



SOME HISTOPATHOLOGICAL CHANGES STUDY OF ACUTE APPENDICITIS IN BABYLON PATIENTS.

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ABSTRACT

OBJECTION:

to explore prevalence and histology appearance of appendix diseases in hilla city.

Conclusion:

the study of 50 cases of acute appendicitis from AL-Hilla Teaching Hospital, Babylon, Iraq, from January to march 2024 , show the histopathological change (shows the mucosa glands was destroyed) and also higher prevalence in female and young age patient

I KEYWORDS: APPENDICITIS , PREVALENCE, , GENDER, HISTOPATHOLOGIC

INTRODUCTION :

Appendix, in anatomy, a vestigial hollow tube that is closed at one end and is attached at the other end to the cecum, a pouchlike beginning of the large intestine into which the small intestine empties its contents. It is not clear whether the appendix serves any useful purpose in humans. Suspected functions include housing and cultivating beneficial gut flora that can repopulate the digestive system following an illness that wipes out normal populations of these flora; providing a site for the production of endocrine cells in the fetus that produce molecules important in regulating homeostasis; and serving a possible role in immune function during the first three decades of life by exposing leukocytes (white blood cells) to antigens in the gastrointestinal tract, thereby stimulating antibody production that may help modulate immune reactions in the gut. While the specific functions of the human appendix remain unclear, there is general agreement among scientists that the appendix is gradually disappearing from the human species over evolutionary time. Blockage of the appendix can lead to appendicitis, a painful and potentially dangerous inflammation.

The appendix is usually 8 to 10 cm (3 to 4 inches) long and less than 1.3 cm (0.5 inch) wide. The cavity of the appendix is much narrower where it joins the cecum than it is at its closed end. The appendix has muscular walls that are ordinarily capable of expelling into the cecum the mucous secretions of the appendiceal walls or any of the intestinal contents that have worked their way into the structure. If anything blocks the opening of the appendix or prevents it from expelling its contents into the cecum, appendicitis may occur. The most common obstruction in the opening is a fecalith, a hardened piece of fecal matter. Swelling of the lining of the appendiceal walls themselves can also block the opening. When the appendix is prevented from emptying itself, a series of events occurs. Fluids and its own mucous secretions collect in the appendix, leading to edema, swelling, and the distention of the organ. As the distention increases, the blood vessels of the appendix become closed off, which causes the necrosis (death) of appendiceal tissue. Meanwhile, the bacteria normally found in this part of the intestine begin to propagate in the closed-off pocket, worsening the inflammation. The appendix,

weakened by necrosis and subject to increasing pressure from within by the distention, may burst, spilling its contents into the abdominal cavity and infecting the membranes that line the cavity and cover the abdominal organs (*see peritonitis*).

Fortunately, peritonitis is usually prevented by the protective mechanisms of the body. The omentum, a sheet of fatty tissue, often wraps itself around the inflamed appendix, and an exudate that normally develops in the areas of inflammation behaves like glue and seals off the appendix from the surrounding peritoneal cavity.

