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PATTERN OF ACUTE APPENDICITIS IN RIYADH, KSA

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Abstract:

Acute Appendicitis is one of the most common surgical emergencies in the developed world. It occurs most commonly in the second and third decades of life. Despite advances in diagnosis and treatment, it is still associated with significant morbidity and mortality. ***Objectives****: to determine the prevalence, determinants, management and outcome of different types of management of acute appendicitis among Saudi population in Riyadh, KSA.* ***Methods****: The present cross sectional community based study was conducted in Riyadh city, the capital of KSA on 336 participant. Data was collected through filling the pre-designed online questionnaire which guided us to the needed data. We utilized the SPSS program version 16. The X^2 test was used as a test of significance, and differences considered significant at P value less than 0.05.* ***Results****: There were 29.2% of participants had a life time attack of acute appendicitis. It was more prevalent in females than males (P=0.009) and among age group 21-30 years (P=0.01). Regarding symptoms, pain in the lower abdomen was the most common by 42.9% followed by vomiting 34.7%, fever 20.5%, loss of appetite 19.4%, vague abdominal pain 9.3%, and pain in the right side 7.2%, nausea 6.1% and pain in the left side by 4.1%. As regards the management, 54.1% managed by surgery, 33.7% medical management and 12.2% by Herbal remedies at home but 8.2% reported recurrence after conservative treatment.. Complications occurred in 22.4% of cases; the most common was surgical wound infection reported by 14.3% followed by paralytic ileus 8.2%.* ***Conclusion****: In our study, the prevalence of a life time attack of acute appendicitis was 29.2%. It was more prevalent in the age group (21-30) years and in females than males, mainly managed by surgery. But recurrence after conservative treatment was reported in some cases.*

Key words: *Acute Appendicitis, Symptoms, Management, Surgery, Conservative Treatment, Complications, Riyadh, Ksa.*

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INTRODUCTION:

Acute appendicitis is the most common abdominal emergency requiring surgery with an estimated lifetime prevalence of 7- 8%. Despite advances in diagnosis and treatment, it is still associated with significant morbidity (10 %) and mortality (1–5 %) [1]. The function of the appendix has traditionally been a topic of debate. There is no clear evidence to its function in humans [2]. Annually, up to 250,000 cases of appendicitis are reported. The estimated lifetime risk is 12% for males and 25% for females. Although appendicitis can occur at any age, it most commonly occurs between the ages of 10 and 19 years [3].

The overall accuracy for diagnosing acute appendicitis is approximately 90 %, with a false-negative appendectomy rate of 10 %. This is more frequent in atypical cases, especially in women of childbearing age, because the symptoms often overlap with others conditions [4, 5]. The diagnostic difficulties result in increased risks of both negative appendectomies and a delayed diagnosis, both leading to increased morbidity, more complications, longer hospital stay, and higher costs [6, 7].

For each clinical pattern the proposed treatment is the same: Appendectomy. This results in an overtreatment with a described rate of negative appendectomy (a histopathological diagnosis of normal appendix) ranging from 6% to 20% [8]. Appendectomy has also a complication rate ranging from 8% to 11%, depending on the surgical technique [9].

A prospective diagnostic accuracy study was carried out on patients suspected to acute appendicitis presenting to EDs of 2 hospitals [10] to report that; 108 patients with the mean age of 23.91 ± 7.46 years were studied (61.1% male). Appendicitis was confirmed for 37 (34.26%) cases. Cohen's kappa coefficient between ultrasonography by the radiologist and emergency physician in diagnosis of acute appendicitis was 0.51 (95% CI: 0.35 - 0.76). Area under the ROC curve of ultrasonography in appendicitis diagnosis was 0.78 for emergency physician and 0.88 for radiologist (p = 0.052). Sensitivity and specificity of ultrasonography by radiologist and emergency physician in appendicitis diagnosis were 83.87%, 91.5%, 72.97%, and 83.10%, respectively.

The aim of this study was to determine the prevalence, determinants, management and outcome of different types of management of acute appendicitis among Saudi population in Riyadh, KSA

PARTICIPANTS AND METHODS:

The present cross-sectional community-based study was conducted in Riyadh city, the capital of KSA on 336 participant. The sample size was calculated using the sample size equation: $n=z^2p\ (1-p)/e^2$, considering target population more than 1000, and study power 95%. Systematic random sampling technique was followed. Data was collected through filling the pre-designed online questionnaire which guided us to the data of socio-demographic characteristics such as age, sex, educational status and marital status, it also included questions about signs and symptoms of appendicitis, management, treatment and complication of the case.

