

Histopathology Analysis of Appendectomy Specimens in Newly Established Medical College in Eastern Region of Nepal

Jha K K¹, Singh M¹, Rana R, Kafle S U²

¹Lecturer, Department of Pathology, Birat Medical College and Teaching hospital

²Lecturer, Department of Pathology, Brat Medical College and Teaching hospital

³Lecturer, Department of Pathology, Brat Medical College Teaching Hospital

⁴Associate Professor, Department of Pathology, Birat Medical College and Teaching Hospital, Tankisiniwari, Morang, Nepal

Abstract: *Background:* Acute appendicitis is one of the common conditions essentials for emergency surgery. A retrospective study was performed to determine various histopathological diagnosis, their demographics and the rates of perforated appendicitis, incidental appendectomy and negative appendectomy. *Materials and Methods:* Histopathological records of resected appendices submitted to histopathology department Birat medical college teaching hospital over the period of 2 years and 6 months from May 2015 to Jan 2018 were reviewed retrospectively. All the case were reviewed by all the pathologist of Brat medical college teaching hospital. *Results:* Out of 100 specimens of appendix, appendicitis account for 98% with peak age incidences with peak age incidence in the age of 9 to 40 years in both sexes. Histopathologic diagnosis consists of acute appendicitis (50.0%), Acute on chronic appendicitis 8%, Eosinophilic appendicitis 8%, Acute appendicitis with periappendicitis 18%, Acute appendicitis with perforation 5%, Normal 11%. We have to do urgent operation or focus on educate people to after pain abdomen come to hospital as soon as possible.

Keywords: Acute appendicitis, Perforation, Carcinoid

1. Introduction

Acute appendicitis is the commonest surgical emergency since many decades and appendectomy is the most countries any decades and appendectomy is the most frequently performed abdominal operation. The incidence of appendicitis varies in different countries. This variation is based on various factors such as sex, age, race, region dietary habits, hygiene, socioeconomic status and season¹.

Acute appendicitis is one of the most common surgical causes of acute abdomen. The lifetime risk for appendicitis is 7%: commonly occurring in adolescents and young adults. The rate of acute appendicitis varies among countries. In USA From 1979 to 1984 the annual appendicitis incidence rate in different parts of the country varied from 94 to 154 appendicitis. Not only the pathologic diagnosis of acute inflammation, at times unusual findings such as incidental tumors noted in appendix highlights the importance of the pathologic analysis of every single resected appendix. This study aims to determine the various histologic diagnosis of all surgical removed appendices and to find out age and sex related incidence of appendicitis. In addition, we attempt to find out the possible causes of negative appendectomy. An obstructed appendix that was previously normal is more susceptible to infection than one affected by fibrous obliteration of the lumen. The most common cause of obstruction is a fecolith, but it may be a foreign body, a true calculus, a gallstone, a tumor of the cecum, or a primary tumor of the appendix. In children from the age of 10 years to young adults, diffuse lymphoid hyperplasia is another cause of obstruction.

2. Materials and Methods

A retrospective study was conducted at pathology department of Teaching hospital during the period of 2 years and 6 months period from May, 2015 to Jan 2018. All the surgically resected appendices submitted to department of pathology were included in this study. Birat Medical College which lies in eastern region of Nepal. Relevant clinical history of the patient was obtained from the requisition forms of the patients and the performa was filled. All emergency appendectomies and interval appendectomies performed for a clinical diagnosis of acute appendicitis but in which the appendix is found to be normal on histopathological examination.

3. Results

Total of 100 specimen of appendix were taken in the histopathology department during the period of 2 and half years 2015 may to 2017 January. Of total 100 appendectomies 98 emergency appendectomy and 2 cases were elective or incidental appendectomy done for primary abdominal or pelvic pathology. Totally 98 (98%) cases were found to have histological proven appendicitis. There were 48(48%) male and 52(52%) female among 100 cases of appendicitis with males female ratio of 1:1.02. The mean age of female was 45.5 and males was 40.5. More than 80% appendicitis occurred below age of 40 years. All actually inflamed appendices had peak incidence in the age group of 11 to 30 years. Chronic recurrent resolving and eosinophilic appendicitis were commonly seen in the age group of 18-40 years. Sex distribution of inflamed appendices at various stages in Table 1.

