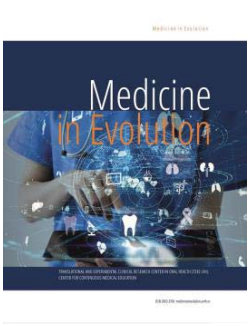
Laparoscopic incidence in acute appendicitis associated with demographic factors



Gavrilă (Brata) R.D.[1], Maghiar T.T.[2], Maghiar O.[2], Domocoş D.[3], Bonta D.F.[3], Popovici-Muţ A.M.[3], Pogan M.D.[3]

[1]*Pelican Clinical Hospital Oradea, Oradea, Romania*
[2]*Faculty of Medicine and Pharmacy, University of Oradea, Romania*
[3]*Department of Dental Medicine, Faculty of Medicine and Pharmacy, University of Oradea, Romania*

Correspondence to:
Name: Domocoş Daniela
Address: Department of Dental Medicine, Faculty of Medicine and Pharmacy, University of Oradea, Romania, December 1st Square no.10, 410068 Oradea, Bihor County, Romania
Phone: +40747386260
E-mail address: danadd769@gmail.com

Abstract

Acute appendicitis is a surgical condition characterized by the inflammation of the vermiform appendix, being one of the most common causes of acute abdominal pathology. Appendectomy can be performed by open or laparoscopic methods, the latter being the preferred way. Once the diagnosis of acute appendicitis has been established, the appendicectomy should be performed urgently within the first hours of hospitalization.

Our findings on the impact of demographic factors on the incidence of acute appendicitis have led to a result showing that the laparoscopic incidence of acute appendicitis is higher among female patients, 52.04%, compared to male patients in the study group. The prevalence of acute appendicitis according to age was recorded in patients under 40 years, the highest incidence in this age group, after the analysis was recorded in patients under 20 years.

To date, the indications for laparoscopic appendicectomy are controversial and the benefits do not appear to be as convincing as those of cholecystectomy or hiatal hernia surgery. Laparoscopy has a dual role, being used for diagnosis and treatment. It allows complete and consecutive diagnosis, solving in the same operating session other possible surgical causes that are at the origin of the abdominal pain syndrome.

Keywords: acute appendicitis, demographic factors, laparoscopic surgery

INTRODUCTION

Acute appendicitis is one of the most common causes of acute abdominal pain in adults and children, with a higher lifetime risk in men compared to women [1].

The peak incidence of appendicitis usually occurs in the second and third decades of life. The condition can occur at any time in life, but is relatively rare at extreme ages. Men and women are equally affected, except for the period between puberty and 25 years when men predominate [2]. The peak incidence is between 10-14 years in female patients and between 15-19 in male patients [3]. Perforation is relatively more common in young children and the elderly, periods in which mortality is also higher [2].

In the observational study "The Significant Impact of Age on the Clinical Outcomes of Laparoscopic Appendectomy", authors shows that acute appendicitis (AA) is the most common surgical emergency and can occur at any age, with a cut-off point at 65 years, the peak incidence being recorded mainly in the younger population [4]. The risk of developing complications in the young population 48 hours after the onset of pain was lower compared to the population older than 40 years. Although the incidence of AA varies with age, being higher in younger patients, it still occurs in the last decades of life, the ratio of complicated appendicitis growing with age [5]. In terms of hospitalization rate, it was higher in the older population [4].

In the comparative study on the benefits of laparoscopic intervention compared with classic intervention in acute appendicitis, [6] reached the conclusion that the laparoscopic approach in elderly patients should be applied whenever possible as it is associated with reduced mortality and reduced rate of immobilized patients in bed.

Aim and objectives

The aim of this study is to assess the incidence of laparoscopic surgery in acute appendicitis related to demographic factors. The study identifies the demographic factors with high impact on the incidence of acute appendicitis treated laparoscopically with reduction of pre and postoperative complications among patients in the study group.

Objectives: Assessment of the incidence of acute appendicitis by age groups, Assessment of the incidence of acute appendicitis by gender, Laparoscopic incidence and its benefits in acute appendicitis.

MATERIAL AND METHODS

A prospective and retrospective study was used to achieve the proposed objectives. In this regard, a group of 171 patients diagnosed with acute appendicitis (AA) was created. All patients were hospitalized during 2019-2021 in the surgical units of the County Emergency Clinical Hospital from Oradea and of the Pelican Hospital from Oradea. Patients were selected on the basis of their medical records from the archives of the two hospital units.

The data obtained were interpreted based on the determination and calculation of several series of indices relevant for this study.

RESULTS

The incidence of age-related acute appendicitis (AA) shows a predominance of patients under the age of 40 years. The study group consisted of 171 patients of which 110 patients were under the age of 40 years (Table 1).

Table 1. Distribution of AA cases by age

Age group	Total AA / 2020-2021	
	No.	%
<20 years	40	23.39
21-30 years	37	21.63
31-40 years	33	19.29
41-50 years	27	15.78
51-60 years	19	11.11
61-70 years	11	6.43
>70 years	4	2.34
Total	**171**	**100.00**

Patients aged 10-40 years represented 64.32%, patients aged 60-70 years represented 6.43% and patients aged over 70 years represented 2.34% of the incidence of acute appendicitis in the study group (Figure 1).

