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PREVALENCE OF CASES OF APPENDICITIS AMONG PATIENTS VISITING EMERGENCY DEPARTMENT AT JORDANIAN ROYAL MEDICAL SERVICES HOSPITALS, JORDAN

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ABSTRACT: In the emergency department, acute abdominal pain including acute appendicitis is more likely to be encountered. The main objectives of the present study were to identify the frequency of appendicitis and related variables such as gender, age, and month with the occurrence of appendicitis. Study methods included the conduction of retrospective study design. Study sample included 139 participants who visited emergency department at King Talal Hospital, Royal Medical Services, Jordan. Study variables included age, gender, month, and the level of white blood cells. Study findings showed that males were more likely to develop appendicitis compared with females, the mean age of participants was about 25 years. The mean level of White blood cells was 13673.65±5439.61/ml^3. Winter season witnessed the most frequent cases of appendicitis. There were significant variations in the level of white blood cells between males and females, in which females had higher levels of white blood cells compared to males (p=0.003). Taken together, acute appendicitis is more encountered among males, and in Winter season, particularly, January. It seems that females exhibit more pathologic events compared with males.

KEYWORDS: Acute appendicitis, abdominal pain, WBC, age, gender, month

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INTRODUCTION:

A ruptured appendix is one of the most well-known careful crises in the United States (1). Nonetheless, the analysis of an infected appendix is missed in 3.8% to 15.0% of youngsters and in 5.9% to 23.5% of grown-ups during crisis division (ED) visits (2-4). Appendicitis is the second most encountered condition among pediatric patients and the third most basic condition referred to in grown-up negligence protection claims (5).

The emergency department (ED) is a setting in which it is the first line to receive different cases, and accordingly, there is a risk to have diagnostic errors (6, 7).It has been estimated that acute abdominal pain is responsible for up to 10% of all entries to ED (8, 9). Acute appendicitis is considered one of the most frequent reasons of lower abdominal pain forcing patients to access the ED (10, 11).

The level of white blood cell is considered to assess the preoperative scoring system for the differentiation of perforation risk among pediatric patients with acute abdominal pain. This system depends on the duration of symptoms (> 1 day), fever (> 38.0 C), and WBC absolute count (> 13,000/mm3) (12).

Study objectives:

the main objectives of this study were to identify the frequency of appendicitis and related variables such as gender, age, and month with the occurrence of appendicitis.

METHODS AND SUBJECTS:

Study design and setting:

A retrospective design was conducted in this study to collect data from study participantswho visited emergency departmentat King Talal Hospital, Royal Medical Services, Jordan. Files in which patients have come with acute appendicitis were included in the study. Study variables included age, gender, month of visiting, and white blood cell count. Study sample included 139 patients who were subjected to appendicitis.

All data were entered excel spreading sheet. Data were analyzed using SPSS version 21. Data were presented as frequencies and percentages for categorical variables, means and standard deviations for linear variables. The relationships between variables were computed using independent T test. Significance was considered at $\alpha \leq 0.05$.

RESULTS:

General characteristics of participants

As seen in table 1, the mean age of study participants was 24.70±14.2 years. A total of 104 (74.8%) of participants were males. The mean WBC was 13673.65±5439.61 cells/ml. regarding the frequency of appendicitis, about 33% of cases were operated by January,22.3% by February, about 16% by March, about 19% by April, about 4% by both May and June, and about 2% by July.

Table 1: General characteristics of participants

Variable	Description
Age (M±SD) years	24.70±14.2
Gender (N, %):	
- Male	104 (74.8%)
- Female	35 (25.2%)
WBC (M±SD) cells/ml^3	13673.65±5439.61
Frequency of appendicitis per month (N, %):	
- January	46 (33.1%)
- February	31 (22.3%)
- March	22 (15.8%)
- April	27 (19.4%)
- May	5 (3.6%)
- June	5 (3.6%)
- July	3 (2.2%)

The frequency of appendix variables by gender

As shown in table 2, the mean age for males and females were close to each other (24.78±11.62 for males, and 24.46±20.23 for females). The mean of WBCs for males (13333.64±5176.65) was less than that of females (14683.94±6124.74).

