

## Four Pathologies in a Single Patient with Acute Abdomen..... Who is the Culprit? A Case Report

**Rajesh Chaudhary<sup>1\*</sup>, Ramesh Bharti<sup>2</sup>, Amar Verma<sup>3</sup>, Rajesh Sharma<sup>1</sup>, Vikrant Dharwal<sup>4</sup> and Vivek Sharma<sup>4</sup>**

<sup>1</sup>Senior Resident, Department of Surgery, Dr. R.P. Govt. Medical College Kangra at Tanda HP, India

<sup>2</sup>Professor, Department of Surgery, Zonal Hospital Dharamshala HP, India

<sup>3</sup>Associate Professor, Department of Surgery, Dr. R.P. Govt. Medical College Kangra at Tanda HP, India

<sup>4</sup>Junior Resident, Department of Surgery, Dr. R.P. Govt. Medical College Kangra at Tanda HP, India

**\*Corresponding Author:** Rajesh Chaudhary, Senior Resident, Department of Surgery, Dr. R.P. Govt. Medical College Kangra at Tanda HP, India.

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### Abstract

Acute abdomen is the sudden onset of pain abdomen in a patient which needs to be differentiated from many medical causes. Although the multiple possible causes of acute abdomen are rare to find in a single patient, but it's not impossible. The difficulty lies in how to decide which is the real emergency. Acute appendicitis is the most common among all the causes of acute abdomen. But the similar clinical features may be seen in Meckel's Diverticulitis, Acute cholecystitis or renal stones. We present the case of a patient with four possible causes of acute abdomen and had two culprits.

**Keywords:** Acute Appendicitis; Acute Abdomen; Meckel's Diverticulum; Emergency Appendectomy

### Introduction

Acute abdomen is a sudden or recent onset of abdominal pain usually of nontraumatic origin, which may require surgery. A pain persisting for more than six hours is mostly due to a surgical cause. Although not every one of them is a surgical candidate but all the possible surgical as well as nonsurgical causes are to be ruled out. The emphasis should be to rule out all the differential diagnosis and treating the underlying cause at an early stage [1]. This is usually done by a careful history and clinical examination supported by laboratory and radiological examinations. Among the surgical causes acute appendicitis, intestinal obstruction and gallstone disease are the most common causes of acute abdomen. The nonsurgical causes could be classified as: Metabolic (uremia), Endocrine (diabetic crisis), Haematological (sickle cell crisis), Drugs (heavy metal poisoning), and toxins like lead and black widow spider poison [2].

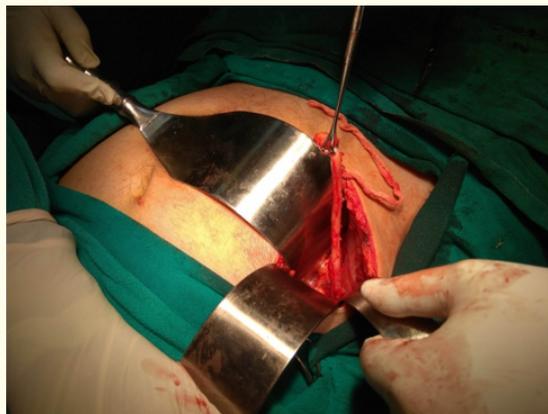
### Case Report

We present the case of a 42 year old male who presented to emergency room (ER) with a one day history of pain abdomen. The pain was initially in the upper abdomen which moved to right iliac fossa (RIF). The pain was colicky in nature and was referred to back. It was associated with nausea and two episodes of vomiting. He had anorexia and was not passing stools or flatus. There was no history of hematuria, dysuria or fever. On examination his pulse rate was 94 beats per minute with a blood pressure of 140/ 84 mm Hg (millimetres of mercury). There was a deep tenderness in RIF and right lumbar region with Psoas sign positive. Ultrasonogram (USG) of abdomen was suggestive of multiple small gall bladder (GB) calculi and multiple right renal calculi with an 11 mm calculus in the middle calyx with no evidence of hydronephrosis (HDUN). X- ray of the abdomen (standing film) was showing multiple air fluid levels within the small gut lumen in RIF and left lumbar region (Figure 1). His total leucocyte counts (TLC) were 11360/cubic mm with 85% neutrophils. His

