

Clinical and Epidemiological Profile of Acute Appendicitis Patients in Ghassan Naguib Pharaon Hospital: Kingdom of Saudi Arabia

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ABSTRACT

Objective: To describe the clinical and epidemiological profile of acute appendicitis of patients treated at Ghassan Naguib Pharaon Hospital in Khamis Mushayt, Aseer Region, Saudi Arabia.

Methods: We conducted a cross-sectional study in Ghassan Naguib Pharaon Hospital. We included 136 patients clinically diagnosed with acute appendicitis, and analyzed the variables gender, age, nationality, hospital stays length, and different methods used for diagnosis (US, CT, intra-operative findings and histopathology report).

Results: Acute appendicitis was prevalent among patients in different diagnostic methods with mean years (SD) 30.9 (11.83), the average length (Hours) of hospital stay is 34.29 (34.88). The results of clinical diagnosis, ultrasonography, CT scan, intra-operative findings and histopathology are reported.

Keywords: Appendicitis, Acute, Saudi, Non-Saudi, Prevalence, Epidemiology, Clinical and Diagnosis.


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INTRODUCTION

Acute appendicitis is one of the most prevalent abdominal conditions affects about 7% of total population.¹⁻³ It's common between age of 5-40 years.⁴ also, it's one of the most prevalent urgent surgeries in developing countries.⁵ If ruptured, it may lead to sever complication widespread, painful inflammation of the inner abdominal wall lining and blood sepsis.^{6,7}

Appendectomy is the standard line of treatment in acute appendicitis and it decreases significantly the risks of rupture and its accompanied complications.^{8,9} Non-complicated acute appendicitis, when treated with appendectomy, has a lower rate of complications.¹⁰ It allows a certain diagnosis as well as significantly reduces the risk of perforation, sepsis and death.⁹ The most important risk factor of acute appendicitis is the development of luminal obstruction.⁹

A systematic review included number of meta-analyses and concluded that the treatment of acute appendicitis only with antibiotics should not be routinely recommended.¹¹ The follow-up of patients in hospital is a must to prevent any post-operative complications of the operations.^{12,13} Acute appendicitis is diagnosed mainly clinically and depending on the symptoms of the patient which may vary.¹⁴ However, radiological and histopathological examination is done in some certain cases.¹⁵

We aimed to discuss the clinical and epidemiological profile of patients with clinical diagnosis of acute appendicitis treated in Ghassan Naguib Pharaon Hospital (a private hospital) in Khamis Mushayt, Aseer Region, Saudi Arabia.

METHODS

A cross-sectional, descriptive study of patients in Ghassan Naguib Pharaon Hospital (a private hospital) in Khamis Mushayt, Aseer Region, Saudi Arabia, from March 2016 till March 2017, was performed.

A total of 136 patients who diagnosed clinically with acute appendicitis were included in this study.

A written informed consent was assigned by all of the patients individually after explaining the aim of our study and assurance of data confidentiality.

All participants were voluntaries. We analyzed the obtained data using SPSS® software version 24 (IBM, New York, USA).

Data consists of two parts, the first includes general information (gender, age, nationality, length of hospital stay and WBCs and neutrophils counts) and the second contains results of different methods of diagnosis (US, CT, intra-operative findings and histopathology report) which were recorded in patients' files.

RESULTS

We included 136 patients, 72 (52.9%) were males and 64 (47.1%) were females, their mean age (Years) was 30.9 (11.83). Average hours of hospital stay were 34.29 (34.88). The mean of WBCs and neutrophils count (x 10⁹/L) in male patients was 10.8 (4.19) and 7.62 (4.11) respectively (table 1).

In table 2, the prevalence of different diagnosis by the specialists is reported and the most prevalent diagnosis was acute appendicitis.

In tables 3, both USG and CT finding are reported. According to USG findings, appendicitis was the diagnosis of 78 (59.5%) patient while in CT findings, appendicitis prevalence among patients was 65 (48.1%).

In table 4, the most common intra-operative finding was appendicitis followed by complicated appendicitis while the marked histopathological finding was early acute appendicitis with intraluminal and mucosal inflammation.