Table 2: The frequency of appendix variables by gender

Variable	Description
Age (M±SD) years: **Males** **Females**	 **24.78±11.62** **24.46±20.23**
WBC (M±SD) cells/ml: - **Males** - **Females**	 **13333.64±5176.65** **14683.94±6124.74**

As shown in figure 1, males were more frequent to subject for appendicitis in all studied months except for June.

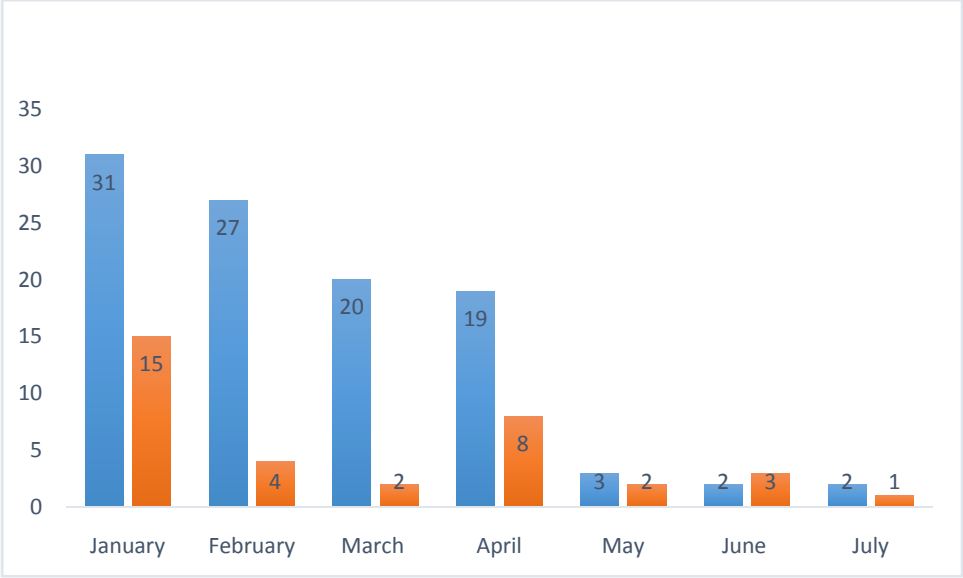

Figure 1: The frequency of appendicitis by month (blue for males, orange for females)

The effects of gender on study variables

we conducted T test to investigate the impact of gender on both age and WBC. As shown in table 3,gender had no effect on age (p=0.711). On the other hand, gender had a significant effect on WBC (p=0.003).

Table 3: The effect of gender on study variables

		Mean	N	Std. Deviation	P value
Pair 1	Age_male	25.9143	35	9.37259	0.711
	Age_female	24.4571	35	20.23152	
Pair 2	WBC_male	10406.5400	35	4870.34239	0.003
	WBC_ _female	14683.9429	35	6124.73658	

DISCUSSION:

The present study showed that the mean age of study participants with appendicitis was about 25 years. Age seems to be a varying agent in various studies. Other studies found the mean age of study participants who were subjected for appendectomy was 39 years (13). However, age is expected to vary among studies due several factors such as study size, and culture.

The present study showed that males were more likely to have appendicitis compared with their counterparts of females. This finding is consistent with previous studies (14), in which authors analyzed large data of patients with appendicitis.

The level of WBCs in this study indicated that inflammation was a prominent feature of appendicitis and this confirmed other studies (12, 15, 16). The level of WBC may also indicate to the pattern of behavior of appendicitis in which antibiotic treatment could be beneficial or not (15).

The results of the present study indicated that appendicitis is more likely to develop in winter compared with other seasons. These findings do not agree with other studies in which Summer and Spring were the most frequently seasons for reporting appendicitis (17, 18). It seems the environmental factors play significant roles in these studies, while in our study, we think that in Winter, acute abdominal pain is more likely to develop which increase the likelihood of developing appendicitis.

The results of this study showed that females were more likely to develop higher levels of WBCs which reflects more inflammatory conditions compared with males. We have to take into consideration that some factors like hormonal factors may increase the inflammatory status in females (1).

CONCLUSION: The present study showed that acute appendicitis is more encountered among males, and in Winter season, particularly, January. It seems that females exhibit more pathologic events compared with males.

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