total bilirubin count was 1.63 mg/dl (milligrams per decileter) with 1.31 mg/dl of indirect bilirubin. His urine routine and microscopic examination was within normal limits. His modified Alvarado score was 7, which was highly suggestive of acute appendicitis. So, the patient underwent emergency appendectomy. During surgery a 15 centimeter (CM) long, retrocecal, subhepatic, inflamed appendix was removed (Figure 2). But no pus or free fluid was seen. There were multiple air fluid levels in the erect x- ray abdomen so we looked for a possible other cause. About two feet proximal to ileo-cecal junction (ICJ) a 10 cm long Meckel’s diverticulum with a narrow neck was noticed (Figure 3). It has bent over itself and was adherent to the distal ileal loop with mild dilatation of the proximal small gut causing intestinal obstruction like picture. So, a wedge resection of the Meckel’s Diverticulum was done. The patient made a good recovery and was discharged home on fourth post-operative day. He has been doing well at six months after surgery. Histopathological examination confirmed the diagnosis of acute appendicitis.



**Figure 1:** X-ray Abdomen (standing) showing right renal calculus and multiple air fluid levels of small gut in the right iliac fossa along with left lumbar and iliac region.



**Figure 2:** Showing inflamed appendix.



*Figure 3: Showing Meckel's Diverticulum.*

## Discussion

The acute and sudden pain felt in the abdomen or an increase in the chronic pain is known as acute abdomen. The abdominal pain can be visceral or somatic in nature. The visceral pain is mainly due to inflammation, ischemia, distension or traction of the hollow viscus. It is poorly localised pain mainly to the middle of the abdomen because of the bilateral innervations of the visceral peritoneum by the autonomic nervous system. It is vague, dull and deep. Parietal pain is well localised to a particular site of the abdomen as it has single spinal somatic nerve supply. The pain is sharp, well localised and initiated by inflammation of the parietal peritoneum. This pain produces particular signs; as in Rovsing's sign of acute appendicitis and Murphy's sign in acute cholecystitis [1]. Foregut pain is usually felt in the epigastrium initially, midgut in the periumbilical region and hindgut pain in the hypogastrium. A pain initially felt in the centre of the abdomen, later on becoming localised to the right iliac fossa as in acute appendicitis is an example of migration of pain. Due to the common neuronal pathways, the pain may be felt at a distant site away from the primary source of origin as in right shoulder tip pain due to acute cholecystitis. This is known as a referred pain [1,2]. A careful history is important in initial assessment of a patient. The pain may be sudden in onset which occurs within seconds like in ruptured aortic aneurysm, perforated duodenal ulcer or myocardial infarction. It may accelerate rapidly over minutes as in renal colic, biliary colic, acute appendicitis or mesenteric ischemia. This pain may evolve gradually over hours like in case of acute appendicitis, acute cholecystitis or acute intestinal obstruction. The pain may be colicky in nature like in biliary colic, ureteric colic or intestinal colic of acute appendicitis which has a waxing and waning pattern. The pain may be associated with nausea and vomiting as seen in biliary colic, acute appendicitis, Meckel's Diverticulum or renal pain. Renal pain may be felt in the lumbar area radiating to back. Ureteric colic may radiate to testicles or inner side of thigh. Renal pain may further be associated with fever, vomiting, dysuria or hematuria when associated with features of urinary tract infection (UTI) [3]. Biliary colic typically presents with a sudden waxing and waning pain in the right hypochondrium which may persist for 1-5 hours. It may be associated with nausea and vomiting. Pain may be referred to the right shoulder. If the pain persists for more than 24 hours along with fever and tenderness in the right hypochondrium (Murphy's sign), a diagnosis of acute cholecystitis should be suspected. The patient may have mild jaundice and deranged liver function tests (LFT). The pain of biliary colic may be felt in the epigastrium, left hypochondrium, left lumbar region, or left shoulder in atypical cases [1,4]. The acute appendicitis presents with pain initially followed by vomiting. Anorexia is the most consistent feature of acute appendicitis. Pain may be felt in the epigastrium or in the periumbilical region initially, but once the parietal peritoneum is inflamed the pain migrates to right iliac fossa (RIF) [5]. Similarly, an inflamed Meckel's Diverticulum may also present with periumbilical pain initially. It is a differential diagnosis for Acute Appendicitis, especially in children. The Meckel's Diverticulum presents most commonly with complications like bleeding per rectum in children and intestinal obstruction in the adults. The site of

