Correlation of Imaging Characteristics with Appendiceal Neoplasms

Franklin A. Valdera, Patrick M. McCarthy, Todd R. Smolinsky, Alex M. Clem, Katryna Thomas, Spencer Van Decar, Elizabeth L. Carpenter, Ankur Tiwari, Alex J. Myers , Woo S. Do, Constance L. Joel, Timothy J. Vreeland, Alex Stojadinovic, George E. Peoples, Guy T. Clifton
Department of General Surgery, Brooke Army Medical Center, Fort Sam Houston, TX

INTRODUCTION

There are imaging criteria defining a normal appendix, but guidance as to what specific incidental radiologic abnormalities should be considered an indication for elective appendectomy is lacking. This study sought to characterize imaging qualities related to appendiceal neoplasms.

METHODS

Retrospective chart review of 5 academic military institutions from January 2005-June 2017 of all patients taken for elective appendectomy after abnormal imaging findings were noted. All underwent open/laparoscopic appendectomy. Those taken for suspected acute appendicitis or who underwent incidental appendectomy during another primary operation were excluded. Pathologic diagnoses were divided into neoplastic or benign groups. Appendiceal diameter, other appendix characteristics, and demographic correlations were compared using chi square or Fisher exact testing.

Table 1. Abnormal imaging findings of all patients

		Benign (n-28)	Neoplasm (n=21)
Imaging Features	Appendicolith	7	0
	Dilated (>10mm)	14	13
	Free Fluid	1	0
	Appendiceal/ Cecal Mass	5	8
	PET Avid	1	0

Table 2. Benign and Neoplastic diagnoses on final pathology

Benign (n=28)	Neoplasm (n=21)
Retention mucocele	Low-grade appendiceal mucinous neoplasm (12)
Lymhpoid hyperplasia (2)	Sessile serrated adenoma
Acute appendicitis (7)	Invasive adenocarcinoma
Fibrous obliteration of lumen (3)	Mucinous cystadenoma (5)
Chronic appendicitis (3)	Low grade neuroendocrine tumor
Benign appendix (4)	Well differentiated neuroendocrine tumor
Benign mucocele (4)	
Intraluminal lipoma	
Intraluminal actinomycosis	
Dilated appendix with fecalith (2)	

RESULTS

A total of 49 pts were included with an overall neoplasm rate of 43% (21/49). These included mucinous neoplasm (17), adenocarcinoma (1), adenoma (1), and neuroendocrine tumor (2). Median age was 47 years old (20-84), and 65% (32/49) were male. Age and gender were not associated with increased rates of appendiceal neoplasm (p=0.23, p=0.80, respectively). In pts under 50 years old with appendices dilation ≥10mm the rate of appendiceal neoplasm was 56% (9/16), while the rate of neoplasm decreased to 0% (0/8) in pts under 50 years old when appendiceal dilation was < 10mm. Preoperative report of a solid or cystic mass was found in 27% (13/49) and associated with a neoplasm rate of 62% (8/13).. Appendicoliths were present in 14% (7/49) of pts with no neoplasms associated, p=0.007.

CONCLUSIONS

There is a high rate of neoplasm in elective appendectomy for imaging abnormalities. Certain groups, such as <10mm appendix in patients under 50 years of age, or presence of an appendicolith, are associated with low rates of neoplasm. Prospective studies will help confirm that these are groups that can observed without surgery.

The view(s) expressed herein are those of the author(s) and do not reflect the official policy or position of Brooke Army Medical Center, the US Army Medical Department, the Department of the Army, Department of the Air Force, Department of Defense, or the US Government. This is an IRB exempt Quality Improvement project. All authors have consented for publication and attest their significant contributions to this work. The authors have no conflicts of interest. The authors have no financial disclosures