ORIGINAL ARTICLE

Carcinoid Tumors: An Ignored Cause of Appendicitis

Iqbal Memon[1], Komal Moorpani[2], Shafiq-ur-Rehman[3]

ABSTRACT

Background: Many conditions related to appendix present as appendicitis. These conditions can range from fecolith obstruction to tumors .Carcinoid tumors are most common tumors to present in appendix. Most of the carcinoid tumors in appendix present as appendicitis. Majority of the cases are diagnosed after histopathological examination, with 90% of the tumors measuring smaller than 1 cm with excellent prognosis after appendectomies. Tumors with the size of 2cm are treated with right hemicolectomy.

Objective: To determine the frequency of carcinoid tumors in appendectomies using histopathological data.

Methods: This was a retrospective study conducted at Ziauddin University Hospital, Nazimabad for a time period of 7 years from March 2005 to December 2012. 2,157 appendectomies were analyzed, out of which 13 appendectomy specimens were diagnosed as carcinoid tumors. Incidental and negative appendectomies were excluded from this study.

Results: 0.60% of the appendectomy specimens were diagnosed as carcinoid tumors (n=13), male to female ratio was (5.5:1), 77% (n=10) of the tumors were up to 1 cm in size and 23% (n=3) of the tumors were of 1.5 cm in size. Majority of the tumors (n=9) had well differentiated cell types. 77% of the tumors were localized to the tip of the appendix, 15% of the tumors spread locally to the distal half of the appendix and 8% spread to the mesentery.

Conclusion: Carcinoid tumors of the appendix, mostly present as appendicitis in early stage. While 90% of the cases show excellent prognosis with appendectomy, 10% of the cases might need further management.

KEY WORDS: *Carcinoid Tumors, Appendix, Appendicitis, Appendectomy, Right Hemicolectomy.*

Cite as: Memon I, Moorpani K, Shafiq-ur-Rehman. Carcinoid Tumors: An ignored cause of appendicitis. Pak J Med Dent 2014; 3(2):3-6.

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INTRODUCTION

The appendix is the most common sight for carcinoid tumors to present.[1] Most of the carcinoid tumors of appendix present as appendicitis.zx[2] Approximately 60% of the all appendix tumors are carcinoid tumors[3]; carcinoid tumors are slow growing tumors[4], majority of these are discovered during the procedure or after histopathological examination.[5] Approximately 90% of appendiceal carcinoid tumors are not located at the base measuring smaller than 1 cm, and have an excellent prognosis after appendectomies.[6,7] Carcinoid tumors of more than 2 cm are treated with right hemicolectomy since these can spread and become metastatic.[8] The incidence of appendiceal carcinoid tumors accounts for 0.3-0.9% worldwide[9], however, the incidence in Pakistan is yet not determined due to insufficient data.

Carcinoid tumor of the appendix is one of the rare causes of appendicitis[9,10] which effects its correct diagnosis. The aim and outcome of this research will help in selecting the right approach towards management of appendicitis presenting due to rare causes.

METHODOLOGY

This retrospective study was done at Ziauddin University, Nazimabad for a period of 7 years from March 2005 till Dec 2012.The sample was selected at a CI of 95% and precision value of 0.05. The cases were diagnosed clinically by history and examination, with supportive investigations of CBC, CRP, ultrasound and CT scan. Incidental and negative appendectomies were excluded from the study. Histopathological data of 2,157 appendectomies was taken, out of which appendectomies with carcinoid tumor findings were selected. The data was analyzed for sex, age, the stage of the tumor, its local spread, and the curative surgical approach. Microsoft Excel v.2010 was used for analysis. The statistical T-test was used to determine the corresponding p value:

RESULTS

A total of 0.60% (13) cases of carcinoid tumors were diagnosed out of 2,157 appendectomies. The gender ratio showed high male dominance with 11 males and 2 females (5.5:1) diagnosed for carcinoid tumors. The ages ranged from 12 years to 54 years with a mean age of 30.5 years. 77% (10) of the tumors were up to 1 cm in size and 23% (3) of the tumors were of 1.5 cm in size (Figure 1).

Figure 1: The Prevalent Size of Carcinoid Tumor

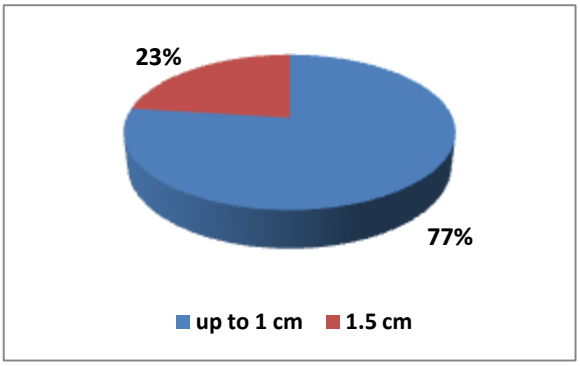
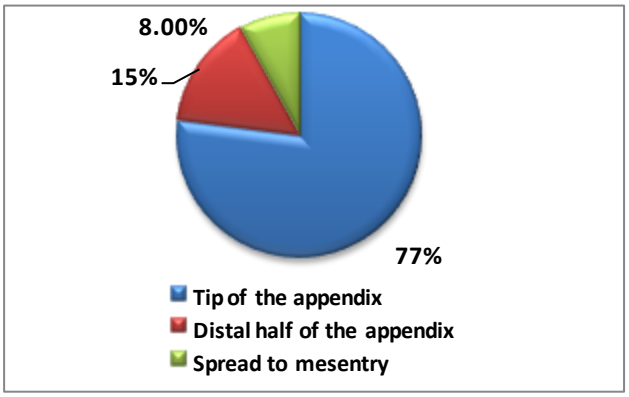
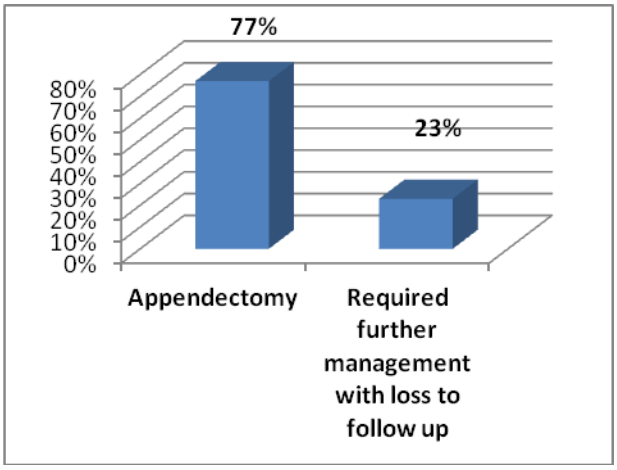


