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Histopathology and Histochemistry study of surgically removed appendix of some patients in Misan Governorate, Iraq

Muhanad Mahdi Mohammed[1], Hawrra Jabbar Mohammed [2], Eman Kamil Aati [3]

[1] College of Dentistry, University of Misan, Amarah, Maysan, Iraq.

[2] Department of Biology, College of Sciences, University of Misan, Amarah, Maysan, Iraq.

[3] College of Nursing, University of Misan, Amarah, Maysan, Iraq.

*Corresponding author: Hawrra Jabbar Mohammed,
Email: hawraa.histology@uomisan.edu.iq

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Abstract

This study sheds light on the histopathology structure and histochemistry of the appendix. For a further understanding of the supplement's function. Where (neutrophils) were observed in all the specimens as signs of inflammation. The inflammation extended from the epithelial layer to the muscularis layer.

Furthermore, it showed cells (neutrophils) Ulcerated in the mucosa, Fat necrosis and Atrophy in payer patches in the submucosa layer, and Hypertrophy in smooth muscle with damage for the same layer, The study included 40 samples, they are suffering from appendicitis, whose weights ranged between 45-75 kg, respectively. The study period was from (1/4/2023 to 7/4/2023). Eosin and hematoxylin, a tissue examination approach, and periodic acid Schiff stains, a histochemistry method, are used in this work, as well as show that PAs staining gave a strong reaction in all layers of the appendix, evidence for the presence of neutral carbohydrates such as neutral mucin and glycogen.

Keywords: histopathology, histochemistry, appendicitis

Introduction

During the fifth month of pregnancy, the appendix organ develops, and its mucosa is, with severe lymphoid follicles. Between the ages of 8 and 20, these follicles proliferate **(1)**. The first reported case of an appendiceal tumor was in 1882(**2)**.

The appendix's length can vary, with an average of 9 cm and a range of 5 to 35 cm (**3)**. There has long been disagreement on the appendix's purpose. While lymphoid tissue is important in the development of B lymphocytes and the generation of IgA antibodies, the neuroendocrine cells in the mucosa generate hormones and amines to support different biological regulatory mechanisms (**2)**.

It is a real diverticulum of the colon, as opposed to an acquired one, and it comprises all the intestinal layers, including the serosa, longitudinal and circular muscularis propria, mucosa, and submucosa. The presence of B and T lymphoid cells in the appendicular mucosa and submucosa is necessary for the histological separation of the appendix from the colon (**4)**.

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Despite the progress made in medicine, appendicitis still poses a hurdle in the operating room. An appendectomy is the most often performed emergency surgical operation. Its widely changeable placement within the abdominal cavity might be perplexing for physicians. For doctors, the location within the abdomen might be confusing (**5**).

Aim of the study: histopathology and histochemical study of the surgically removed appendix.

Materials and Methods

The Department of Life Sciences is where the current study was carried out, Faculty of Science, Misan University. The study period was from (1/4/2023 to 7/4/2023), and the study included 40 samples of adult males only, suffering from appendicitis, whose weights ranged between 45-75 kg, respectively. whose ages ranged between 25-45 years. The sample was taken from Al-Sadr General Hospital. All clinical examinations were performed to ensure that all subjects had appendicitis (**6**). Tissue sections were then treated with two stains and cut to a thickness of 7 micrometers (**6**). Hematoxylin and Eosin were utilized for general histological structural descriptions, Periodic Acid-Schiff (PAS) identification, and measurements of carbohydrates (**6**).

Results

Histopathology study

The results of the current study showed that the Appendix consists of four layers mucosa, submucosa, muscular, and serosa as shown in Figure 1 The inflammation (neutrophils) extended from the epithelial layer to the muscularis layer as shown in Figure 2.

Figure (1) shows layers of appendix (1) mucosa, (2) submucosa, (3) muscularis and (4) serosa. H&E.4X

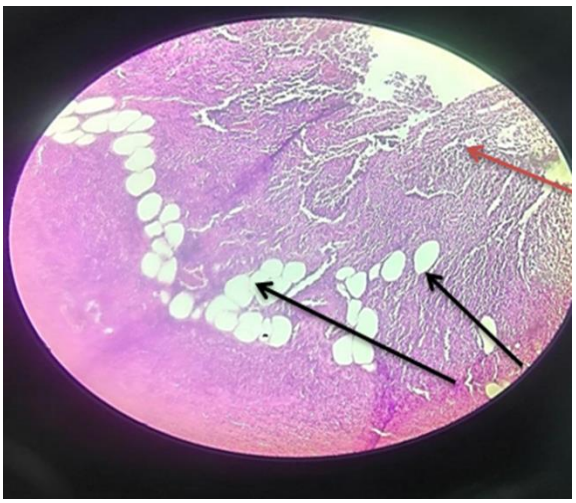

Figure (2) showed (arrow red) Acute inflammation(neutrophils) in the mucosa and (arrow black) Fat necrosis in the submucosa layer. H&E.10X

Histochemical study

The current study showed that PAs staining gave a strong reaction in all layers of the appendix, indicating the presence of neutral mucins and glycogen, and this confirms the presence of cancerous or possibly infective necrosis. As shown in figure 3,4.

