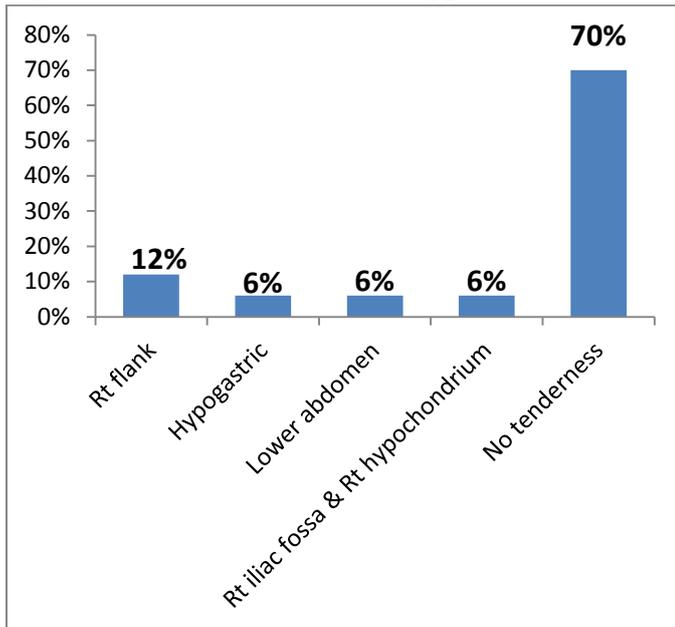


Table 9: Diagnostic accuracy of imaging in atypical and typical cases

Method used	Typical cases	Atypical cases
X-ray abdomen	0%	0%
Ultrasound	70%	82%
CT Scan Abdomen	Was not required	100%

Figure 5: Treatment modality in atypical cases

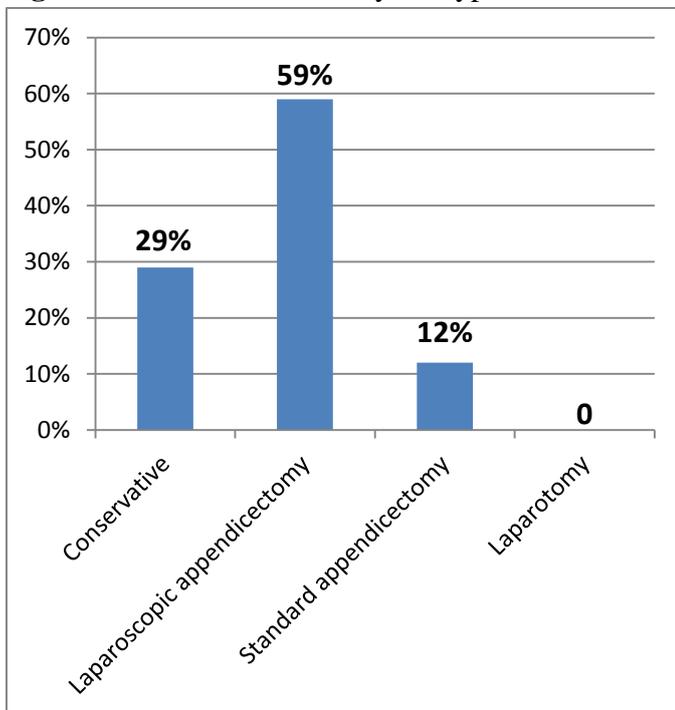


Figure 6: Duration of hospitalisation in atypical cases

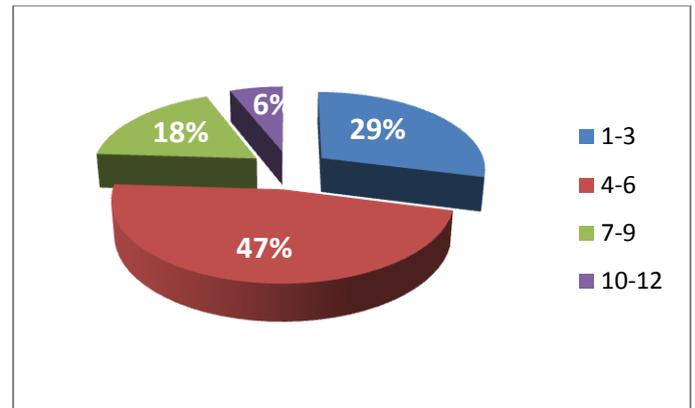
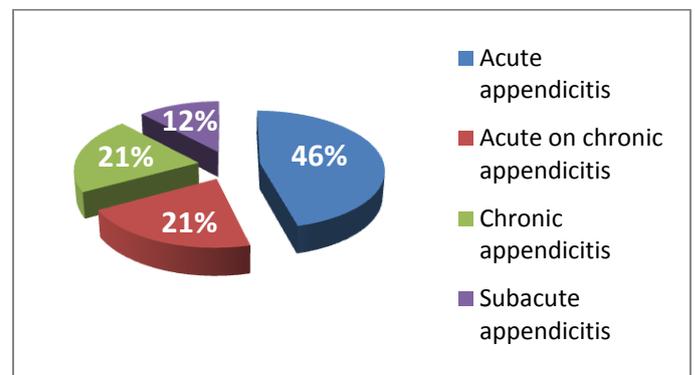


