

Original Research Article

Role of Ultrasonography in Diagnosis of Appendicitis and Its Correlation with Age

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Received: 27.05.2022

Accepted: 19.06.2022

Published: 02.09.2022

Journal homepage:<https://www.easpublisher.com>**Quick Response Code**

Abstract: Background: Inflammation of appendix is most collective medical condition. Appendicitis can develops serious when it ruptures. Perforation is additional common problem in many aged patients. **Aim:** The goal of study was to classify diagnosis of appendicitis on sonography and its correlation with age. **Methodology:** Cross-sectional study was directed on a group of patients who had appendectomy at the same time. All data was summarised, including the patients age, sex, clinical findings, and ultrasound findings. Across-sectional assessment of 98 patients under age of 35 who required a physical exam and ultrasound findings was conducted. Individuals of various ages were divided into groups. Demography, clinical presentation, and diagnosis were compared between the groups. The diagnosis was made through clinical examination followed by ultrasonography. Different age groups are compared to ultrasonography findings. **Results:** During study, total number of patients were 98 under the age of 35 years with suspected appendicitis, 42 males and 56 females. Appendix found in 74 individuals, 47 females and 27 males. Of all individuals, 74 were diagnosed by medical valuation and ultrasound findings. By performing ultrasound it has been evaluated that all patients had appendicitis. From total, 47 were females and 27 were male patients. Appendix was found in total 74 cases with associated other signs of tenderness. According to gender females were found more positive results of disease than males. Out of 98 patients 47 females with ultrasound positive results and 27 males were with ultrasound positive results. To find out the relationship between age groups, gender and appendicitis results we applied chi square test. Output of chi square test for age show that there is same relationship exist between different age groups and appendicitis result. The relationship was significant and we observed p value (0.045) which is less than (0.05) there is same relationship exist between different gender and appendicitis result. The relationship was significant and we observed p value (0.05) which is less than (10.29). **Conclusion:** Appendicitis in the aged individuals is a dangerous condition it needs to be diagnosed and treated as soon as possible. Perforation of the appendix rises death and illness. All aged people with abdominal pain who come to the hospital should be admitted and investigated. In appendicitis, proper medical valuation is the support of diagnosis, and the adding of the regular diagnostic tool ultrasound can increase diagnostic accuracy and reduce unfavourable outcomes. In order to reduce the cost of treatment.

Keywords: Acute appendicitis, Ultrasound diagnosis, Sonography in Appendicitis, Appendicitis in the elderly.

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INTRODUCTION

Appendix is a small duct starting from the large intestine. It is an extension of the cecum and is known as the vermiform appendix for this reason (Ellis & Mahadevan, 2014). Adult appendices are pencil-shaped

structure. The appendix starts at the cecum's posteromedial boundary, around 1.7 to 2.5 cm below the ileum's terminal section (Schumpelick *et al.*, 2000). Appendix is a long, slender tube that emerges from the caecum's posteromedial aspect, and it has no fixed anatomical position. This location is normally on the

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caecum's posteromedial boundary. The origin of the appendix and the ileal orifice both project on McBurney's point (Ahmed *et al.*, 2007). Appendix usually play its role for digestive system succeeding diarrhetic illnesses by storage of strong microbes. Role of appendix have significant role in the gut's microbial ecology. It has been verified to operate as a lymphoid organ in early growth, secondary in the development of B lymph cell and combination of immunoglobulin A antibodies. Appendix is important for maintaining the health of our immune systems and the brain-gut link. (Laurin *et al.*, 2011) the appendix in humans is related with extensive amounts of lymphoid tissue, named as gut associated lymphoid tissue (Smith *et al.*, 2009). Appendicitis is a disease known as inflammation of appendix that requires surgical intervention (Elangovan, 1996). Pain in lower quadrant is usually caused by appendicitis. Usually pain starts around the navel and next moves in the abdomen. Appendicitis generally worsens as the inflammation worsens. Appendicitis affects people of all ages and source of abdominal pain Only 60 to 70% of the time, the usual signs and symptoms are present (Ge *et al.*, 2020). It is a common problem of emergency intestinal surgical treatment, with aera prevalence of about 7%, damage rises from 18to 21%. In the elderly, the demonstration is unusual, and the diagnosis is normally recognized too late. The prediction for appendicitis is the same in both young and elderly , but damage disorders significantly degenerate the condition, resultant in significantly higher morbidity and death in the elder (8)Males are affected at a lower rate than females, with males accounting for 13% of the total and females accounting for 25%. Unwanted appendectomy and its related morbidity are reduced by complete clinical examination (Konduru & Gowda). Optimal treatment for appendicitis is appendectomy with morbidity of 4.1%. Appendicitis is hazardous due to its dangerous problems. Careful valuation is necessary in a hospital to avoid complications of Appendicitis (Lamtire *et al.*, 2017). In spite of technical developments, appendicitis diagnosis is still founded mainly on past and medical inspection. Findings and clinical indicating might decrease the danger of puncture and avoid many problems. Affected pepelclassically present with lower quadrant pain radiates to right side or may present with widespread intestinal pain (Shrestha *et al.*, 2018). High occurrence of bacterial infections has been recognized in patients. this study was to find out the ultrasound findings abnormalities are usually related with appendicitis in the elderly (Elangovan, 1996). Severe illness profile is typically a bad situation by late medical presentation and trouble opening healthcare services (Kong *et al.*, 2015). Appendicitis is commonly associated with younger age groups. Due to recent increases in lifespan anticipation, the disease appears to be on the rise in this age range. Besides, the frequently divergent appearance and interruption in looking for medical aid collectively linked to delays in finding and dealing, leading to high morbidity and fatality rates. On