Statistical analysis:

We utilized the Statistical Package for Social Sciences, version 16 (SPSS Inc., Chicago, Illinois, USA) to analyze the study data. The results displayed as counts and percentages. The X^2 test was used as a test of significance, and differences considered significant at P value less than 0.05.

Ethical considerations:

The questionnaire included a brief introduction to the participants by explaining the aims and benefits of the study. Anonymity and confidentiality of data were maintained throughout the study. There was no conflict of interest.

RESULTS:

The majority 50% aged 21-30 years, 88.7% were males, 80.1% had University or more education, 73.8% were not working and 44.6% were married. There were 29.2% of participants had a life time attack of acute appendicitis. (Table 1).

Table 2 illustrates the manifestations, treatment, complications and recurrence of appendicitis cases. Regarding the symptoms of appendicitis we found that Pain in the lower abdomen was the most common by 42.9% followed by vomiting 34.7%, fever 20.5%, loss of appetite 19.4%, pain in the abdomen 9.3%, pain in the right side 7.2%, nausea 6.1% and pain in the left side by 4.1%. As regards the management, 54.1% managed by surgery,33.7% Medical management and 12.2% by Herbal remedies at home. As regards postoperative complications, it occurred in 22.4% of cases; the most common was surgical wound infection reported by 14.3% followed by paralytic ileus 8.2%. But unfortunately, 8.2% reported recurrence after conservative treatment.

Table 3 shows the relationship between occurrence of appendicitis and socio-demographic characteristics of the studied population. There were significant relations between occurrence of appendicitis and gender, age, education and working status ($p<0.05$) except material status ($p=0.08$). It was more prevalent in females than males by 81.6% and 18.4%, respectively. It was more prevalent among age group 21-30 years 44.9% followed by less than 20 years 34.7%.

Table (1): Socio-demographic characteristics of the studied population (N=336)

Variable	No.	%
Gender		
• Male	298	88.7
• Female	38	11.3
Age group (in years)		
• < 21	82	24.4
• 21 – 30	168	50.0
• 31 – 40	64	19.0
• >40	22	6.5
Educational level		
• Primary	10	3.0
• Intermediate	25	7.4
• Secondary	32	9.5
• University or higher	269	80.1
Marital status		
• Single	172	51.2
• Married	150	44.6
• Divorced	12	3.6
• Widow	2	.6
Working status		
• No	248	73.8
• Yes	88	26.2
Appendicitis		
• Yes	98	29.2
• No	238	70.8

Table (2): Manifestations, treatment, complications and recurrence of appendicitis cases (N=98)

Symptoms	No.	%
• Pain in the lower abdomen	42	42.9
• Vomiting	34	34.7
• Fever	20	20.5
• Loss of appetite	19	19.4
• Pain in the abdomen	9	9.3
• Pain in the right side	7	7.2
• Nausea	6	6.1
• Pain in the left side	4	4.1
Management		
• Surgery	53	54.1
• Medical management	33	8.2

• Herbal remedies at home	12	12.2
Occurrence of complications		
• No	76	77.5
• Yes	22	22.4
Type of complication		
• Surgical wound infection	14	14.3
• Paralytic ileus	8	8.2
Recurrence after conservative treatment	**8**	**8.2**

Table (3): relationship between occurrence of appendicitis and socio-demographic characteristics of the studied population (N=336)

Variables	Response	Appendicitis		Total (N=336)	P value
		Yes (N=98)	No (N=238)		
Sex	Female	80	218	298	0.009
		81.6%	91.6%	88.7%	
	Male	18	20	38	
		18.4%	8.4%	11.3%	
Age group	<21	34	48	82	0.014
		34.7%	20.2%	24.4%	
	21-30	44	124	168	
		44.9%	52.1%	50.0%	
	31-40	12	52	64	
		12.2%	21.8%	19.0%	
	>40	8	14	22	
		8.2%	5.9%	6.5%	
Education	Primary	4	6	10	0.003
		4.1%	2.5%	3.0%	
	Secondary	7	25	32	
		7.1%	10.5%	9.5%	
	University +	72	197	269	
		73.5%	82.8%	80.1%	
	Preparatory	15	10	25	
		15.3%	4.2%	7.4%	
Working status	Not working	63	185	248	0.009
		64.3%	77.7%	73.8%	
	Working	35	53	88	
		35.7%	22.3%	26.2%	
Marital status	Single	60	112	172	0.082
		61.2%	47.1%	51.2%	
	Married	34	116	150	
		34.7%	48.7%	44.6%	
	Divorced	4	10	14	
		4.1%	4.2%	4.2%	