Figure 7: Histopathological findings in atypical cases



Discussion

- In the study, 34% of patients were noted to have atypical presentation of appendicitis of which 59% were males and 41% were females.
- The most common age-group with atypical cases were 11-20 (24%)
- The most common symptom in atypical cases was pain (100%) followed by nausea/vomiting (41%), fever (35%), urinary symptoms (35%), diarrhoea (12%) and vaginal discharge (6%)
- The most common location of pain was noted to be right iliac fossa (34%) followed by right flank(18%), paraumbilical and right iliac fossa (18%), hypogastric (12%), right lumbar(6%), paraumbilical (6%) and right hypochondrium(6%).

- Atypical features were commonly associated with pregnant females (67%) and strongest associated co-morbidity was AIDS (72%)
- The most common sign on abdominal examination in atypical cases was localised tenderness(30%) followed by localised guarding/rigidity(12%), rovsing's sign(6%), psoas sign(6%) and obturator sign(6%).
- Diagnostic accuracy of ultrasound and CT abdomen in atypical cases was very high being 82% and 100% respectively.
- Despite the atypical presentations the treatment in majority cases remained operative with laparoscopic appendicectomy (59%) being most common followed by standard appendicectomy (12%), while 29% of patients were treated with conservative management.
- Histopathological findings in operated atypical cases was mostly acute appendicitis (46%) followed by (acute or chronic appendicitis (21%), chronic appendicitis (21%) and subacute appendicitis (12%).

Conclusion

Atypical presentation of uncomplicated appendicitis is fairly common in routine practice. Knowledge about the variable presentation of this very common condition can aid in timely and confident diagnosis and intra-operative location of appendix can be presumed. However, the management in such cases is not dependent on clinical presentation in uncomplicated cases but depends on patient's comorbidities and surgeon's discretion.

Acknowledgement

We are thankful to Dr. S.G.Mehta (M.S, Professor), Dr. F.H.Shah (M.S, Assistant Professor), Dr.V.G. Sangani (M.S, Assistant Professor) for their inputs on the subject and to the nursing staff of our unit.

References

1. O'Connell PR, The Vermiform Appendix, In: Williams NS, Bulstrode CJK, O'Connell PR, Bailey and Love's Short practice of surgery, 25th Edition, London: Hodder Arnold; 2008, p1215-1216.
2. Jaffe BM, Berger DH, The Appendix, In: Brunicaardi FC, Anderson DK, Billiar TR, Dunn DL, Hunter JG, Matthews JB, Pollock RE, Schwartz's Principles of Surgery, 9th Edition, Philadelphia: The McGraw-Hill Companies Inc; 2010. p1073-1092.
3. Aiken JJ, Oldham KT, Acute Appendicitis, In: Kliegman RM, Stanton BF, St. Geme III JW, Schor NF, Behrman RE, Nelson's Textbook of Paediatrics, 19th Edition, Vol. 2, Philadelphia: W B Saunders Elsevier Science; 2004. p1349-1354
4. Freeland M, MD, King E, MD, Safcsak K, RN, Durham R, MD, Diagnosis of appendicitis in pregnancy, The American Journal of Surgery, 2009;(198): p753-758.
5. Perera WR, MBBS, Hennessy OF, MB, FRCR, An unusual case of appendicitis, The American Journal of Surgery, 2010; 199: p79-81
6. Sanjay Harrison and Harrison Benziger, Diagnostic Challenges in Acute Appendicitis, In: Anthony Lander, Appendicitis—A collection of essays from around the world, P21-42.