



Comparative study of spiral computed tomography compared with ultrasound in appendicitis in Iraq

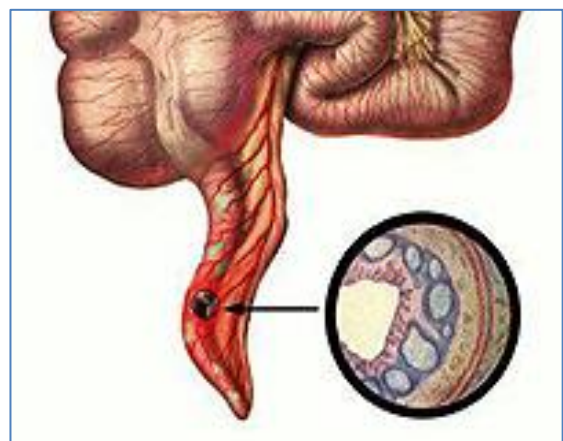
<p>Assistant Lecturer Dr. Mazin Kauther Abdul Latif</p>	<p>M.B.CH.B.- D.M.R.D. (Radiologist) Ministry of Higher Education and Scientific Research, Dijlah University College, Baghdad, Iraq. mazinkouter5@gmail.com</p>
<p>Abduljabbar Jameel Asal</p>	<p>M.B.CH.B.- D.M.R.D. (Radiologist) Iraqi Ministry of Health, Retired, Baghdad, Iraq. Abduljabbarasal@gmail.com</p>
<p>Tariq Abdulhameed Midhat</p>	<p>M.B.CH.B.-D.G.S. (General Surgeon) Iraqi Ministry of Health, Kirkuk Health Directorate, AZADI Teaching Hospital, Kirkuk, Iraq. midhattariq3@gmail.com</p>

ABSTRACT	<p>This study focusses to a Comparative study of spiral computed tomography compared with ultrasound in appendicitis, and patients were collected from different hospitals in Iraq. which consisted of 100 devided 2groups (first by US and second by CT) Thus, CT of the appendix plays an important role in diagnosis and should be used as soon as possible from the onset of the first clinical signs.</p> <p>The radiograph depends on the size of the lesion, the stage and extent of the process, the involvement of adjacent organs, and the development of concomitant complications. All this determines the nature of the clinical manifestations and the severity of the patient's condition.</p> <p>Knowing the capabilities of radiological diagnostic methods and their rational use in many cases solves the issue of choosing the necessary treatment methods and determines the outcome of the disease</p>
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Keywords: CT, US, BMI, Appendicitis, Obstruction.

Introduction

Appendicitis is one of the most common abdominal diseases that require surgical treatment [1]. Appendicitis appears at any age, but more often at the age of 10-30 years, its incidence in children is no more than 1-3%; Both men and women. The incidence of acute appendicitis is 4-5 cases per 1,000 people per year [2,3]. Among acute surgical diseases of the abdominal organs, acute appendicitis is 89.1%, ranking first among them. Acute appendicitis is the most common cause of peritonitis [4,5].



The main reason for the development of acute appendicitis is the activation of the intestinal flora of the appendix against the background of mechanical obstruction of its lumen. Obstruction of the lumen of the process is caused by fecal stones (35% of cases), enlarged lymphatic follicles. Less commonly, blockage is caused by a foreign body or tumor [5,6,7]

This leads to an accumulation of mucus in the lumen of the appendix and an excessive development of microorganisms, which leads to inflammation of the mucous membrane and its underlying layers, thrombosis of blood vessels, necrosis of the appendix wall, which in turn leads to perforation of the appendix and leads to the outflow of purulent contents containing a large number of microbes in the sterile abdominal cavity [8,9,10]. There is a complication that threatens the patient's life - diffuse purulent peritonitis. In some cases, with timely medical care, patients may experience other complications: peripheral infiltration, perivertebral abscess, acute pleural inflammation [11,12,13,14,15].

Material and method

Patient sample

One hundred patients were collected from different hospitals in Iraq, where the study was a specialized Comparative study of spiral computed tomography compared with ultrasound in appendicitis in Iraq.

The patients were divided into 60 patients who underwent ultrasound and 40 patients who underwent tomography.