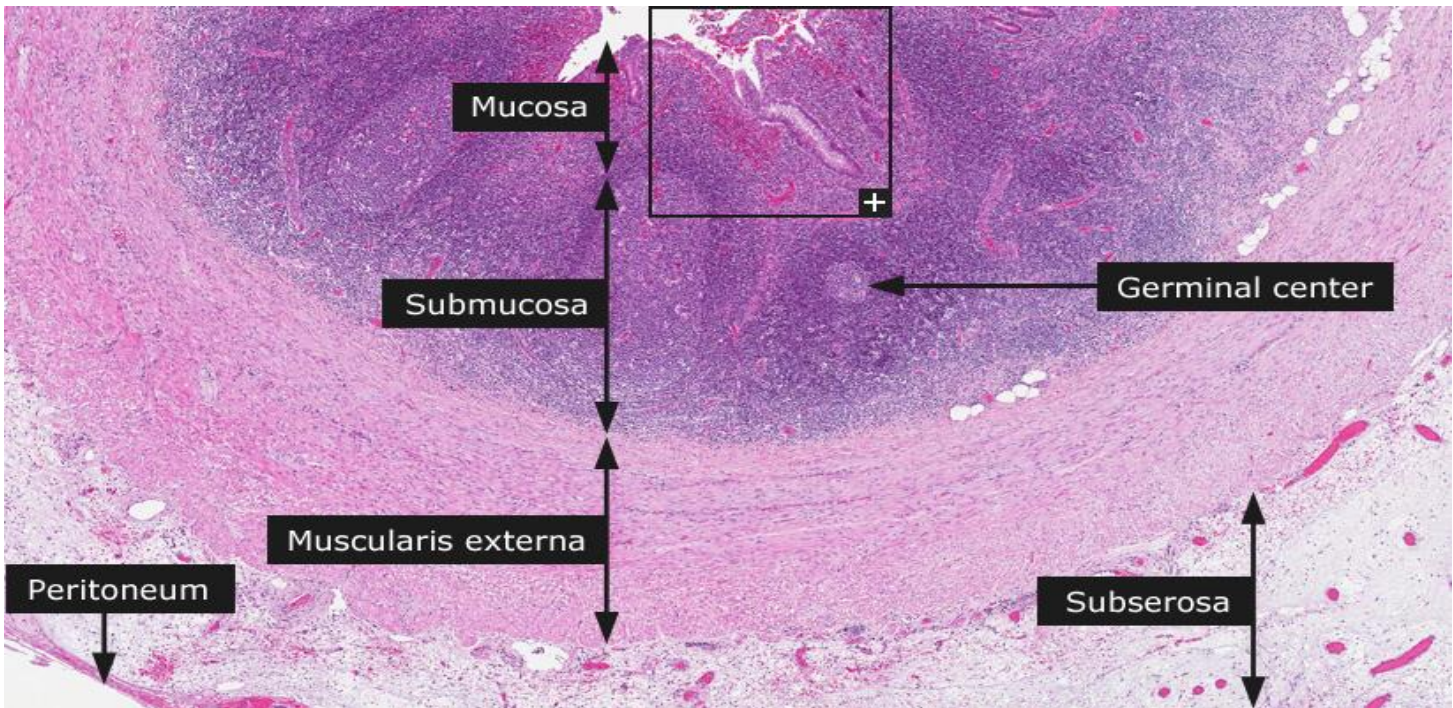
Histology of appendix:

The appendix is connected to the mesentery by a region called the mesoappendix which store fat as well as supply the intestines with blood, lymphatics and nerves.

The inner lining, facing the lumen of the appendix, is covered by a glandular epithelium with intestinal mucus glands that extend into the deeper layers of the mucosa. The glands are lined with epithelial cells (simple columnar epithelium) and a high number of mucin producing goblet cells. Goblet cells are characterized by a large globule of mucus located in the top portion of the cell. The lamina propria typically contains lymphocytes that partly obscure the underlying muscularis mucosae, which separates the mucosa from the submucosa.

The submucosa is almost fully occupied by lymphoid tissue mainly arranged in primary and secondary lymphoid follicles. The lymphoid follicles are recognized by a circular aggregation of densely packed lymphocytes, sometimes surrounded by darkly stained mantle area of lymphocytes. The center of the secondary lymphoid follicles stain lighter and are termed germinal centers. The germinal centers stain darker and contain larger dividing lymphoblasts, similar to the arrangement in lymph nodes. The outer portions of the submucosa harbor larger vessels and have less dense infiltrates of immune cells.

Similar to the colon, an inner circular muscle layer and a thin external longitudinal muscle layer comprise the muscularis externa that encircles the appendix. Outside of the muscular layers there is a serosa containing loose connective tissue, vasculature and nerves. The outermost located peritoneum consists of a thin lining of mesothelial cell. Vasculature and nerves. The outermost located peritoneum consists of a thin lining of mesothelial cell.



Fig(1): Normal Histology of appendix

Most common disease of appendix:

1. Appendicitis: Appendicitis is an inflammation of the appendix. The appendix is a finger-shaped pouch that sticks out from the colon on the lower right side of the belly, also called the abdomen.

