

A Retrospective Analysis of Geographical Association Between Onset of Acute Appendicitis and Socio-Economic Status in Tertiary Care Hospital

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ABSTRACT

Background: The present retrospective study was conducted for assessing the geographical association between the onset of acute appendicitis and socio-economic status in tertiary care hospital.

Materials & Methods: A total of 100 patients with presence of acute appendicitis were enrolled. Complete demographic details of all the patients were assessed. On the patients were evaluated on the basis of geographic evaluation. Patients were divided into various socio-economic status according to modified kuppuswamy scale. Correlation of incidence of acute appendicitis was done with geographic location and socio-economic status.

Results: While assessing the patients according to socio-economic status, 57 percent of the patients were of lower socio-economic status while 31 percent of the patients were of middle socio-economic status. 61 percent of the patients were of rural residence while 39 percent of the patients were of urban residence.

Conclusion: Lower socio-economic status and rural geographic location were associated with higher incidence of acute appendicitis.

Key words: Appendicitis, Socio-economic status, Geographic.


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INTRODUCTION

Appendicitis is the most common abdominal emergency and is most common between the ages of 10 and 20 years, but no age is exempt. Since the 1940s the incidence of hospital admission for acute appendicitis has been falling, but the reason for this decline is not clear. Abdominal pain is the primary presenting complaint of patients with acute appendicitis.^{1,2}

In Asian and African countries, the incidence of acute appendicitis is probably lower because of dietary habits of the inhabitants of these geographic areas. Dietary fiber is thought to decrease the viscosity of faeces, decrease bowel transit time and discourage the formation of faecolith, which predispose individuals to obstructions of the appendiceal lumen. The incidence of appendicitis gradually rises from birth, peaks in the late 10 years and gradually declines in the geriatric years. Despite the advances in diagnostic medicine and therapeutics, the accurate diagnosis of appendicitis and pain in the right iliac fossa remains a clinical challenge.^{3,4}

Although numerous epidemiological studies on appendicitis have been conducted, most have focused on Western populations; relatively few epidemiological studies have focused

on appendicitis in Asian populations. Lee et al reported the epidemiological features and lifetime risk of appendicitis and appendectomy in South Korea using epidemiological data from 2005 to 2007. However, considering the relatively short observation period, determining long-term trends was challenging.⁵⁻⁷

Hence; the present retrospective study was conducted for assessing the geographical association between the onset of acute appendicitis and socio-economic status in tertiary care hospital.

MATERIALS & METHODS

The present retrospective study was conducted for assessing the geographical association between the onset of acute appendicitis and socio-economic status in Department of Surgery, Rajendra Institute of Medical Sciences, Ranchi, Jharkhand, India.

A total of 100 patients with presence of acute appendicitis were enrolled. Complete demographic details of all the patients were assessed. On the patients were evaluated on the basis of geographic evaluation. Patients were divided into various socio-

economic status according to modified kuppaswamy scale. Correlation of incidence of acute appendicitis was done with geographic location and socio-economic status.

All the results were recorded in Microsoft excel sheet and were analysed by SPSS software. Chi-square test was used for evaluation of level of significance.

Table 1: Demographic data

Variable	Number	Percentage
Males	58	58
Females	42	42
Mean age (years)	38.4	

Table 2: Distribution of patients according to socio-economic status

Socio-economic status	Number	Percentage
Upper	12	12
Middle	31	31
Lower	57	57
Total	100	100

Table 3: Distribution of patients according to geographic location

Geographic location	Number	Percentage
Rural	61	61
Urban	39	39

RESULTS

Mean age of the patients was 38.4 years. 48 percent of the patients were males while the remaining were females. While assessing the patients according to socio-economic status, 57 percent of the patients were of lower socio-economic status while 31 percent of the patients were of middle socio-economic status. 61 percent of the patients were of rural residence while 39 percent of the patients were of urban residence.