Perforation rate was 5% (5 out of 100 cases). Perforation appendicitis was seen more commonly in females at the age interval of 13-20 yrs. In our studied we did not found any case of worm infestation and carcinoid.

Incidental appendectomy

There were total 4 cases (2%) of incidental appendectomy of which 4 were females. The most common primary surgery was total abdominal hysterectomy. With bilateral salpingo-oo pherectomy (2cases).

Table 1: The Distribution of Histopathologic stages of appendicitis by Sex

Histologic stages	Female (n=52)	Male (n=48)	Total (n=100)
Acute appendicitis	36(69.25%)	14(29.16%)	
Acute on chronic appendicitis	2(3.84%)	06(12.5%)	
Eosinophilic appendicitis	2(3.84%)	6(4.34%)	
Acute appendicitis with perforation	1(1.92%)	4(8.33%)	
Acute appendicitis wirh periappendicis	6(11.54%)	12(25%)	
Normal	5(9.6%)	6(12.5%)	

4. Discussion

Acute appendicitis has been the most common surgical emergency for a number of decades and the appendectomy is the most frequently performed abdominal operation, In the western world⁶, acute appendicitis accounts for about 40% of surgical emergency. It is rare in Asian and African subcontinent, however recent literature and review show that there is an increase in incidence of appendicitis in African countries with adoption of western life style and diet.⁵ Similarly in South Korea, epidemiological study done by Lee et al ,from 2005 to 2007, showed an overall incidence of appendicitis and appendectomy of 22.71 and 13.56 per 10,000 population per year ,respectively which was found to be higher than that of western countries, i.e. 7.5 to 12.0 per 10000 population per years.⁷ Our observation showed there is lower frequency of acute appendicitis of only 7.86%. The other studies done in Nepal showed a variable incidence rate of appendicitis Khan et al, ⁸ From Nepalgunj ,reported acute appendicitis to be most common cause of emergency laparotomy showing incidence of 26%. However ,there was a low incidence rate of acute appendicitis of only 7.46% in the study conducted by makaju et al.⁹

The incidence of appendicitis varies substantially by country, geographical region, race socioeconomic status ,dietary habits, hygiene, Sex, age and season ⁵. The high incidence of appendicitis ,particularly in this region could be explained by the improvement in socioeconomic status that would directly habits with affect the dietary habits with high intake of meat, increased health awareness and easy access to hospital.

Age incidence of appendicitis were higher in the second and third decade, about 80% of appendicitis occurring below 40 years of age in concordance with various studies .In contrast to other studies^{5,6,11}, which showed male to female ratio of 1.1:1. However ,it was observed that at adolescent age group had higher incidence than the females similar to other studies. Migration of majority of male adults to foreign

countries in search of work has been a trend here and might have disturbed overall population structure. Therefore, this could be the reason for the overall higher incidence acute appendicitis in females than males.

Maximum frequency of histologic diagnosis was acute appendicitis (45.6%) followed by acute suppurative(20.8%) and gangrenous appendicitis (16.3%) similar to other study done by Zulfikar et al.¹²

Nabipour et al ¹¹ found poor positive correlation between the histologic stage and age sex incidence. In the present study, the age incidence followed a similar pattern in all acutely inflamed appendicitis occurring in young adults (i.e. the age group of 10-32 yrs). However, sex incidence was higher in males in suppurative and acute gangrenous appendicitis it was higher in females in acute appendicitis and perforated appendicitis.

Eosinophilic appendicitis was most common in females. The frequency of eosinophilic appendicitis was 6.4% in our study which was high to the incidence of 1% found by park et al ¹³ The diagnosis of acute of chronic chronic\recurrent\resolving appendicitis is still controversial and its existence has been debated. Some authors postulated that chronic or recurrent pelvic pain may be, to some extent attributed to a chronically inflamed appendix, and when removed in an otherwise anatomically normal pelvis, can reduce pain in one half of the patients ^{13,14}. In our series, It was found to be 8.6% in young and older adults, while it was found still higher in other study ¹⁴. Therefore, recurrent abdominal pain should not be overlooked and a high index of suspicion of appendicitis is essential to avoid repeated unnecessary admissions.

The perforation rate was low (5.36%) in our study similar to that shown by other studies.^{11,16}. Number of series ^{5,7, ,11,18} however had quite higher value ,ranging from 8.3 to 23.2%. The decrease frequency might be due to early visit in the hospital in most of the cases and the prompt decision to operate for suspected appendicitis by the surgeons.