Appendicitis causes pain in the lower right abdomen. However, in most people, pain begins around the belly button and then moves. As inflammation worsens, appendicitis pain typically increases and eventually becomes serious. Although anyone can develop appendicitis, most often it occurs in people between the ages of 10 and 30. Treatment of appendicitis is usually antibiotics and surgery to remove the appendix(.3)

2. Appendix cancer : Appendiceal malignancies are a rare group of tumors often found incidentally during surgical removal of the appendix. Histologically, this malignancy accounts for 0.5% to 1% of all biopsy specimens following appendectomies. Clinically, this condition most commonly presents as acute appendicitis due to obstruction of the appendiceal lumen. As it is for all malignancies, early detection is critical as the late diagnosis could lead to much poorer outcomes. This activity seeks to quantify and define appendiceal malignancies. It describes current recommendations

for the evaluation and management of these disease processes. It highlights the role of the interprofessional team in treating patients with these conditions.

Material and Methods:

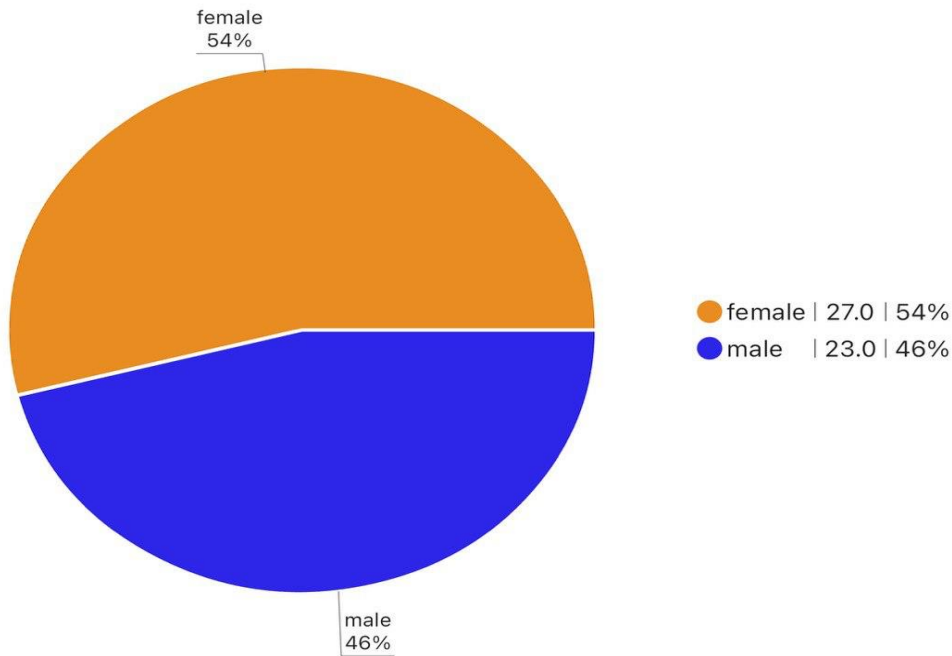
The presented study was conducted in the laboratories of Hila Teaching Hospital, Babylon, Iraq, from January to March 2024. Out of a total of 50 samples, 50 tissue blocks embedded in paraffin wax have been acquired from 50 patients (23 males and 27 females) experiencing acute appendicitis; moreover, pathologic and clinical information was also acquired, including the operation type, gender, age. Sections were obtained with 5 µm-thick from paraffin embedded tissues, these sections were stained by using Haematoxylin and Eosin staining method (Falkeholm et al., 2001) as follows in:

1. Paraffin wax was removed from glass slides by placing in the oven at 58-65 C° temperature for a half hour and placed in xylene (twice) for a half hour to remove all wax.
2. Sections were dried from xylene then rehydration by passing through a series of alcohol from descending concentrations for (2-3 minutes), then placed in tap water for (5 minutes).
3. Sections are placed in Hematoxylin for (10-15) minutes.
4. Sections were washed by tap water (5)minutes.
5. Sections were dipped in acid – alcohol for little seconds to prevent over the stain.
6. Sections were washed by tap water for 5 minutes until return the blue color.
7. Sections are placed in Eosin stain for (10-30) seconds.
8. Sections are washed by tap water.
9. Dehydration from glass slides by passing through series of ascending concentrations of ethanol alcohol for 2-3 minutes for each concentrate.
10. Sections are placed in xylene for half hour.
11. Then, cover specimen by cover slide with histofluid (DPX).