Table 1: Participants' characteristics

Variables	Value
Total	136
Gender (Males/females)	72 (52.9%)/64 (47.1%)
Nationality (Saudi/non-Saudi)	46 (33.8)/90 (66.2)
Age (Years.): mean (SD)	30.9 (11.83)
Hospital stay in hours: mean (SD)	34.29 (34.88)
WBCs count(x 10⁹/L): mean (SD)	10.8(4.19)
Neutrophils count(x 10⁹/L): mean (SD)	7.62(4.11)

Table 2: Diagnosis by specialists:

Variables	Value
Acute abdomen	42(32.1%)
Acute appendicitis	78 (59.5%)
Appendicular Mass	8 (6.1%)
acute appendicitis with Right renal colic	1 (0.8%)
AGE with acute appendicitis	1 (0.8%)
Complicated acute appendicitis	1 (0.8%)
Total	131 (100%)

Table 3: CT and USG findings:

Variables	Value
USG FINDINGS	
Normal/negative	16 (11.8%)
Appendicitis	81 (59.6%)
Other diagnosis	13 (9.6%)
Advised other investigations	12 (8.8%)
Not performed	14 (10.3%)
Total	136 (100%)
CT FINDINGS	
Normal/negative	6 (4.4%)
Appendicitis	65 (48.1)
Other diagnosis	13 (9.6%)
Not performed	51 (37.8%)
Total	135

Table 4: Intra-operative and histopathological findings

Variables	Value
INTRAOPERATIVE FINDINGS	
Appendicitis	66 (50.4%)
Complicated appendicitis	30 (22.9%)
Appendicitis with other finding	25 (19.1%)
Notes not available	10 (7.6%)
Total	136
HISTOPATHOLOGICAL FINDINGS	
Normal appendix without any gross pathologic changed.	1 (0.7%)
Early acute appendicitis with intraluminal and mucosal inflammation.	77 (56.6%)
Acute suppurative appendicitis	19 (14.0%)
Gangrenous appendicitis.	10 (7.4%)
Perforated appendicitis.	12 (8.8%)
Not Performed	17 (12.5%)
Total	136