Parasitic infestation is thought to be one of the causes of luminal obstruction of appendix leading to appendicitis. Several studies have found luminal parasites in appendix associated with or without appendicitis in the range of 0.3 to 3.15%. In our study there is no case of parasitic infestation.

5. Conclusion

Acute appendicitis is clinically suspected on the basis of clinical features and physical examination by the surgeon. Definitive diagnosis is established by histopathological evaluation and various etiological factors are simultaneously highlighted. The incidence of appendicitis is high, in the second and third decades of life and slightly higher in females. High perforation rate indicates a bad prospective regarding morbidity and mortality. Findings of pelvic pathologies in female such as, such as ovarian cyst, in negative appendectomy emphasize the usefulness of the laparoscopic surgery that would help to minimize negative appendectomy rate.

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References

- [1] Marudanayagam R, Williams GT, Rees BI. Review of pathological results of 2660 appendectomy specimens. *J Gastroenterol.* 2006; 41(8): 745-9.
- [2] Turner JR. The Gastrointestinal tract, In: Kumar, Abbas, Fausto (eds). *Robins and Cotran Pathologic basis of disease.* 8th edn. Saunders: Philadelphia; 2010. pp870-1
- [3] Walker AR, Segal I. Appendicitis: an African perspective. *J R Soc Med* 1995; 88:616-9
- [4] Al-Omran M, Mamdani MM, McLeod RS. Epidemiologic features of acute appendicitis in Ontario, Canada. *Can J Surg* 2003;46:263-8
- [5] Oguntola AS, Adeoti ML, Oyemolade TA. Appendicitis: Trends in incidence, age, sex, and seasonal variations in South-Western Nigeria. *Ann Afr Med* 2010;9:213-7.
- [6] Edino ST, Mohammed AZ, Ochicha O, Anumah M. Appendicitis in Kano, Nigeria: A 5 year review of pattern, morbidity and mortality. *Ann Afr Med* 2004;3:38-41
- [7] Lee JH, Park YS, Choi JS. The epidemiology of appendicitis and appendectomy in South Korea: National Registry Data. *J Epidemiol* 2010;20:97-105.
- [8] Khan S, Khan IU, Aslam S, Haque A. Retrospective analysis of abdominal surgeries at Nepalgunj Medical College (NGMC), Nepalgunj, Nepal: 2 year's experience. *KUMJ* 2004;2:336-43
- [9] Makaju R, Mohammad A, Shakya A. Acute appendicitis: Analysis of 518 histopathologically diagnosed cases at the Kathmandu University Hospital, Nepal. *KUMJ* 2010;8:227-30.
- [10] Noudeh YJ, Sadigh N, Ahmadnia AY. Epidemiologic features, seasonal variations and false positive rate of acute appendicitis in Shahr-e-Rey, Tehran. *Int J Surg* 2007;5:95-8.
- [11] Nabipour F. Histopathological feature of acute appendicitis in Kerman-Iran from 1997 to 2003. *Am J Env Sci* 2005;1:130-2.
- [12] Zulfikar I, Khanzada TW, Sushel C, Samad A. Review of the pathologic diagnoses of appendectomy specimens. *Ann King Edward Med Univ* 2009;15:168-70
- [13] Park CS, Chang MS, Park IA, Kim YI, Choe G. Pathologic analysis of 2159 cases of appendix. *Korean J Pathol* 2000;34:39-49
- [14] Salom EM, Schey D, Penalver M et al. The safety of incidental appendectomy at the time of abdominal hysterectomy. *Am J Obstet Gynecol* 2003;189:1563-7
- [15] Chang SKY, Chan P. Recurrent appendicitis as a cause of recurrent right iliac fossa pain. *Singapore Med J* 2004;45:6-8
- [16] Korner H, Sondena Karl, Soreide JA et al. Incidence of acute nonperforated and perforated appendicitis: Age-

specific and sexspecific analysis. *World J. Surg* 1997;21:313-7

- [17] Marudanayagam R, Williams GT, Rees BI. Review of the pathological results of 2660 appendectomy specimens. *J Gastroenterol* 2006;41:745-9.
- [18] Aydin O. Incidental parasitic infestations in surgically removed appendices: a retrospective analysis. *Diagn Pathol* 2007;2:16