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Data to Improve Clinical Diagnosis of Acute Appendicitis

Dr. Alaa AK Mohammed

FRCS, CABS, College of Medicine, Jabir Ibn Hayyan Medical University, Najaf-Iraq

Abstract

Severe appendix inflammation is a powerful operation oriented ailment. Appendicitis depends mainly on clinical assessment supported by imaging tests particularly ultra-sound. Acute appendicitis is primarily a clinical diagnosis, but the new concepts and trends rely mostly on U/S, CT scan. We tried to improve the identification of acute inflammation depending on clinical examination and emphasizing on some features much more than others. Hence, this study enrolled 108 cases of Acute Appendicitis operated upon and the pathology confirmed grossly. Each case correlated with its original symptoms and signs with white blood cells count (WBC) . On clinical bases we found that migratory pain, anorexia, and nausea are most important while vomiting is least significant. Tenderness and rebound tenderness with the abdominal guard are main important signs. Pulse rate and body temperature are inconclusive findings, WBC count was increased in 77.7% of cases. No imaging study done in all cases. In conclusion, clinical assessment still crucial in the identification of acute appendix discomfort. Some symptoms and signs are more diagnostics than other symptoms thus it is unnecessary to rush and send a patient for U/S, or CT scans.

Keywords: Acute appendicitis, Clinical diagnosis, ultrasonography, White blood cells count, Clinical features

1.Introduction

Appendicitis is one of the most common surgical emergencies, the average chance of appendicitis occurrence is at 7% in an average person's lifespan. Appendicitis is treated by performing surgical procedures to the patient.11 people in a population of 10,000 are likely to be victims annually. Acute appendicitis can occur across all ages. Appendix inflammation is however rare among people with advanced ages. Patients aged between 15 and 30 years are likely to have appendicitis. However, older people are unlikely to have appendicitis ; the incidence inversely associated with age And the incidence is higher among this age group to reach almost 23 in 10,000 in a year, white-skinned represented majority of appendicitis cases compared to black-skinned, 74% and 5%, respectively (Graffeo, 1996; Shelton *et al*, 2003; Hawkins & Thirlby, 2009; Petroianu *et al*, 2004; Hlibczuk et al., 2010)

Men are more likely to get appendicitis than women, the possibility of a having appendicitis is 9% for males and 6% in females .The overall lifetime possibility risk lies between 12% to 23%

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in men and 24% to 42% in women (Graffeo, 1996; Shelton *et al*, 2003; Hawkins & Thirlby, 2009; Petroianu *et al*, 2004; Humes and Simpson, 2006).

The diagnosis and identification of an appendicitis case may be straight forward in patient with typical classic clinical feature while disease with atypical symptoms can confuse the diagnosis and may lead to delay in proper management (Birnbaum and Wilson, 2000)

Constipation, profound vomiting and nausea are among the general symptoms that could indicate general peritonitis after perforation. These are however rare symptoms related to simple appendicitis (Graffeo , 1996;Shelton *et al*,2003;Hawkins & Thirlby,2009;Petroianu *et al*, 2004;Hlibczuk et al., 2010;Rybkin & Thoeni , 2007).

Low-grade body temperature has associations with appendicitis. However, when the body temprature more than 38.3 °C perforation could be suspected. Perforation result in periapendiceal phlegm or abscess . When the caecum, terminal small intestine, and momentum wall off the inflammation. Perforation into abdominal cavity favors the development of peritonitis (Graffeo , 1996;Shelton *et al*,2003;Hawkins & Thirlby,2009; Hlibczuk *et al*., 2010) . Alvarado's scoring system is the best scoring achievement used globally for appendicitis. However, this achievement alone is not reliable enough to make precise diagnosis or to exclude appendicitis (Howell et al., 2010; Malik, 1998)

Laboratory findings upon presentation often reveal an increased white cell count. Abnormal count of neutrophils is likely to occur in more than 75% of the incidences. However, leukocytosis could be present in different disease and could be non-specific among the adults with advanced ages, patients with impaired immune systems and conditions such as Acquired immunodeficiency syndrome; observation of leucocytosis occurs in less than 15% of such patients (Graffeo, 1996).