DISCUSSION:

Appendicitis is one of the most common surgical emergencies in the developed world [11]. It is a supportive inflammatory process of the vermiform appendix and is the most common life-threatening surgical emergency in the pediatric age group [12, 13]. Appendicitis occurs most commonly in the second and third decades of life. Obstruction of the appendiceal lumen appears to be one of the most common physiologic mechanisms for the development of acute appendicitis. Once obstructed, the dilatation of the lumen causes ischemia and necrosis of the wall. The lifetime risk of appendicitis is approximately 7 %. In the general population it has an incidence of 86 per 100,000 populations per year [14]. This is a cross sectional study was conducted among 336 of studied population in Riyadh, KSA. The study aims to determine the prevalence, determinants, management and outcome of different types of management of acute appendicitis among Saudi population in Riyadh, KSA

Our study found that there were 29.2% of participants had a life time attack of appendicitis. In Jeddah, Saudi Arabia, another study was conducted among 124 female patients admitted for suspicious of acute appendicitis to the Emergency Department (ED) at King Abdul-Aziz University Hospital; the prevalence of advanced appendicitis was 13.7% [15]. In Taiwan, another study found that the overall incidence of appendicitis was 36.25% [16]. In India, a cross-sectional study was conducted among patients admitted through emergency with pain abdomen; appendicitis was present in (38.9%) of study subjects [17]. However, another study conducted in India among 510 patients admitted to surgery department from them 21.5% were having appendicitis [18]. In Pakistan, Tariq et al. conducted study among 127 patients from them 64 (50.3%) had acute appendicitis [19].

Regarding the relationship between occurrence of appendicitis and socio-demographic characteristics of the studied population, our study found that there were significant relations between occurrence of appendicitis and gender, age, education and working status ($p<0.05$) except material status ($p=0.08$). It was more prevalent in females than males by 81.6% and 18.4%, respectively. and among age group 21-31 years by 44.9%. In contrast to our results another study found that proportion of the male patients with appendicitis was more as compared to females (60.00%) and (40.00%) [18]. Also, another study reported; males had higher rates of appendicitis than females at all ages except for 70 years and older [20]. However, another study found that occurrence of appendicitis in both male and female was almost equal [21].

Appendicitis is generally a disease of young age. The usual finding of the highest incidence was seen in the second and third decades of life.

Our study found that it was more prevalent among age group 21-30 years 44.9% followed by less than 20 years 34.7%. Similar to our results another study reported that the most common age for appendicitis was found to be 21-30 (34.54%) followed by 11-20 (26.36%), 31-40 (14.54%) 41-50 (13.63%), 51-60 (6.33%) [18]. Another study reported that the highest incidence of appendicitis was found in persons aged 15 to 29 years [20]. However, another study reported that occurrence of appendicitis was the highest in the 11-20 years' age group which constituted 44.6% followed by the 21-30 years' age group which constituted 36.1% [21].

According to symptoms of appendicitis we found that Pain in the lower abdomen was the most common by 42.9% followed by vomiting 34.7%, fever 20.5%, loss of appetite 19.4%, pain in the abdomen 9.3%, pain in the right side 7.2%, nausea 6.1% and pain in the left side by 4.1%. Another study found that the most common presenting complain was pain in abdomen (100%) followed by fever (86.36%) vomiting (54.54%) [18]. Another study showed that right lower quadrant pain and tenderness were the most frequently reported symptoms (91.2% and 69.6%), followed by vomiting, fever, and diffuse tenderness (42%, 24.7%, and 11.7%, respectively) [22]. In Nigeria, another study conducted among 124 patients with appendicitis reported right iliac fossa pain as the most common symptoms in all cases followed by loss of appetite 63.4%, nausea 28.2% and fever 26.8% [23]. In Mekelle, Ethiopia, another study reported; the frequent clinical presentations of appendicitis were abdominal pain 196 (100.0%), vomiting 107 (54.6%) and anoxia 97 (49.5%) [24].

As regards postoperative complications, our study reported that complications were occurred in 22.4% of cases; the most common was surgical wound infection reported by 14.3% followed by paralytic ileus 8.2%. In accordance with our results another study found that wound infection was the most common postoperative complication occurring in 26.8% of patients [23]. Another study reported; the complication rate was 36.2% and wound infection (28.30%) was the most common [25].

CONCLUSION AND RECOMMENDATIONS:

In our study, the prevalence of a life time attack of acute appendicitis was 29.2%. It was more prevalent in the age group (21-30) years and in females than males, mainly managed by surgery. But recurrence after conservative treatment was reported in some cases.

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