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A Spectrum of Low-Grade Appendiceal Mucinous Neoplasms (LAMNs): A Case Series from a Tertiary Care Centre

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Abstract: ***Background*: Low-grade appendiceal mucinous neoplasms (LAMNs) are rare, enigmatic tumors that often mimic acute appendicitis or adnexal masses due to their nonspecific presentation.[1] Early and accurate diagnosis is crucial for preventing complications like pseudomyxoma peritonei. *Objectives*: To present a case series of three LAMN cases diagnosed within a year, highlighting their varied clinical, radiological, and histopathological spectrum. *Methods*: This retrospective study includes three patients who underwent appendicectomy or right hemicolectomy following clinical suspicion of appendiceal pathology. Imaging and histopathology were reviewed. *Results*: All patients presented with right lower quadrant abdominal pain. Radiology suggested mucocele of the appendix in two cases. Gross examination revealed enlarged appendix with mucinous content. Histology confirmed LAMN with extracellular mucin and varying degrees of wall invasion. One case showed mucin pools extending to the serosa. Immunohistochemistry was supportive (SATB2 and CK20 positive, variable CK7). *Conclusion*: LAMNs are rare and often underdiagnosed preoperatively. Careful pathological examination is essential for accurate diagnosis and optimal surgical management.***

Keywords: LAMN, Appendix Tumor, Mucocele, Pseudomyxoma Peritonei

1. Introduction

Low-grade appendiceal mucinous neoplasms (LAMNs) represent a rare subset of epithelial tumors of the appendix.[2] Though histologically non-invasive, these tumors have the potential to spread mucinous material throughout the peritoneum, leading to pseudomyxoma peritonei.[3] [4]Appendiceal mucinous neoplasm is commonly misdiagnosed as acute appendicitis, adnexal mass, or retroperitoneal tumors.[5] Due to their indolent nature and overlapping clinical features with appendicitis or gynecological pathology, LAMNs are frequently diagnosed incidentally during surgery or histopathology.

2. Case Presentations

Case 1
Patient: 73-year-old male
Symptoms: Right-sided abdominal pain, vomiting
History: Previous TB, recurrent inguinal hernia
Imaging: CECT showed appendiceal mucocele
Surgery: Appendicectomy
Histopathology: LAMN with mucin pools extending into muscularis
IHC: SATB2 and CK20 positive, heterogeneous CK7

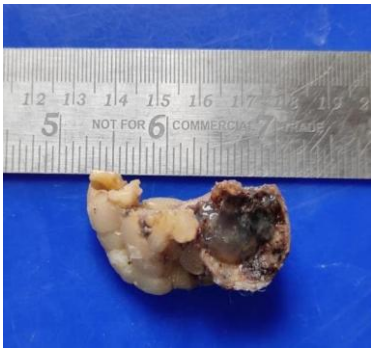

Figure 1: Gross image of enlarged appendix with thickened wall and dilated lumen with mucinous material

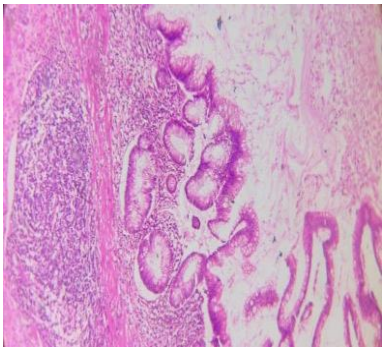

Figure 2: Appendiceal mucosa showing mild architectural complexity

Case 2
Patient: 65-year-old female
Symptoms: Abdominal pain and vomiting

Surgery: Appendicectomy
Histopathology: LAMN with mucin extending into muscle layer.

Figure 3: Appendicectomy specimen with wall thickened and mucinous material in the lumen

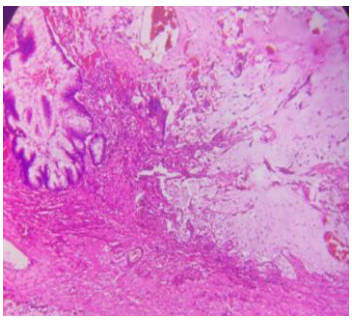

Figure 4: Large pools of mucin in lumen and muscular layer

Case 3
Patient: 58-year-old female
Symptoms: Right lower quadrant pain
Imaging: Mucocele near base of appendix and pericecal lymph nodes
Surgery: Right hemicolectomy
Histopathology: LAMN with mucin extending to serosa

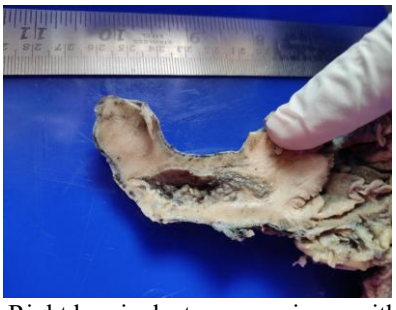

Figure 5: Right hemicolectomy specimen with enlarged appendix with dilated lumen filled with mucinous material

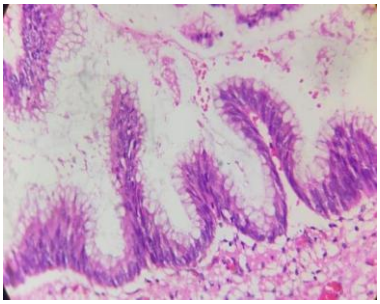

Figure 6: Appendiceal mucosa lined by dysplastic mucinous epithelium

3. Discussion

LAMN is a rare malignancy accounting for 1% of gastrointestinal neoplasms and is found in less than 0.3 % of appendectomy specimens.[6] Although LAMN can often remain asymptomatic and stable, it may eventually give rise to several serious complications.[7] According to the WHO classification of appendiceal tumors, the term low-grade appendiceal mucinous neoplasm (LAMN) refers to low-grade mucinous tumors that show pushing-type invasion. In contrast, the term mucinous adenocarcinoma is applied to high-grade appendiceal tumors or those demonstrating conventional invasive features, such as irregular glandular proliferation with stromal desmoplasia.[8] They are histologically non-invasive but clinically significant due to potential peritoneal spread. Diagnosis is challenging due to overlapping presentation with acute appendicitis. Imaging (especially CT) aids in suspicion, but definitive diagnosis is made by histopathology. In our series, all three patients showed features consistent with LAMN, but varied in terms of mucin spread. Immunohistochemistry further supported diagnosis. The serum tumor markers CEA, CA19–9, and CA125 are frequently obtained on diagnosis of appendiceal mucinous neoplasms and routinely monitored to assess disease remission or progression.[9] If left untreated, Pseudomyxoma peritonei can lead to organ compression and dysfunction, severely affecting the patient's quality of life.[10] Surgical resection remains the mainstay, with extent guided by pathology.

4. Conclusion

Early identification of LAMN is crucial to prevent complications. Pathologists must recognize its subtle defining features. A multidisciplinary approach enhances diagnostic accuracy and patient outcomes.

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