Figure 2: Spread of Prevalent Carcinoid Tumor



Majority of the tumors (9) had well differentiated cell types. 77% (10) of the tumors were localized to the tip of the appendix, 15% (2) of the tumors spread locally to the distal half of the appendix and 8% (1) spread to the mesentery (Figure 2). 77% of the cases had curative appendectomy performed, 23% (3) of the cases needed further management but could not be followed up (Figure 3). All tumors were sensitive to chromogranin and synaptophysin. The P value <0.05 was found as significant.

Figure 3: Curative Procedures for Removal of Carcinoid Tumor (n=13)



DISCUSSION

Tumors of appendix are extremely rare. Majority of these tumors often go undiagnosed since they rarely produce detectable symptoms.[3] Appendiceal tumors can present as carcinoid tumors, adenocarcinomas, lymphomas, cystadenocarcinomas, mucocele and adenocarcinoid tumors (Goblet cell tumor).[18] Goblet cell tumors are rare variants of carcinoid tumors which are aggressive with high metastatic potential. Goblet cell tumors are symptomatic with mixed exocrine and endocrine features.[6] It usually presents with a grossly inflamed appendix in ages 50 years and above.[19] Carcinoid tumors are the most common form of appendiceal tumors; these tumors are classified as slow growing and asymptomatic neuroendocrine tumors.[10] Most of the carcinoid tumors that measure less than 1 cm are considered benign (90% of the cases); once removed these tumors do not grow back. This observation has been made in the latter part of the discussion where appendectomy was the treatment of choice for tumors sized up to 1 cm. This study was conducted to highlight the prevalence of carcinoid tumor of appendix using retrospective histopathological data. The prevalence of carcinoid tumor in patients with appendicitis was 0.60% which falls in the range discussed in the literature[11], our data results show a high male dominance, 11 males were diagnosed with low grade carcinoid tumors of appendix, which is unusual.[1,11] as the literature states either female dominance[5,6,7,8] or no correlation with gender.[12] Such variability can be attributed to the limited data series in literature[1,11]. The mean age of 30.5 years as per the study conducted for carcinoid tumor is also lower than those presented in the findings by K. H. In't Hof where the mean age was 32.5 years[11]. Carcinoid tumors up to 1 cm in diameter are cured by appendectomy; these tumors are most likely to be located at the tip of appendix which makes appendectomy a necessary curative procedure[10]. For tumors between 1 to 2 cm curative procedures can require right hemicolectomy with adjuvant chemotherapy[13]. The approach depends on the site and the grading of the tumor[10,12]. If the tumor is at the base of the appendix with the involvement of mesentery, ileocecal resection may be required. Right hemicolectomy with adjuvant chemotherapy is only considered if the tumor cells are poorly differentiated, or if resection margins cannot be determined.

In our data 23% patients (3) had 1.5 cm tumor situated in the distal half of appendix and the mesentery, due to which they required further management. However, these cases could not be managed since they were lost to poor follow up. This is fairly common in Pakistan with its high rate of loss to follow up owing to socioeconomic reasons[14]. Chromogranin A or parathyroid secretory protein 1 (gene name CHGA) is a member of the granin family of neuroendocrine secretory proteins[15], a highly sensitive marker for carcinoid tumor of appendix[16]. Synaptophysin is an integral membrane glycoprotein (Mr 38,000) that occurs in presynaptic vesicles of neurons and in similar vesicles of the adrenal medulla. This similar protein is also expressed in neuroendocrine tumors [17].

Histopathological examination is still not a routine practice in many parts of Pakistan. Carcinoid tumors of appendix, regardless of rarity, need to be investigated properly to ensure their treatment and management is appropriately approached. It is recommended that routine histopathological examination should be made a necessity post appendectomies.

CONCLUSION

The data regarding carcinoid tumors shows that majority of the cases present in the initial stages with a positive prognosis. However, carcinoid

tumors of appendix can only be diagnosed after a detailed histopathological examination, so routine histopathology examination is important. This practice should be kept in check along with follow ups of the patients with carcinoid tumors. Pakistan faces a critical issue pertaining to lack of follow-up of patients which hinders the ability to calculate prevalence or outcome of a disease.

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