Image detailed interrogations need to be conducted only in patients with whom an observational and laboratory assessment of appendicitis is impossible to achieve (Hlibczuk et al., 2010; Hlibczuk et al., 2010). Introduction of U/S and CT scan reducing the negative results to less than 10%. However, still, clinical examination is the most essential part in the assesment of acute inflammation of the appendix. (Bower *et al*, 1981; Rothrock &Pagane, 2000; Bundy *et al*., 2007)

2.Methods

A retrospective study of 108 cases of acute appendicitis from November 2000 to October 2007 in the United Arab Emirates. The pathological diagnosis of acute appendicitis made preoperatively on gross features (red, swollen and edematous appendix), with close seropurulent, purulent and even frank pus formation. Any suspicion, the case excluded from the study. Each case assessed with its preoperative symptoms , signs and WBC count.

Symptoms: Is a migratory pain, anorexia, nausea, vomiting. Signs included Vital signs (pulse rate, temperature), abdominal guard, tenderness and rebound tenderness, and W.B.C Count. No, imaging study done for all cases.

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Statistical analysis and presentation of results were performed using the statistical package for social sciences (SPSS) version 18 and MS. Word software.

Results

A total of 10 patients were enrolled in this study, the gender distribution revealed a male to female ratio of 4: 1 , (Figure 1). Anorexia was the more frequent symptom reported among patients; it was reported in 106 case (98.1%) followed by Nausea in 102 cases (94.4%), Migratory pain in 92 cases (85.1%), and the least frequent, vomiting was reported in 82 cases (75.9%), (Figure 2).

Regarding the signs they are summarized in (Table 2), Tenderness and rebound tenderness an abdominal guard are the more frequent clinical signs found on examination, they were reported in 100%, 94.4% and 71.2%, respectively, followed by Pulse rate more than 90/mint (49.1%) and Temperature more than 37.4 in (39.8%).

Among the 108 cases, high WBC count was reported in 84 (77.7%), while the remaining 24 cases had normal WBC count, (Table 4), from other point of view, 17 cases (15.7%) had elevated WBC of 18000 or more.

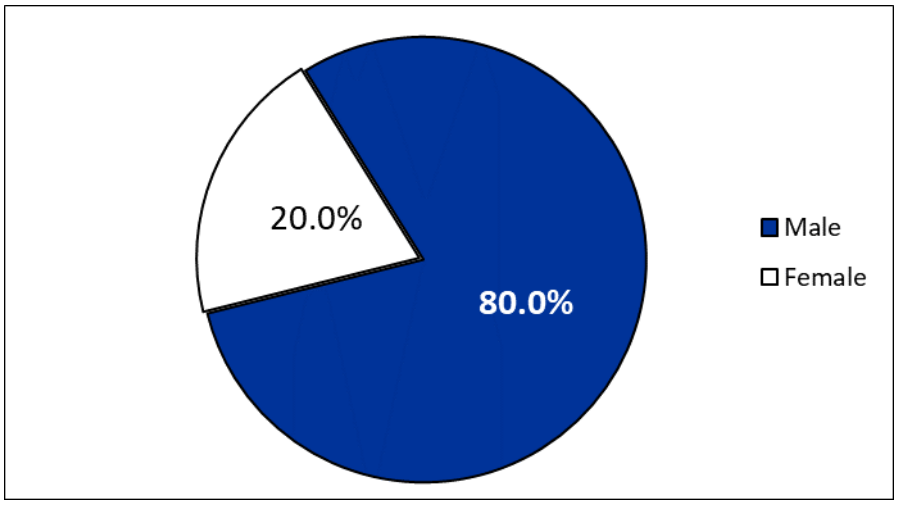

Figure 1. Gender distribution of the studied group (Male to female ratio; 4:1)