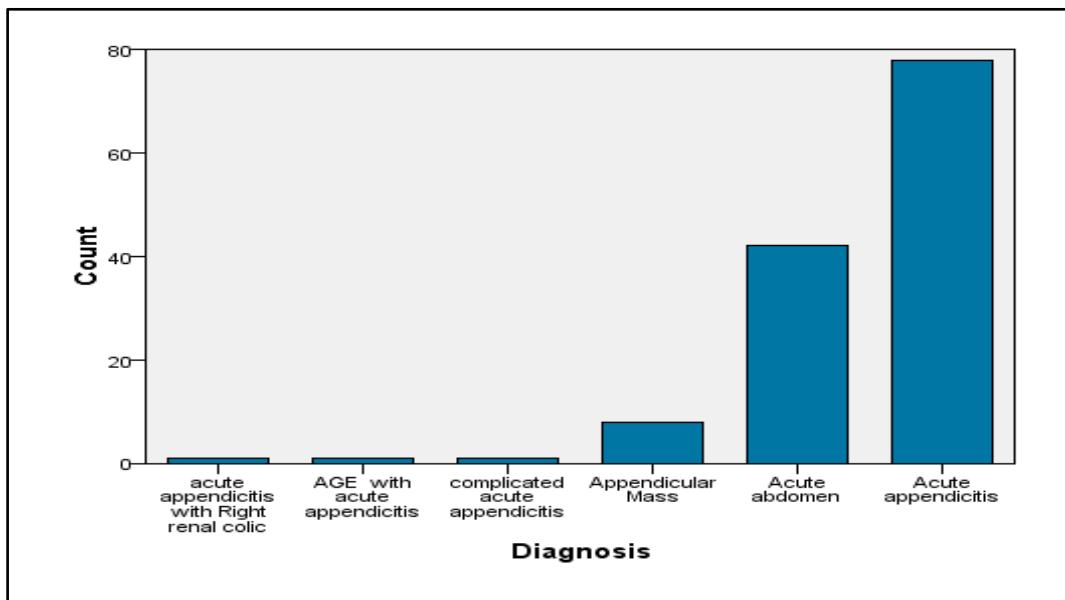


Figure 1: Diagnosis by a specialist

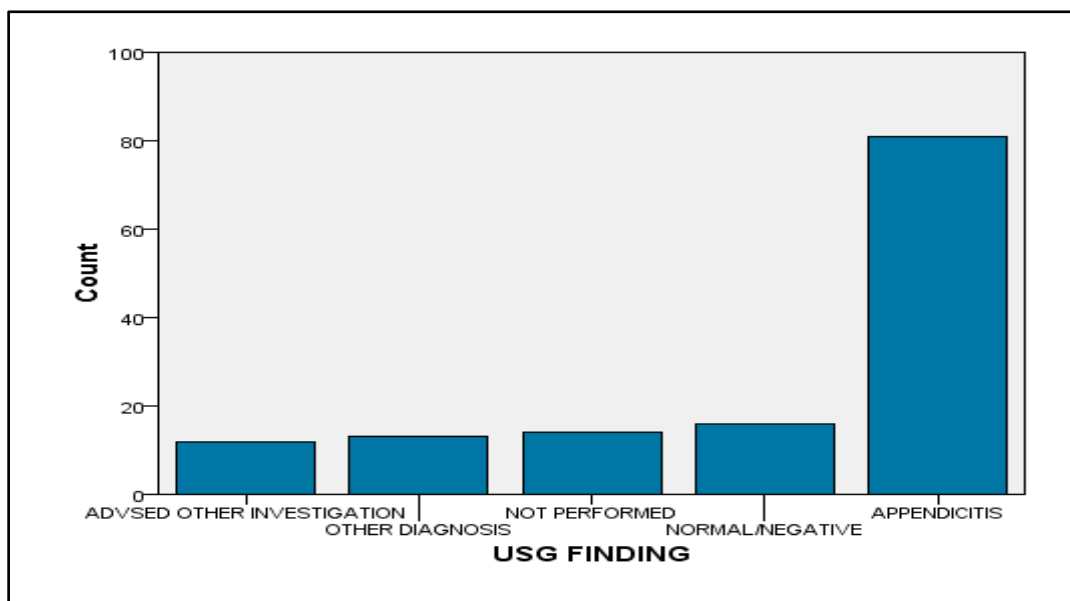


Figure 2: USG findings

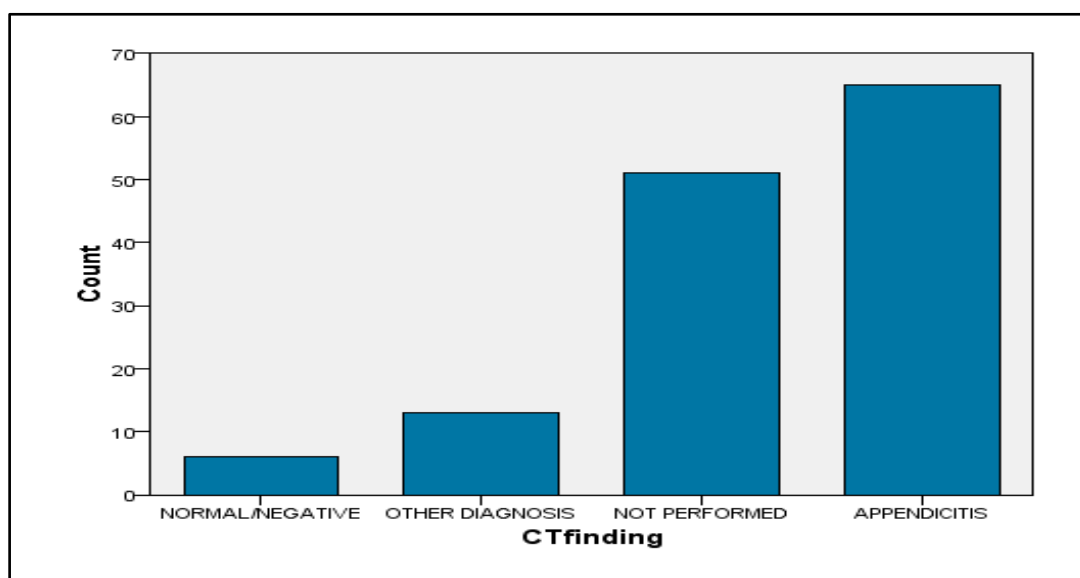


Figure 3: CT findings

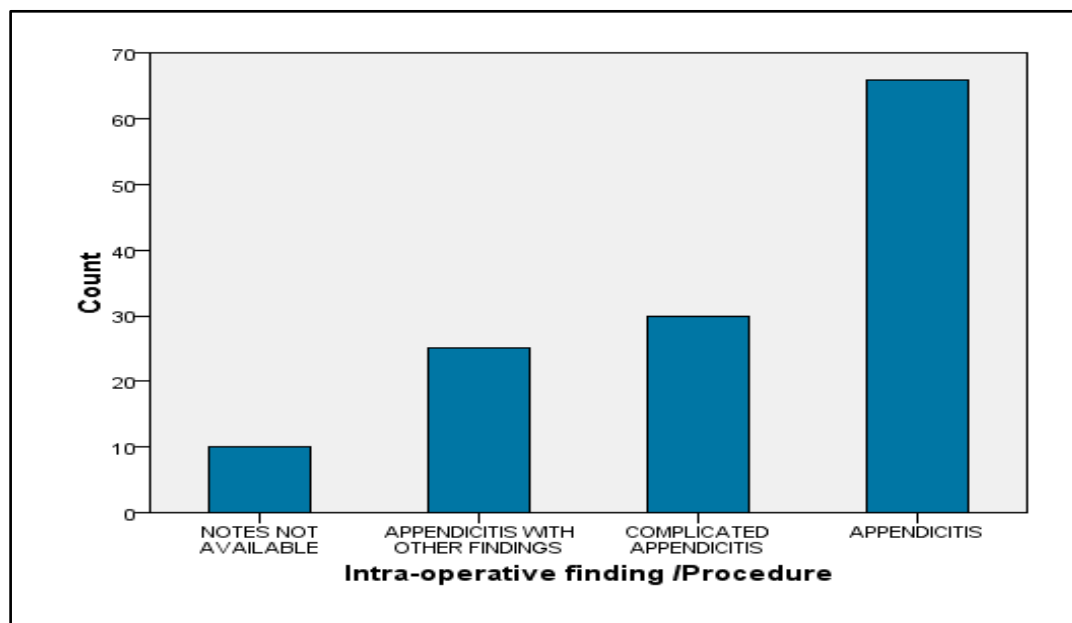


Figure 4: Intra-operative findings

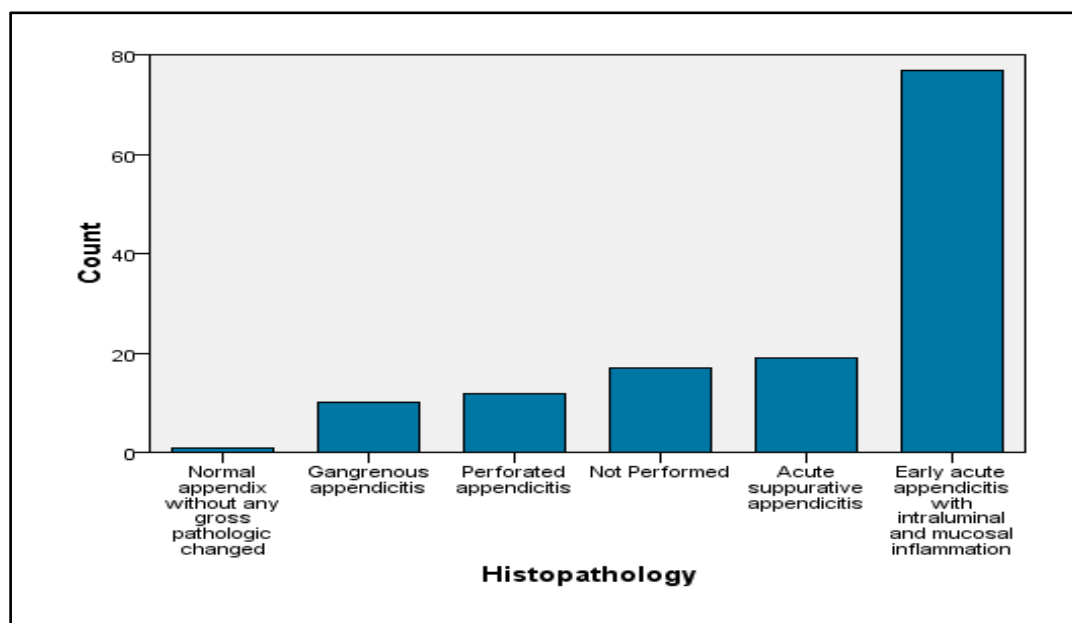


Figure 5: Histopathological findings

DISCUSSION

In this cross-sectional study, 136 patients were included 46 were Saudi and 90 were non-Saudi, we found acute appendicitis was more common in males 72 (52.9%) than females 64 (47.1%), which is reported in other similar studies.¹⁶⁻¹⁹ The mean of age (SD) was 30.9 (11.83), and the average length of hospital stay (Hours) (SD) was 34.29 (34.88) which increased with post-operative complications.²⁰ WBCs and neutrophils count were markedly elevated.

131 Patients were initially diagnosed by a specialist in Ghassan Naguib Pharaon Hospital, among them acute appendicitis was found in 78 (59.5%) followed by acute abdomen 42 (32.1%) then appendicular Mass 8 (6.1%) and acute appendicitis with right renal colic, acute gastroenteritis (AGE) with acute appendicitis and Complicated acute appendicitis each one was found in only one patient (figure 1).

USG was performed on all the patients while CT on only 135 out of 136 patients. In both, appendicitis was the most preventable diagnosis, followed by diagnosis other than appendicitis and finally negative/normal (figure 2 and 3).