Study design

Demographic information and data were collected based on the electronic record in the hospital, where the diagnosis was made using ultrasound

Ultrasound signs of acute appendicitis are: visualize a blindly terminated tubular structure at the point of maximum pain with a maximum external diameter of more than 6 mm, it is incompressible, is aperistaltic, with wall hyperemia in the initial stages of inflammation

on Doppler examination, often What contains fecal gallstones, and also additional signs of appendicitis (echo-inflamed adipose tissue surrounding the appendix, fluid surrounding the column, signs of cecum > bowel, lymphadenopathy).

The patient does not need additional ultrasound preparation when diagnosing appendicitis. Diagnosis is made by external examination of the abdominal cavity using the abdominal sensor with light pressure on the area of the appendix. Objective signs of appendicitis are:

An increase in the walls of the intestine with a thickness of more than 3 mm.

- an increase in the diameter of the accessory by more than 7 mm;

- create an echo;

- Inflammation of the omentum.

In order to determine the location of the appendix, the doctor focuses on the position of other organs during the ultrasound method, for example, at the end of the cecum, since the appendix arises from it. The success of the diagnostic method directly depends on the anatomical features of the patient. As for CT, tests were performed using the General Electric Light speed VCT XT 64 detector helical CT, width 5 mm. The patients based on contrast (nonenhanced) and (enhanced) visualized. CT findings, provided excellent performance of 96.3% sensitivity, 91.2% specificity, 89.7% PPV, 96.9% NPV, and 91.9% accuracy for diagnosing appendicitis.

Study period

The study period for collecting demographic data and information for patients was two years, which also included statistical analyzes by the specialist. The study period was from 6-8-2019 to 22-5-2021

Aim of research

This study aims to Comparative study of spiral computed tomography compared with ultrasound in appendicitis in Iraq.

Results

Age	Ultrasound N=60	Chi-square	computed tomography N=40	Chi-square	P-value
20-24	22	3.33	15	2.56	0.45
25-29	18		13		
30-34	10		6		
35-39	7		3		
40-45	3		3		

Table 2- demographic results of patient

p	Ultrasound N=60	computed tomography N=40
BMI		
normal weight - BMI greater than or equal to 18.5 to 24.9 kg/m ²	18	13
Overweight – BMI greater than or equal to 25 to 29.9 kg/m ²	22	17
Obesity – BMI greater than or equal to 30 kg/m ²	15	8
Obesity class I – BMI 30 to 34.9 kg/m ²	5	2
Smoking		
Yes	15	10
No	45	30
Gender		
F	30	25
m	30	15
Family history of disease		
DM	10	7
hypertension	11	6
appendicitis	4	4