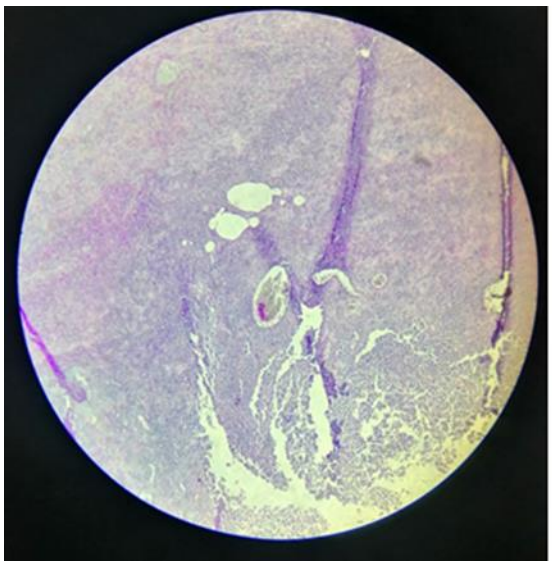

Figure (3) show that PAs staining gave a strong reaction in all layers of appendix. PAs.10X

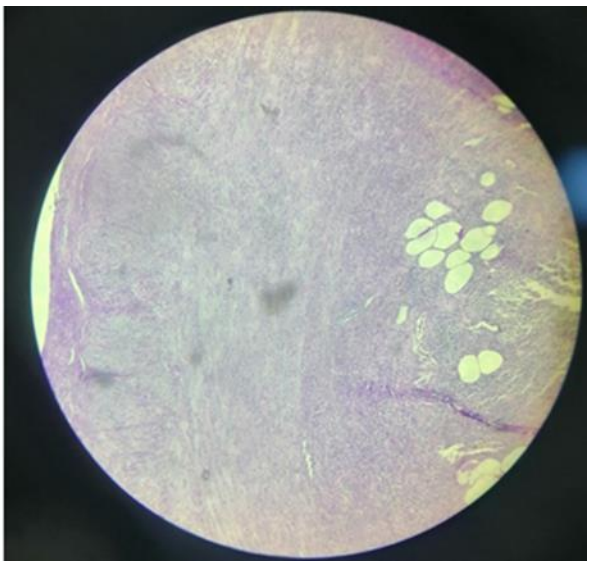

Figure (4) show that PAs staining gave a strong reaction in all layers of appendix. Pas. 10X

Discussion

Surgery-related acute appendicitis is a frequent illness (**7,8,9)** found that all patients had clinical symptoms. From appendicitis. With 1%–2% of all surgical operations performed, appendices are the most performed emergency surgical treatment (10). Although acute appendicitis can strike anybody at any age, it most frequently does so in the younger age range of 10 to 20 years (**11)**. Even though acute appendicitis has been known for over a century, its etiology and pathophysiology are still unknown (**10)**. Intestinal eosinophilia symptoms might appear in patients with appendiceal eosinophilia (**12)**.

Appendectomy is one of the most common acute surgical conditions. Several studies have reported abnormal histopathological findings in appendectomy specimens (**13)**; however, its etiology is thought to be multifactorial, with potential roles for luminal obstruction, diet, and family factors (**14)**. Long thought to be the cause, a luminal blockage is one of the obstructive causes (fecaloid, foreign body, parasite, tumor, or lymphoid follicular hyperplasia) (**15)**. Furthermore, found that patients with complex appendicitis had increased neutrophil invasion in the appendix (**16)**. Nevertheless, it is still unclear whether subepithelial neurosecretory cells cause appendicitis if any relationship exists at all (**17)**. Even yet, most cases of acute appendicitis have a clinical diagnosis.

Potential aggravating factors for complex appendicitis are suggested by the rise in proinflammatory innate cells and the decline in adaptive cells in these patients. Investigating the underlying mechanisms further may reveal novel

biomarkers that distinguish between simple and complex appendicitis.

Conclusion

The appearance of inflammation cells (neutrophils), ulceration of the mucous membrane, fat necrosis and atrophy in impulse spots in the submucosal layer, hyperplasia of smooth muscle with damage, as well as it was found that the staining of protected areas gave strong reactions in all layers of the appendix.

Ethical approval:

The study's ethics approval was obtained from Al-Sadr General Hospital (and participants before enrollment, all participants provided written informed consent.

Conflict of interest:

The authors declare that they have no conflict of interest.

Funding Disclosure: None

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