When the physicians performed appendectomy, they found appendicitis only in 66 patients, complicated appendicitis in 30 patients and appendicitis with other diagnosis in 25 patients (figure 4).

In a study that evaluated 107 appendectomy patients in a hospital, the most prevalent developmental stages were phases II (27%) and IV (27%). In our study, phase II was the most prevalent, accounting for 34.30 % of cases²¹ but in our study, we couldn't obtain stages data.

The major postoperative complications of appendectomy related to the degree of inflammation. It is important to take into

consideration the time from the beginning of symptoms and the time of surgery.²² Complications after the operation are around 10%, the surgical site infection being responsible for one-third of them.^{23,24} Infection of the site of the surgery occurred in 3.45% of patients and was the main postoperative complication.¹⁹ Its range is between 0% and 15% for the laparotomy procedure.^{23,25}

Histopathology is a best method for diagnosis as it let us identify malignancy or not up to 1% of patients, most often in the form of neuroendocrine tumor, adenocarcinomas or mucinous cystadenomas.²⁶ We found no malignancy in patients, but early acute appendicitis with intraluminal and mucosal inflammation was found in 77 patients, acute supportive appendicitis in 19, gangrenous appendicitis in 10 patients and perforated appendicitis in 12 patients (figure 5). Perforated appendicitis is associated with higher rates of post-operative complications like intra-abdominal abscesses.¹⁰

A study established in South Africa evaluated the histopathological results of 371 patients who underwent appendectomy and revealed parasitoids as incidental diagnosis in 8.5% of cases²⁷ and another study conducted in Brazil reported one patient had acute appendicitis by parasitic infestation¹⁹ while in our study there were no patients with parasitic infection.

The main strength points of our study are that it's the first study to discuss the clinical and epidemiological profile of acute appendicitis patients in Aseer region, Saudi Arabia and it discussed the different methods of diagnosis.

The limitations are short duration of time and sample size limited to one hospital.

CONCLUSION

In conclusion, acute appendicitis has higher prevalence among male patients than females. WBCs and neutrophils are elevated in all patients of acute appendicitis. CT has more accuracy in detecting acute appendicitis than USG in comparing with histopathology report. Perforated appendicitis was the most prevalent complication. We need more researches in Aseer region as well as in all the country with larger sample size, longer duration and more than one hospital.

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