the other hand, perforation remarkably worsens the situation, resulting in greater rates of infection. Overall illness linked with late analysis and treatment of appendicitis are an increased rupture rate , infection , pelvic swelling, (Hussain *et al.*, 2014). Appendicitis is also the mutual clinical urgent situation with a time frequency 8% (Omari *et al.*, 2014). The gold standard for appendicitis is Ultrasound. Because ultrasonography does not expose people to radiation, this is very important for everyone. Ultrasonography has a 98% specificity and a 1% to 4% false negative rate. Ultrasound remained to be highly delicate and precise for diagnosing appendicitis, and other illnesses producing right lower quadrant pain. High frequency transducers have superior resolution, it is now easier to diagnose appendicular diseases. Graded compression sonography is very helpful in appendicitis The obvious advantages of ultrasonography are that it emits no ionizing radiation and is non-invasive (Subash *et al.*, 2015). Abdomen ultrasonography (USG) plays It reduces the incidence of negative appendectomy and play vital part in the diagnosis. Because its ease of use and low cost, ultrasonography is now considered the first line of investigation imaging .The established standards for diagnosing appendicitis by ultrasonography is identification of appendicitis. Difficulty in compressing, tubular structure along longitudinal axis with a diameter larger than 5 mm and no peristalsis. Transverse views, swollen appendix resembles a target (Tauro *et al.*, 2009).

METHADODOLOGY

Cross sectional study was approved in Radiological Section of Medcare International Hospital Gujranwala. This study was done in 4 months i.e January 2022 to May 2022.Total number of patients was conducted in Radiology department with appendicitis were 98.Individuals with abdominal or right flank pain. All Patients below 35 years of age. Both male and female gender were included in this study. Individuals nonsuitable for surgery, Problems related to appendicitis like swelling, bump, Pregnant patients were excluded from this study. Ultrasound apparatus (LOGIQ P9) with high resolution probes was used for our study. Around 98 patients were involved in this study.

RESULTS

The medical demonstration of appendicitis diverse significantly and number of patients did show representative results of appendicitis. Total 98 patients were included in this study by performing ultrasound it has been evaluated that 74 paitents had appendicitis. Out of 98 patients, 74 patients were ultrasonographically positive. The mean value of the age was calculated (20.5) with minimum age of 6 years and 35years as maximum age. Relationship between different age groups and appendicitis results were significant patients with age group 16 to 25 had

maximum patients with suspected appendicitis rather than other 2 age groups. According to gender females were found more positive results of disease than males. Out of 98 patients 47(47%) females with ultrasound positive results and 27(27%) males were with ultrasound positive results. To find out the relationship between age groups, gender and appendicitis results we applied chi square test. Output of chi-square assessment

for age demonstrate that there is same relationship exist among different age groups in addition to appendicitis result. Relationship was significant and we observed p value (0.045) which is less than (0.05) there is same relationship exist between different gender and appendicitis result. The relationship was significant and we observed p value (0.025) which is less than (10.29).