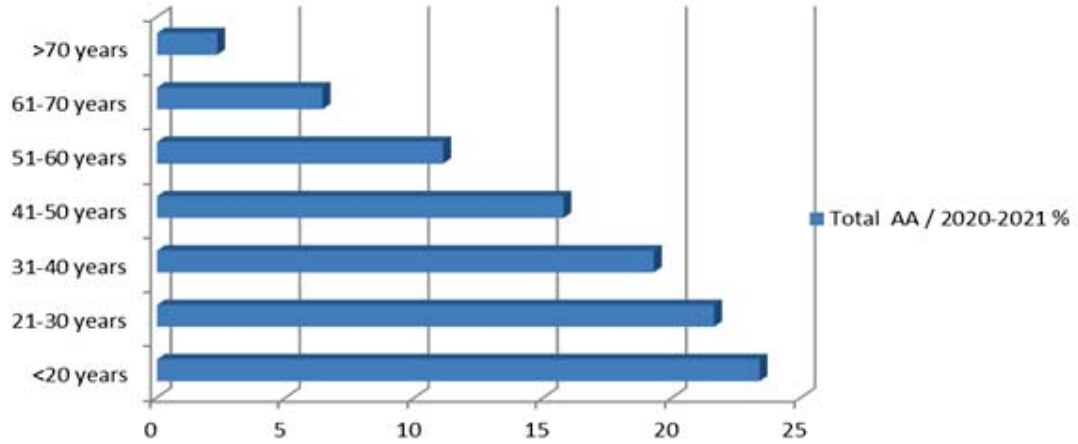


Figure 1. Distribution of cases of acute appendicitis by age

The distribution by gender (Table 2) shows a predominance of female patients, without significant difference, the female to male ratio being 1.08:1.

Table 2. Distribution of AA cases by gender

Gender	Total of AA /2020-2021	
	No.	%
Women	89	52.04
Men	82	47.95
Total	**171**	**100.00**

The distribution of AA cases (Table 3) by age and gender indicates a female to male ratio of 2:1 only in the case of the patients aged 21-30 years, the ratio being reversed in the group aged 31- 40 years where the incidence of acute appendicitis is higher in male patients. Of the four people over the age of 70 years, three were women.

Table 3. Distribution of AA cases by age and gender

Age group	Female		Male	
	No.	%	No.	%
<20 years	20	22.47	20	24.39
21-30 years	25	28.08	12	14.63

31-40 years	15	16.85	18	21.95
41-50 years	11	12.36	16	19.51
51-60 years	9	10.11	10	12.19
61-70 years	6	6.74	5	6.09
>70 years	3	3.37	1	1.22
Total	**89**	**100.00**	**82**	**100.00**

The incidence of acute appendicitis (AA) was 5% higher in male patients in the age group 40-50 years and 7% higher in male patients in the age group 50-60 years. The incidence of acute appendicitis was similar in patients aged 60-70 years.

DISCUSSIONS

The data observed in our study show similar evolution to the data presented in the literature, as concluded in the retrospective study of the clinical-epidemiological profile of acute appendicitis conducted by Pereira Lima et al., 2016. In this study, the authors observed a higher incidence of this surgical pathology in young adults (19-44 years) and male patients (65.20%).

According to the study on hospitalization trends for acute appendicitis [7], the incidence of acute appendicitis in people aged over 50 years was estimated at 1 in 35 men and at 1 in 50 women. In those older than 70 years, the chances were less than 1 in 100, similar data being observed in our study. Hospitalizations by age groups were of 25.3% in children aged 0–14 years; of 41.1% in patients aged 15–34 years; of 12.2% in patients aged 35–44 years; of 13.8% in patients aged 45-64 years and of 7.6% in patients aged over 65 years, the average age being 29.8 years [8, 9].

Many studies have concluded that in adolescents and young adults, acute appendicitis is more frequent in men, with a female to male ratio of 1.3:1 cases [10].

The risk of acute appendicitis during life is considered to be higher in men than in women. The lifetime risk in the United States has been estimated at 8.6% in men and at 6.7% in women [11]. but with an insignificant difference similar to the results observed in our study.

The study on the prevalence of acute appendicitis among hospitalized patients with suspected acute abdomen in Ethiopia showed that the overall prevalence of acute appendicitis was 44.27%. This study, compared and completed with recent data presented in the literature, reports a higher incidence in female patients (62.98%) from India. This difference suggests that the study depends on the region subjects come from [12].

The observational study "Hospitalization Trends for Acute Appendicitis in Spain, 1998 – 2017" [7], which analysed the hospital admission rates for acute appendicitis by age, gender and age group, showed that 58.9% of the subjects included in the study group were male patients and 41.1% were female patients. The trend in hospital admissions for acute appendicitis related to age showed that the incidence of this disease decreased in 2009 in people younger than 35 years. Acute appendicitis mainly affects adolescents and young adults, those aged 20 to 30 years presenting the highest risk and those under 5 years presenting the lowest risk [8, 9].

CONCLUSIONS

Exploratory laparoscopy is a procedure that allows to differentiate the pathomorphological aspects of acute appendicitis and the degree of the extent of peritonitis.

Acute appendicitis presents a higher prevalence in women and young people.

The highest laparoscopic incidence of acute appendicitis in the study group occurred in the age group of 21-40 years (40.92%).

The impact of laparoscopically treated acute appendicitis was higher in male patients aged 31-50 years.

There is an upward trend in female patients from the age group 21-30 years, the female to male ratio being 2:1.

The analysis of the evolution of the age to gender ratio in the study group shows that it was higher in the case of female patients as opposed to male patients, but the difference is not significant.

Laparoscopy is a method to establish the diagnosis and eventually treat the suspected acute appendicitis. It is also a method to distinguish AA from another acute intra-abdominal pathology.

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