Figure 2- p-value of study

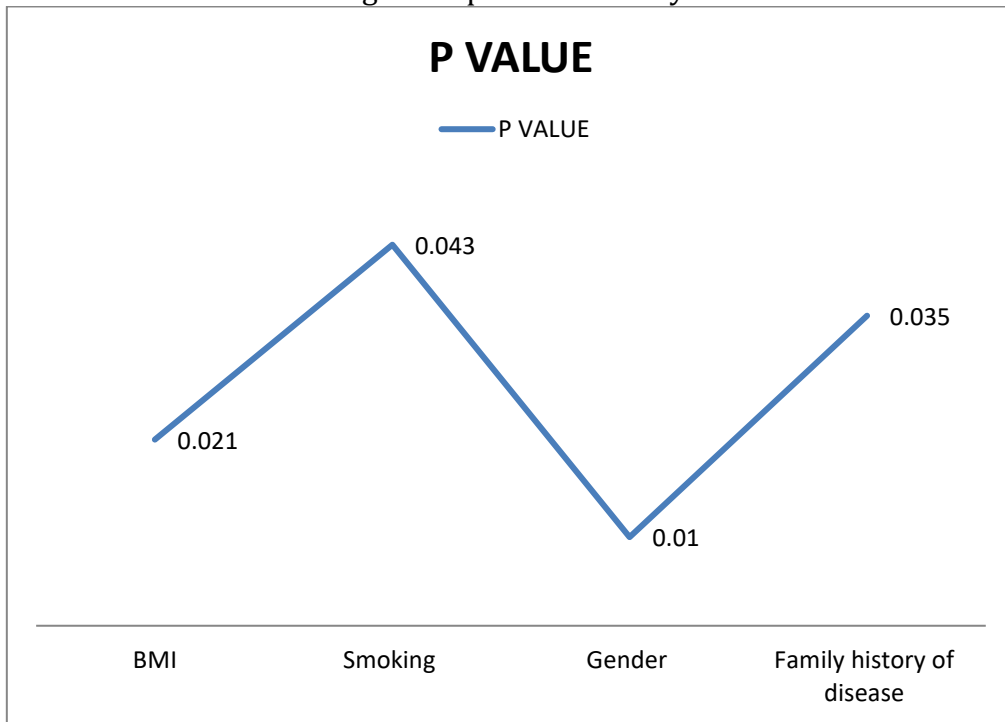


Figure 3- outcomes results of symptoms among appendicitis

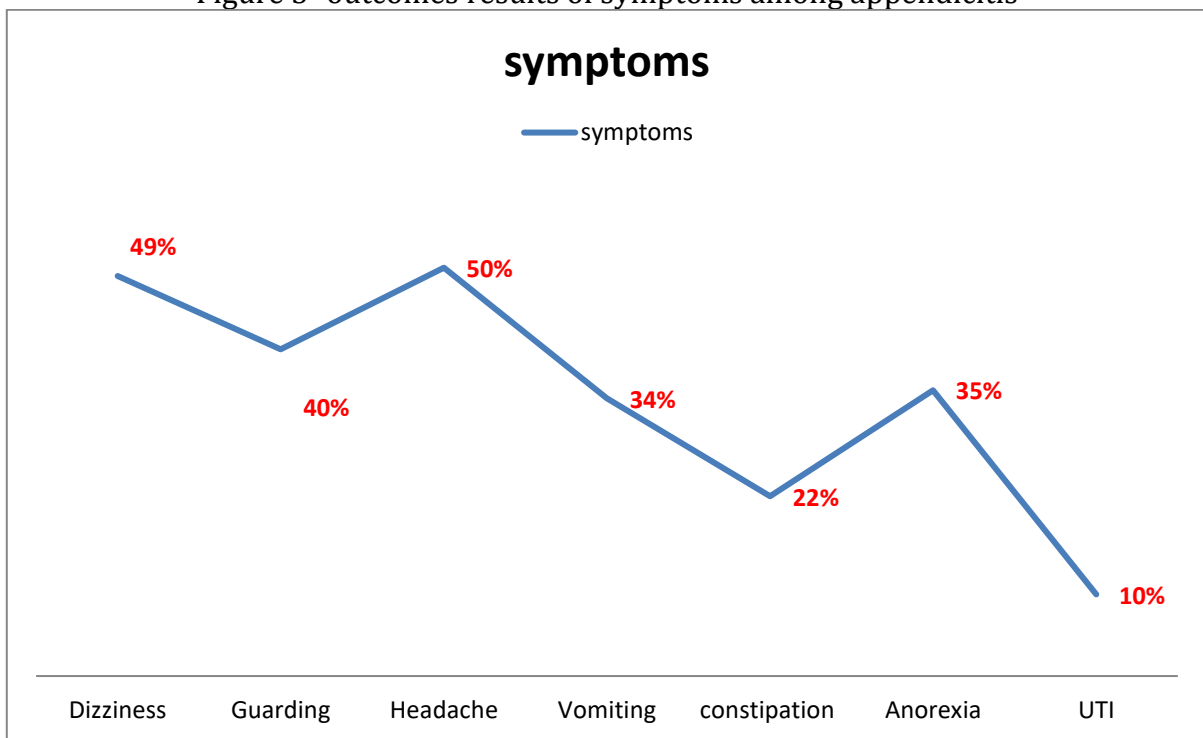


Figure 4- outcomes results according to bp

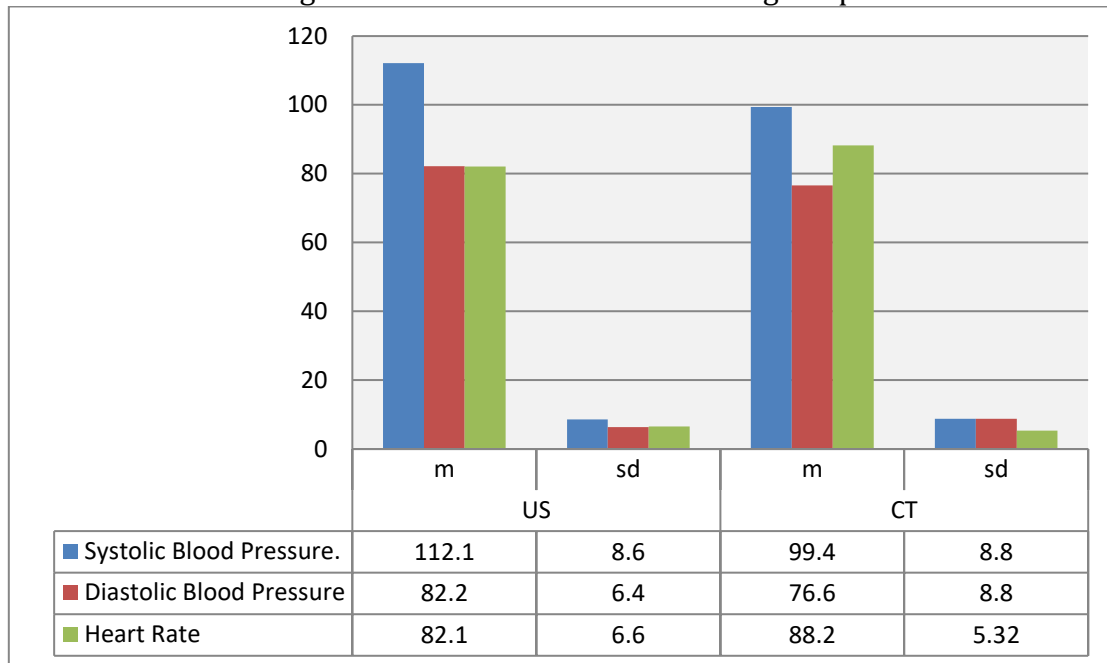


Table 3-Final results depending on the type of diagnosis

	US	Ct
Severe crumps	77%	40%
Rigidity	67%	55%
Pain	50%	33%
Pain right belly	34%	20%
irritation to the iliopsoas group	12%	10%
Rovsing's Sign	23%	34%
Digestive disorders	40%	11%

Table 4- Positive factors reported by the surgeon

	No. of Cases		
	previously mentioned	Most Important	Second Most Important
Equivocal clinical findings	3	1	2
No increased WBC	0	0	2
Time of day	4	0	0
Obesity	3	2	0

Discussion

The patients were divided into two groups, within the first group, the ultrasound was divided into 60 patients, while the second

group included 40 patients, and the diagnosis of Ct was based on

The average of patients ranged from 20 to 45 years, and the most frequent ages were 25-29 years, and it was found in the ultrasound group

to 18 patients, while for the second group, it was found for 13 patients. Demographic information and data were analyzed using IBM SPSS 22 and Ms office excel statistical analysis program.

Severe abdominal pain can occur for various reasons. These diseases include appendicitis. With its inflammation, it is necessary to diagnose the abdominal cavity as soon as possible since this condition can be classified as an emergency.

When reading most of the studies related to this study, it was noted that the results of the CT scan showed higher results positive than the diagnosis of appendicitis by ultrasound due to the excellent diagnostic performance in addition to the speed

The cause of recurrent appendicitis may be delayed appendectomy with appendicular effusion and appendic abscess. In a third of patients, granulomas are detected, which indicates a possible relationship between recurrent appendicitis and granulomatous appendicitis [16,17].