Age Group * Result Crosstabulation				
Count				
		Result		Total
		No	Yes	
Age Group	6-15 years	7	19	26
	16-25 years	8	43	51
	26-35 years	9	12	21
Total		24	74	98

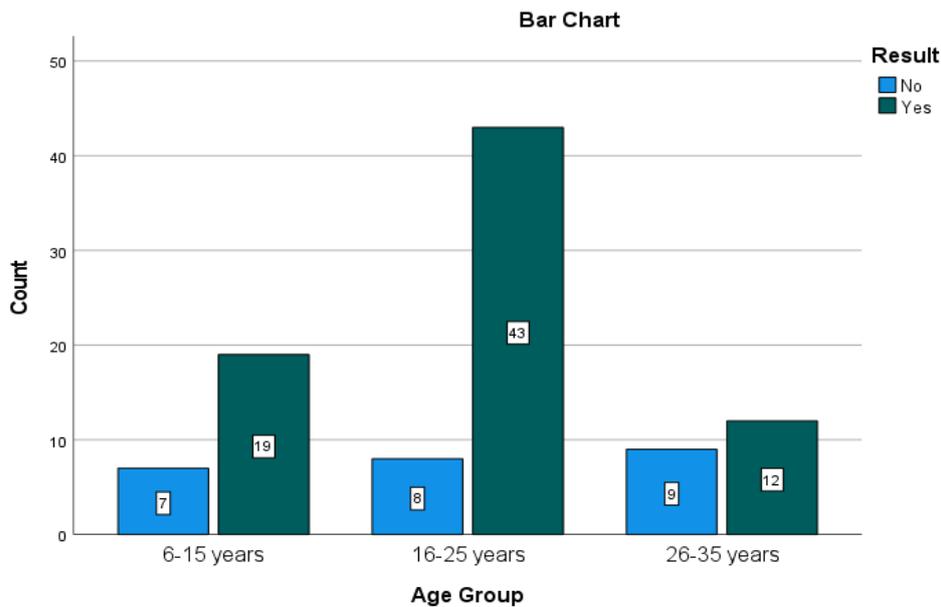
Age sets are divided into 3 set In first set 16-15 total number of patients were 26 in which 19 were diagnosed with Appendicitis and 7 were negative in result In second set total 16--25years number of patients

were 51 in which 43 were positively diagnosed and 8 were negative In third set 26-35 years total number of patients were 21 in which 12 were positive and 9 were negative.

Chi-Square Assessment			
	Value	Df	Asymptotic Consequence (2-sided)
Chi-Square	6.052 ^a	2	.045
N of Valid Cases	98		
0 cells (.0%) have expected count less than 5. The minimum expected count is 5.14.			

To find out the relationship between age groups and appendicitis results we applied chi square test. Output of chi-square assessment demonstrate that there is same relationship exist between different age

groups and appendicitis result. The relationship was significant and we observed p value (0.045) which is less than (0.05).



Gender * Result Cross tabulation				
Count				
		Result		Total
		No	Yes	
Gender	Male	15	27	42
	Female	9	47	56
Total		24	74	98

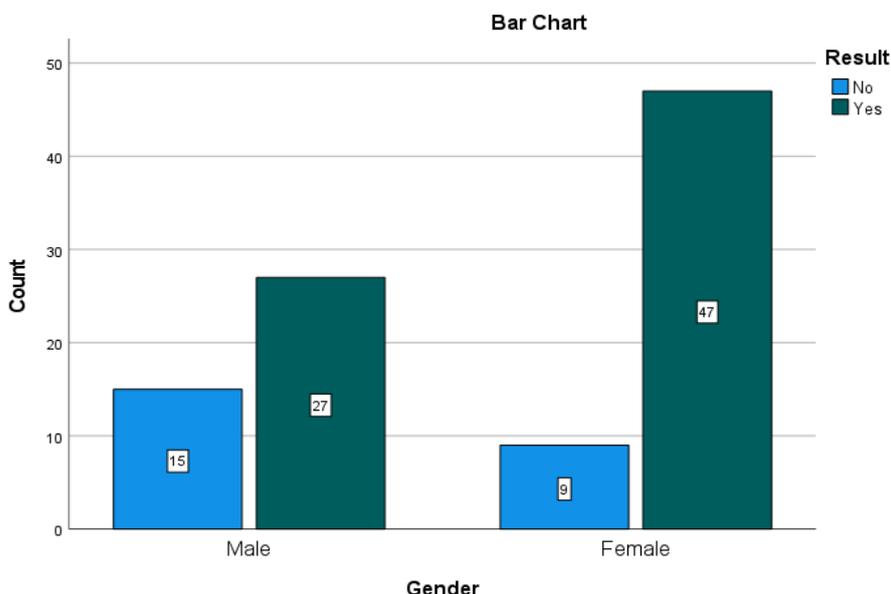
From 98 total patients 74 were females and 24 were males from which 47 female patients positively

diagnosed and 9 were negative. From 24 male patients 27 were positively diagnosed and 15 were negative.

