

## Behind the Pain: Recognizing The Warning Signs Of Acute Appendicitis

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### ABSTRACT

Acute appendicitis is a surgical emergency and one of the most common cause of acute abdominal pain. Appendicitis means inflammation of vermiform appendix. Common age group is 10 -20 years. Causes of appendicitis include obstruction of its lumen with fecolith, calculi, infection and lack of dietary fiber. Clinical presentation vary thus called chameleon of surgery. Typical feature include periumbilical pain that migrates to right iliac fossa over the next 24 hours accompanied by nausea, anorexia and vomiting. Typical features were first described by Murphy and are present in 50 percent of the cases. Atypical symptoms include diarrhea, constipation, urinary tract infection. Pregnant women feel pain in the upper abdomen due to displacement of appendix by uterus. It can be classified as uncomplicated which means inflammation with abscess formation and complicated that means appendix is inflamed along with abscess formation and peri appendiceal phlegmon.

Clinical signs include elevated temperature and rebound tenderness. Physical examination includes a positive Rovsing sign, obturator sign, obturator sign or psoas sign. Alvarado scoring system is one of the few scoring systems used to diagnose a case of suspected appendicitis. Total score is 10. A score of 7-10 indicated surgical intervention. Among the imaging modalities USG abdomen is the first choice but CT abdomen is superior to it because of its increased sensitivity and specificity. Laproscopic appendectomy is most effective surgical intervention. Uncomplicated cases can be treated with piperacillin-tazobactam. Complicated cases can be treated with combination antibiotics cephalosporin combined with fluoroquinolones or metronidazole.

### INTRODUCTION

Acute appendicitis is one of the most common surgical emergencies which is encountered in both adults and children. Acute appendicitis is one of the most common causes of acute abdominal pain<sup>(1)</sup>.

#### Definition:

The word appendicitis is derived from a Latin word which means inflammation of vermiform appendix<sup>(2)</sup>.

#### Epidemiology:

Appendicitis is considered to be the disease of young age group and only 5-10% of the cases occur in elderly patients<sup>(3)</sup>. The most common age for occurrence of acute appendicitis is between the ages of 10 and 20 years<sup>(2)</sup>. The lifetime risk of acute appendicitis is 9% in USA, 8% in Europe and 2% in Africa<sup>(4)</sup>. The overall incidence of acute appendicitis is 1 per 1000 persons per year<sup>(5)</sup>. The lifetime risk of acute

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appendicitis is 8.6% in males and 6.7% in females in United states <sup>(2)</sup>. Appendicitis is more common in males as compared to females and Male to female ratio is 1.4:1 . Acute appendicitis is responsible for more than 40,000 hospital admissions in England every year<sup>(6)</sup>. The incidence of acute appendicitis decreases with the increasing age. However the morbidity and mortality rates are higher in elderly patients. The mortality rate is 8% in patients older than 65 years of age as compared to 0 to 1 % among young patients<sup>(7)</sup>.

### **Etiology:**

The etiology of acute appendicitis include obstruction of appendicular lumen with fecolith, calculi, lymphoid hyperplasia, parasitic infection and lack of dietary fiber <sup>(13)</sup>.

### **Clinical Presentation:**

Acute appendicitis is one of those medical conditions which present with variable clinical presentation that is why it is called as chameleon of surgery <sup>(5)</sup>. Patients with acute appendicitis may present with typical or atypical clinical features. Most of the patients present with the periumbilical pain which may be colicky or dull ache in nature. The pain increases in severity over 24 hours and then after a variable period of time the pain shifts towards the right iliac fossa. The initial pain is basically referred pain which results from visceral innervation of mid gut and localized pain is due to the involvement parietal peritoneum. The pain is also associated with anorexia, nausea and vomiting . This typical clinical picture was first described by Murphy and it is present only in 50% of the patients. The atypical presentation may include pain beginning and staying in right iliac fossa, diarrhoea, constipation and increase in urinary frequency if appendix lies in contact with the urinary bladder <sup>(2,8,9)</sup>.

Acute appendicitis can be ruled out in children with 98% reliability when there is absence of nausea, vomiting, abdominal tenderness and leukocytosis. In pregnant women the pain may be felt in the upper part of abdomen because of the cranial displacement of the appendix due to the enlarged uterus <sup>(5)</sup>.

### **Classification of Appendicitis:**

According to the European Association of endoscopic surgery (EAES) , appendicitis is classified as complicated or uncomplicated appendicitis.