maximum tenderness may vary with the position of the tip of appendix likewise the pain may vary in Meckel's Diverticulitis, which may be centered around umbilicus [6]. A retrocecal appendicitis may not produce at all or may produce mild tenderness in the RIF elicited on hyperextension of the right hip joint (Psoas Sign) but in case of subhepatic appendicitis the pain may be felt in the lumbar region. The inflamed appendix touching the ureter may produce features of urinary tract infection (UTI) with dysuria, hematuria, and fever. An inflamed appendix irritating the rectum may result in diarrhoea as in pelvic appendix. A pre-ileal appendix may produce the features of Acute intestinal obstruction when inflamed [7]. Laboratory investigations may show raised leucocyte counts with neutrophilia in case of Acute Appendicitis, Acute Cholecystitis as well UTI. Bilirubin may be raised in case of acute cholecystitis as well as in some cases of perforated appendix. Bilirubin may be raised and liver enzymes may also be deranged mildly in case of acute appendicitis as well as acute cholecystitis. Urine examination may reveal red blood cells (RBC) and white blood cells (WBC) and raised leucocyte esterase levels in renal stones associated with UTI. WBC and RBC in urine may also be seen with appendicitis. Then how to settle the diagnosis? Radiology can help in reaching the diagnosis. A plain x- ray of the abdomen will show multiple air fluid levels in the right iliac fossa signifying paralytic ileus of the ileal loops. The psoas shadow may be absent with the scoliotic curve of the spine deviated more towards the right side. There may be visible air inside the appendix or biliary tree. Free gas under the diaphragm and fecalith inside the appendix may be seen in rare circumstances of acute appendicitis. Likewise, a perforated Meckel's Diverticulum will show free gas under the diaphragm. An x-ray abdomen may also show renal calculi and in rare cases Mercedes Benz sign of the gall stones. Ultrasonogram (USG) of the abdomen is the investigation of choice for gall stones. It can also detect renal stones and hydronephrosis (HDUN). A graded compression USG of abdomen can pick up acute appendicitis. An aperistaltic, non-compressible, blind ending gut loop with an antero- posterior (AP) diameter of more than 6 milli meter is diagnostic of appendicitis, Also it can detect fecoliths, abscess, free fluid, thickened oedematous mesentery, mesenteric lymph nodes and probe tenderness in RIF, which are indirect signs of Acute Appendicitis. USG in appendicitis lacks sensitivity and specificity. It is also an operator dependent investigation. A negative USG abdomen in a suspected case of appendicitis does not rule out appendicitis. The clinical scoring system, Alvarado score, along with the USG abdomen can increase the diagnostic yield for Acute Appendicitis. Computerised tomographic scan (CT) of the abdomen is the surest investigation for diagnosing the Acute Appendicitis. A contrast filled appendix rules out acute appendicitis. It can detect fecoliths inside the appendix along with pus and gas in case of abscess secondary to perforated appendix [1,5]. CT Scan of the abdomen can also pickup the renal stones, HDUN and pyelonephritis. Acute Appendicitis is the real and most common emergency which requires urgent surgery an acute appendicitis if not operated well in time can lead to ruptured appendix. If it is localised by the host defences an abscess may be formed. An appendicular lump may be formed by the inflamed appendix wrapped around by greater omentum and small gut loops. If this does not happen and the peritonitis occurs, the consequences could be fatal. Thus, an emergency appendectomy is the most commonly performed emergency surgery worldwide [1,7]. If a normal appendix is seen at the time of surgery in a patient who is suspected of acute appendicitis otherwise, Meckel's Diverticulum should be looked for as a possible cause. A wide mouth Meckel's Diverticulum may be left alone but if there is suspicion then it should better be excised and ileo ileal anastomosis done rather than simply shaving it off, as the heterotopic gastric mucosa can lead to recurrent bleeding or stricture formation [6].

### Conclusion

A good history, thorough clinical examination, supported with laboratory and radiological investigations can help reach a proper diagnosis and a timely treatment of the patient with acute abdomen. This is important especially for the young and budding surgeons who are just beginning their clinical practice that although it is rare to find multiple pathologies in a single patient but there could be more than one causes of acute abdomen. Acute appendicitis is the most common abdominal emergency requiring prompt surgery.

### Conflict of Interest

Authors declare no conflict of interests.

## Consent

Written informed consent was obtained from the patient for publication of this Case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

## Author's Contributions

- Rajesh Chaudhary: Contributed substantially to the Conception, design, Acquisition of data, Analysis and interpretation of data, drafting the article, Critical revision of the article and final approval of the version to be published.
- Rajesh Sharma: Contributed substantially to the Conception and design, Acquisition of data, Critical revision of the article and final approval of the version to be published.
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- Ramesh Bharti: Contributed to the Acquisition of data, Critical revision of the article and final approval of the version to be published.
- Vivek Sharma: Contributed substantially to the Conception and design, Acquisition of data, Critical revision of the article and final approval of the version to be published.

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