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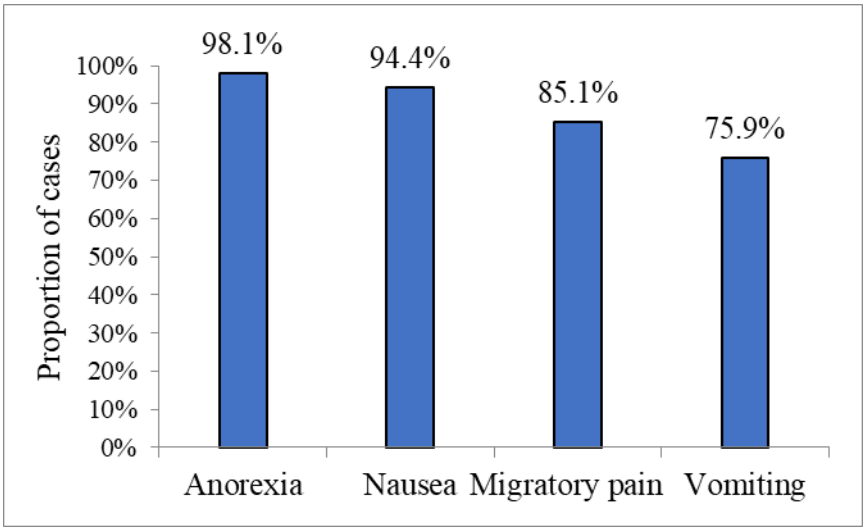

Figure 2. Distribution of symptoms reported among the studied group

Table 3: Distribution of reported signs among the studied group

Sign	**Number of cases**	**Percent**
Pulse rate more than 90/mint	53	49.1
Temperature more than 37.4	43	39.8
Abdominal guard	77	71.2
Tenderness	108	100.0
Rebound tenderness	102	94.4

Table 4. Distribution of WBC count of the studied group

WBC count	**Number of cases**	**%**
High (above normal)	84	77.7

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Normal	24	22.3
Total	108	100.0

Discussion

Acute appendicitis is the commonest indication for acute abdominal surgical intervention worldwide (Stein *et al.*, 2012) . In this study we retrospectively analyzed data of 108 cases of appendicitis who were managed with appendectomy, The present study found that a predominance of males than females in a ratio of four to one . however, This finding is somewhat higher than the usual reported ratios of almost 1.3 to 3 in to one and this could be attributed to the fact that our study was conducted in the United Arab of Emirates where most of the population is male expatriate labors, however, Stein et al found that males had more appendicitis attacks than females (Stein *et al.*, 2012).

The current study found that migratory pain, anorexia, nausea, are the most significant symptoms in majority of the cases followed by vomiting , in 75 % of the cases. Similar figures was reported by Malik et al in 1998, (Malik,1998). The signs of much importance are tenderness and rebound tenderness with the abdominal guard. P.R. and temperature are much less critical. W.B.C: The count could confirm the diagnosis, but it does not exclude it. So in comparing with Alvarado score normal temperature and normal WBC. Count means (10 minus 4=6) that the assessment of acute inflammation of the appendix is equivocal, but in my study still, the determination of acute appendicitis is strongly predictive in spite of average temperature and WBC count. Almost 20% of the cases had neither fever nor leukocytosis, more than 50% of cases had no fever while 22.3% had normal W.B.C count (Cardall, 2004). The incidence of perforation in our study was 12.9 % compared with 16% and 19% in other studies (Hawkins &Thirlby, 2009; Petroianu et al. 2004) . The number of perforated appendicitis was 14 cases (12.9%) , two of them showing W.B.C count more than 18000. WBC Count more than 18000 seen in 17 cases but only two instances with perforated appendicitis but in Cardall's study mentioned that most of those with perforated appendicitis showing higher WBC count more than 18000/mm3 (Cardall, 2004). The incidence of perforation more senior in age group ranges from 14-31 years. But the highest leucocyte count more than 18,000 seen in the age group 5-32 years. These findings agreed that reported in previous studies and literatures . The clinical value of WBC count in appendicitis patients has special interest among investigator, for the evaluation of patients with suspected appendicitis and its validity as an indicator or predictor of appendicitis is still questionable, however, previous studies suggested that an elevated total WBC count, had no clinical utility , poor sensitivity and specificity (Cardall, 2004). .

Conclusion:

The clinical assessment still crucial in the assesment of less appendix inflammation. However, some symptoms and signs are more diagnostics than others. It is worth to suggest that all general practitioner and surgeons not to rush and send patients for an ultrasound and CT scan to reach

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the diagnosis mainly if those tests are not available or time-consuming and to lesser extent costly.

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