Chi-Square Tests			
	Value	df	Asymptotic Consequence (2-sided)
Chi-Square	5.008 ^a	1	.025
N of Valid Cases	98		
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 10.29.			

To find out the relationship between gender and appendicitis results we applied chi square test. Output of chi square assessment demonstrate that there

is same relationship exist between different gender and appendicitis result. The relationship was significant and we observed p value (0.025) which is less than (10.29).



5. DISCUSSIONS

This study was designed to describe clinical and ultrasound findings associated in patients who had suspected appendicitis diagnosed. Study was cross sectional study of 98 patients supposed for disease. Afterward a comprehensive past and medical examination, individuals were undergo to sonographic inspection of lower abdomen using high resolution. Age incidence displayed fewer than 19.3% of individuals in age set of 6-15 years and 43,8 % of individuals above the age set of 15 years were affected (Lee *et al.*, 2000). This study showed that highest number of acute appendicitis occurred in the age group of 16-25 years. In our community, the medical demonstration of appendicitis diverse significantly and few individuals had the distinctive past and medical findings. This underline importance of imaging procedure in individuals having

supposed appendicitis (Lehmann *et al.*, 2022). Appendicitis diagnosis is not easy. Occasionally appearance is so unusual that the highly skilled surgeon eliminate normal appendix. Medical decision to remove leads to removal of 20% of normal appendices to avoid the many problems in diagnosis (Mardan *et al.*, 2007). Direct visibility of the inflamed appendix on sonography is a characteristic of appendicitis. At the point of maximal tenderness, the characteristic look is that of layered, incompressible cylindrical structure. Typical results include: Appendix is pictured as a tubular a peristaltic with a blind-ending end. A total diameter of 6mm and a wall thickness of 2mm is the target appearance. Damage to wall layers, Appendicolith, Restrictedperi fluid collection, Protruding bright appendix, Lumen may be distended with dull/bright substances. Inflamed appendix becomes

non-tender to compression, a diagnosis of unprompted resolution appendicitis should be measured. Ultrasound can reliably show several clinical consequences of appendicitis (Kurane *et al.*, 2008). Tenderness in the right side, mostly over the McBurney's point, when combined with the aforesaid physical indication, provided an outstanding diagnostic indicator with a high chance of predicting real prevalence of appendicitis (P.001) (Samuel, 2002). Study showed that maximum number of appendicitis occurred in the age group of 6-15 years followed by age set of 16-25 years which was reliable with findings shown by Addis *et al.*, [2] that it is most common in 10 to 19 year old age set (Addiss *et al.*, 1990). My study shows that total number of patients were 98 under the age of 35 years with suspected appendicitis, 42 males and 56 females. Appendix found in 74 individuals, 47 females and 27 males. Of all individuals, 74 were diagnosed by medical valuation and ultrasound findings. By performing ultrasound it has been evaluated that all patients had appendicitis. From total, 47 were females and 27 were male patients. Appendix was found in total 74 cases with associated other signs of tenderness. According to gender females were found more positive results of disease than males. Out of 98 patients 47 females with ultrasound positive results and 27 males were with ultrasound positive results. To find out the relationship between age groups, gender and appendicitis results we applied chi square test. Output of chi square test for age show that there is same relationship exist between different age groups and appendicitis result. The relationship was significant and we observed p value 0.045 which is less than 0.05. There is same relationship exist between different gender and appendicitis result. The relationship was significant and we observed p value 0.025 which is less than 0.05.

CONCLUSION

Appendicitis is the common abdominal illness that necessitates emergency surgery. Diagnostic accuracy is greatly improved when clinical indications and symptoms are paired with USG data. USG can also rule out other reasons of RIF discomfort, such as appendicular disease. USG can be a helpful technique in identifying appendicitis, lowering treatment costs and avoiding undesirable appendectomy.

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Cite This Article: Raisa Tariq, Maryam Jamil, Abid Ali, Sadia Azam (2022). Role of Ultrasonography in Diagnosis of Appendicitis and Its Correlation with Age. *EAS J Radiol Imaging Technol*, 4(5), 117-122.