

Acute Appendicitis : Triumphs & Tragedies

Acute appendicitis is the commonest global abdominal surgical emergency. It's incidence is low in high dietary fibre consumers. It is rarely encountered before the age of two years, reaches its peak during second and third decades and then declines, but no age is immune. Perforation of the inflamed appendix is encountered commonly at the extremes of age. Although considered one of the most elemental of general surgical disease processes, it's notoriously inconsistent presentation regularly confounds the diagnostic acumen of even the most experienced surgeons. More than a century has passed since Reginald Haber Fitz coined the term "appendicitis" in his famous paper "Yet appendicitis continues to be a paradox"¹. Perforated appendicitis resulted in the fatality of the Lewis & Clerk expedition and the significance of this disease has been well known since Charles McBurney's famous study on appendicitis presented before the New York surgical society in 1889^{2,3}. However though the surgeons have been confronting acute appendicitis for more than a century its diagnosis remains elusive till today. Even if some doyens can diagnose the disease more accurately the fact is in most of the cases it is the novice who are to take the responsibility of decision making and their decision may be wrong in about 50% of cases⁴. The diagnostic accuracy rates vary in various involved patient population. Negative misdiagnosis rate is low in young male while the figure is much higher in females of child bearing age and children. Though the misdiagnosis rate is comparatively low, very high rate of perforation of appendix reflects the difficulty of diagnosis in old age. Diagnosis is also difficult during pregnancy and may result in both maternal and foetal mortality^{4,5}.

Life time risk of appendicitis is 5-20% with perforation rate 17-20%⁶. Surgeons resolve the dilemma of right iliac fossa pain mimicking acute appendicitis either by observation until clinical diagnosis is clear or by immediate operation. As the incidence of perforation is more or less proportional to the duration of the disease process traditional

teaching has encouraged the surgeons to operate rather than observe even if the diagnosis is doubtful. This teaching has been challenged by some study⁶. The diagnostic aid introduced up till now could not yet render this orthodox surgical teaching obsolete.

Universally practiced leukocyte count reveals elevated count along with elevated neutrophil in many series. Leukocytosis is also seen in patients having pain in right iliac fossa due to other causes. Also perforated appendix may show normal blood count. Thus the universally practiced sensitive test has lost its specificity & believed to have limited diagnostic value⁷.

Plain abdominal radiography has proved as a non-specific, insensitive and inaccurate investigation, mentioned here only to discourage its use⁸.

Barium enema examination is advocated to visualise barium filled normal appendix. Nonvisualisation is taken as obstructed appendix due to inflammation. Both of these statements have got fallacy and the investigation has essentially limited role in the diagnosis of acute appendicitis in the era of ultrasonography and CT scanning⁸.

Barium swallow examination has claimed 95% accuracy for diagnosis of acute appendicitis in children, needs further evaluation⁹.

CT scanning can diagnose accurately the advanced cases of acute appendicitis but not the early cases⁸. Inflamed appendix is visible where as normal appendix is invisible on ultrasonography. Appendicolith or fluid surrounding the organ confirms appendicitis. Sensitivity and specificity of the investigation is highly satisfactory in the hands of the experts. Also this test can exclude other surgical, gynaecological and obstetrical diseases. But it is an operator dependent investigation⁸.

Laparoscopy differentiates normal and inflamed appendix or identifies the signs of inflammation in the right iliac fossa when no other pathology could be

detected to account for appendicitis. Nonvisualisation of appendix acts as an indirect sign and might guide to the diagnosis. This investigation can also diagnose other causes of intra abdominal pathology and thus can reduce misdiagnosis¹⁰.

A pre - programmed computer could diagnose acute appendicitis accurately if accurate data input from the history & physical examination could be provided⁸.

Radioisotope scanning is highly sensitive but unreliable in women and there is need to exclude gynaecological disease by other methods⁸.

Increased leukocyte or pus in peritoneal aspirate and lavage is a reflection of acute appendicitis. Gynaecological infection and mesenteric adenitis may also cause leukocyte rich peritoneal fluid . Negative lavage may exclude all three conditions¹¹.

In clinical diagnostic scoring patient's signs, symptoms and white blood cell count are given various scores. Patient who scores above a certain figure is considered to have appendicitis. The sensitivity and specificity of the investigation has been claimed around 90%. Misdiagnosis rate is also claimed to come down to 30% ⁸. But it needs further evaluation.

In the new millennium despite the introduction of so many sophisticated investigations ,appendicitis still remains as a clinical entity and an ongoing diagnostic challenge. None of the available investigation possesses high degree of sensitivity, specificity and accuracy and hence could not provide marked difference in perforation and misdiagnosis rate. Thus a surgeon confronting a patient suspected to have acute appendicitis is wedged between the Scylla of perforation and Charybdis of negative appendectomy. Therefore the likely aim of the surgeon shall be prevention of perforation of the appendix at any cost. To achieve this goal surgeons have created a surgical security zone which allows to accept certain percentage (15-30) of misdiagnosis rate with indemnity. To overcome this equivocal situation there is no substitute of skilled interviewing of the patient or attendant and eliciting the physical signs very rightly to make a relatively accurate diagnosis. So the clinical judgement still over-rules the laboratory aid when diagnostic dilemma prevails. Emphasis on the diagnostic aids at the expense of

clinical evaluation will be bound to diminish the quality care of the patients with acute appendicitis.

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