The presence of chronic appendicitis has not been confirmed by histological and cultural studies. During the period of its exacerbation, signs of inflammation caused by infection are not detected. Not in the descriptions of everyone who infiltrated neutrophils

It is likely that chronic primary appendicitis is unrelated to acute appendicitis but persists as an independent autoimmune disease of the appendix and ileal region. To confirm this hypothesis, electron microscopic and immunohistochemical studies are necessary [18,19,20].

Conclusion

Currently, various technologies are widely used (ultrasound examination - ultrasound, laparoscopy, etc.), which allows for a more accurate diagnosis. However, ultrasound in acute appendicitis has a low level of accuracy, and diagnostic laparoscopy is an invasive method that requires the use of general anesthesia and significant material and financial costs. In this regard, over the past decades, computed tomography (CT) has been

increasingly used to improve the diagnosis of surgical pathologies of the abdominal cavity.

Multislice tomography has another advantage - multisurface repairs and curved image reconstructions - all this increases the diagnostic significance of the method.

Computed tomography is a very accurate and effective method for assessing the cross-section of the appendix, and the diagnosis of acute appendicitis is based on the ascertainment of an appendix diameter greater than 6 mm.

Recommendation

1. Nodular appendicitis is characterized by a heterogeneous structure of the appendix - fluid and air are visualized against the background of inflammatory changes.
2. Perforated appendicitis is usually accompanied by phlegmon or abscess. There may be other signs - the air outside the intestine, significant thickening of the walls of the cecum and ileum, enlarged regional lymph nodes, peritonitis, and obstruction of the small intestine.

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