Microscope (Under power magnification 100X and 400X) to assess the histopathological types.

Results :

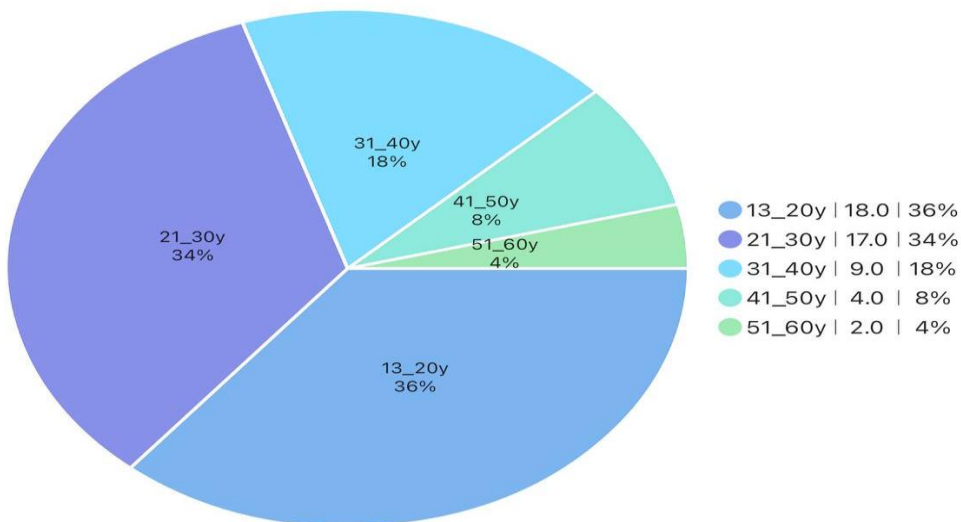
Distribution of appendix cases according to gender :