DISCUSSION

Appendicitis is inflammation of the vermiform appendix. Progression of the inflammatory process can lead to abscess, ileus, peritonitis, or death if untreated. The term 'complicated' appendicitis refers to the presence of gangrene or perforation of the appendix. Free perforation into the peritoneal cavity can lead to purulent or faeculent peritonitis. A contained perforation can lead to appendix abscess or phlegmon (inflammatory mass).⁵⁻⁷ Appendectomy is the most common emergency surgical procedure worldwide. The diagnosis of acute appendicitis is mainly clinical and presentation of acute appendicitis may be typical or atypical. Typical presentation starts with vague peri-umbilical pain for several hours, which later migrates to the right iliac fossa (RIF), associated with lack of appetite, nausea, or vomiting. Atypical histories lack this typical progression and may include pain in the right lower quadrant as an initial symptom.⁵⁻⁸ Several reports described spontaneous resolution of uncomplicated appendicitis without the need of an operation and, since the high rate of negative appendectomy and the significant complications rate, some authors proposed and advised conservative management for uncomplicated appendicitis. Conservative management consisted of resting and fasting

followed by delayed elective appendectomy; nowadays, a conservative approach based on antibiotic therapy is gaining popularity, as documented by several randomized studies and meta-analyses that analyze this peculiar issue.^{5,8,9} Hence; the present retrospective study was conducted for assessing the geographical association between the onset of acute appendicitis and socio-economic status in tertiary care hospital.

Mean age of the patients was 38.4 years. 48 percent of the patients were males while the remaining were females. While assessing the patients according to socio-economic status, 57 percent of the patients were of lower socio-economic status while 31 percent of the patients were of middle socio-economic status. Kai-Biao Lin et al, in a previous study, presented an epidemiologic study of appendicitis over a twelve-year period. An analysis of the incidence in the low-income population (LIP) is included to explore the effects of lower socioeconomic status on appendicitis. They analysed the epidemiological features of appendicitis using data from the National Health Insurance Research Database (NHIRD). The overall incidences of appendicitis, primary appendectomy, and perforated appendicitis were 107.76, 101.58, and 27.20 per 100,000 per year, respectively. The highest incidence of appendicitis was found in persons aged 15 to 29 years; males had higher rates of appendicitis than females at all ages except for 70 years and older. Appendicitis rates were 11.76 % higher in the summer than in the winter months. A multilevel analysis with hierarchical linear modeling (HLM) revealed that male patients, younger patients (aged ≤ 14 years), and elderly patients (aged ≥ 60 years) had a higher risk of perforated appendicitis; among adults, the incidence increased with age. Moreover, the risk of perforation was higher in patients with one or more comorbidities.

LIP patients comprised 1.25 % of the total number of patients with appendicitis from 2000 to 2011. The overall incidence of appendicitis was 34.99 % higher in the LIP than in the normal population (NP), and the incidence of perforated appendicitis was 40.40 % higher in the LIP than in the NP. After multivariate adjustment, the adjusted hospital costs and length of hospital stay (LOS) for the LIP patients were higher than those for the NP patients.¹⁰ In the present study, 61 percent of the patients were of rural residence while 39 percent of the patients were of urban residence. Our results were in concordance with the results obtained by previous authors who also reported similar findings. Lee SL et al, in their study, evaluated the effect of Race and Socioeconomic Status in the Treatment of Appendicitis in Patients with Equal Health Care Access. A total of 16 156 patients treated for appendicitis. Patients were divided into low, medium, and high groups based on annual household income and educational level, as well as racial/ethnic status (white, black, Hispanic, and Asian). Based on their findings, they believed that equal health care access leads to equivalent outcomes in all patients with appendicitis.¹¹ In another previous study conducted by Ferris M et al, authors compared the incidence of appendicitis or appendectomy across the world and evaluated temporal trends. They searched MEDLINE and EMBASE databases for population-based studies reporting the incidence of appendicitis or appendectomy. The search retrieved 10,247 citations with 120 studies reporting on the incidence of appendicitis or appendectomy. During the 21st century the pooled incidence of appendicitis or appendectomy (in per 100,000 person-years) was 100 (95% CI: 91, 110) in Northern America, and the estimated number of cases in 2015 was 378,614. The pooled incidence ranged from 105 in Eastern Europe to 151 in Western Europe.¹²

CONCLUSION

Lower socio-economic status and rural geographic location were associated with higher incidence of acute appendicitis.

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