Uncomplicated acute appendicitis is defined as inflammation of vermiform appendix without abscess formation, free purulent fluid, phlegmon and gangrene whereas the complicated acute appendicitis is associated with abscess formation, periappendiceal phlegmon, perforation or gangrene<sup>(5)</sup>.

### **Signs of Acute Appendicitis:**

The signs of acute appendicitis include elevated temperature, rebound tenderness and localized or diffuse guarding. Rebound tenderness is elicited by pressing gently but firmly in right iliac fossa and then releasing the hand and watching the patient's face for discomfort. When there is local guarding in lower abdomen then it shows irritation of parietal peritoneum but when there is diffuse guarding then it shows severe and complicated appendicitis<sup>(5)</sup>. On physical examination following signs can be elicited which includes pointing sign , psoas sign, Rovsing's sign and obturator sign. Pointing sign can be elicited by asking the patient to point to the site ; from where the pain started and where it moved. Psoas sign is elicited when an inflamed appendix lies on psoas muscle and patient will lie with the right hip flexed for pain relief. In Rovsing's sign deep palpation of left iliac fossa may cause pain in right iliac fossa. Obturator sign is elicited when hip is flexed and internally rotated , patient feels pain in hypogastrium , it occurs due to the contact of inflamed appendix with obturator internus muscle <sup>(10)</sup>.

### **Diagnostic criteria :**

The clinical diagnosis of acute appendicitis is mainly based on the history, physical examination, laboratory evaluation and imaging

modalities<sup>(11)</sup>. A no of scoring systems have been developed for investigating the suspected case of acute appendicitis. The most commonly used scoring systems include Alvarado score (1986) and Appendicitis inflammatory response(AIR) score (2008). Out of these two Alvarado is most commonly used scoring system to determine the need for surgical intervention for appendicitis. The variables of Alvarado score system include migratory right iliac fossa pain-1, anorexia-1, nausea and vomiting-1, tenderness-2, rebound tenderness-1, elevated temperature-1, leukocytosis-2, shift to the left (increase in segmented neutrophils ) -1. The total score is 10. Score of 1-4 indicates "discharged home" , score of 5-6 indicates being "observed", score of 7-10 indicates " need to undergo surgical intervention"<sup>(2)</sup>. The diagnosis of acute appendicitis should be doubted when there is absence of anorexia, nausea and vomiting and when symptoms last for more than 72 hours without perforation and when there is no tenderness in right iliac fossa. The clinical features are approximately same in young and adult patients except for high rate of perforation and morbidity and mortality rates in older patients<sup>(12)</sup>.

#### **Radiological investigations:**

The imaging modalities which are used for diagnosing acute appendicitis include CT-scan, graded compression color doppler ultrasonography and MRI<sup>(2)</sup>. Abdominal ultrasonography is the imaging modality of first choice for diagnosing a suspected case of acute appendicitis. However CT-scan is superior to ultrasonography in terms of sensitivity ( 76-100% ) and specificity ( 83-100%) but its role in diagnosing a suspected case of acute appendicitis is controversial in western countries

because appendicitis is controversial in western countries because it cannot differentiate between complicated and uncomplicated acute appendicitis<sup>(5)</sup>.

#### **Treatment:**

Appendectomy is considered to be the most widely accepted treatment of acute appendicitis. Over 300,000 appendectomies are performed in USA every year. Laparoscopic appendectomy is now considered to be the most effective surgical treatment because it is associated with reduced incidence of wound infection, reduced morbidity rates, shorter hospital stay as compared to open appendectomy<sup>(4)</sup>. In spite of all the improvements in diagnostic process, it is a main challenge to to determine whether to operate or not<sup>(4)</sup> . Uncomplicated acute appendicitis can also be treated successfully with broad spectrum antibiotics such as piperacillin- tazobactam or combination therapy with cephalosporin or fluroquinolones with metronidazole<sup>(11)</sup>. However appendectomy is considered to be the standard treatment for acute appendicitis.

#### **Conclusion:**

In conclusion ,this research article has shed light on the symptoms of acute appendicitis. By analyzing various studies and clinical data , it has been established that the most common symptoms of acute appendicitis include abdominal pain, particularly in the lower right quadrant, loss of appetite, nausea, vomiting and fever. However, it is important to note that the presentation of symptoms can vary among individuals, making diagnosis challenging at times. Early recognition and prompt medical intervention are crucial in preventing complications associated with acute appendicitis. Further research is needed to explore additional factors that may contribute to the accurate diagnosis and management of this condition.

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