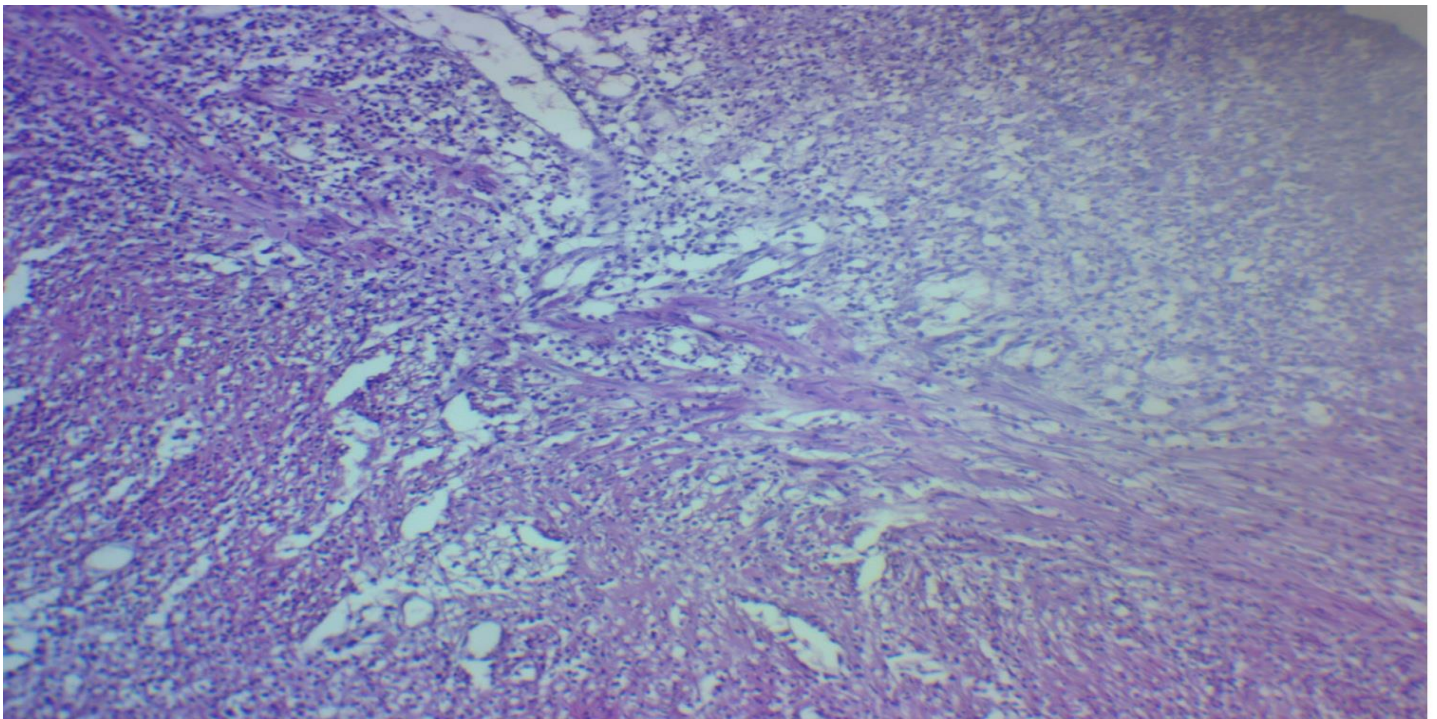
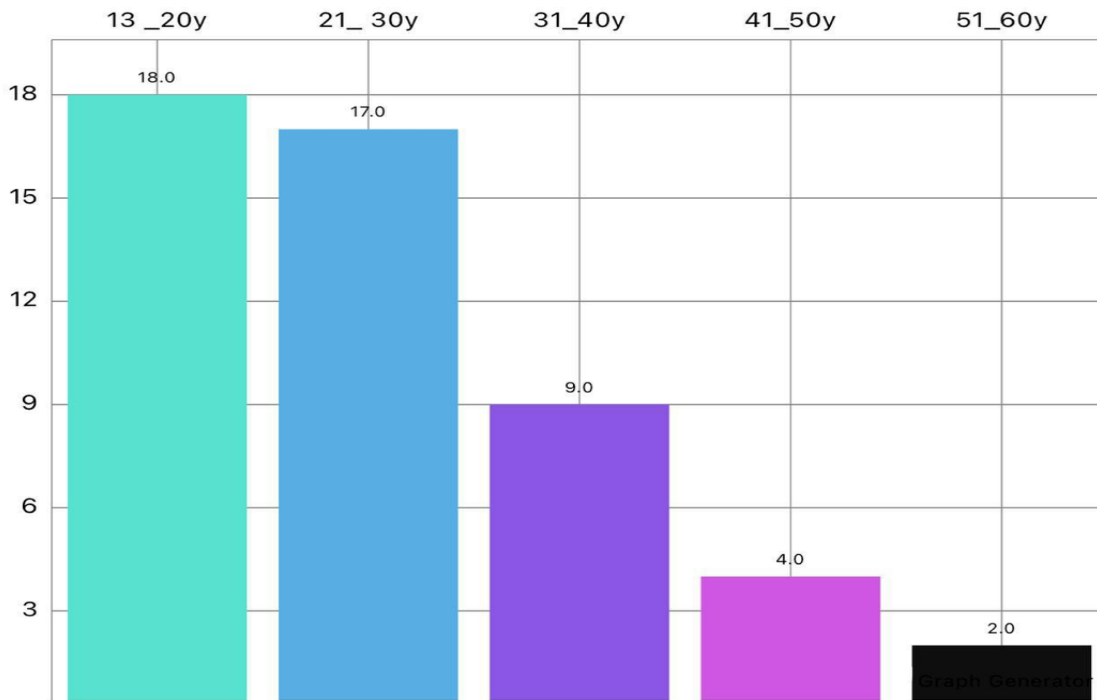
Fig(2) : distribution of cases according to gender

Distribution of appendix disease according to age :

This study was showed the distribution of appendix cases according to age ,



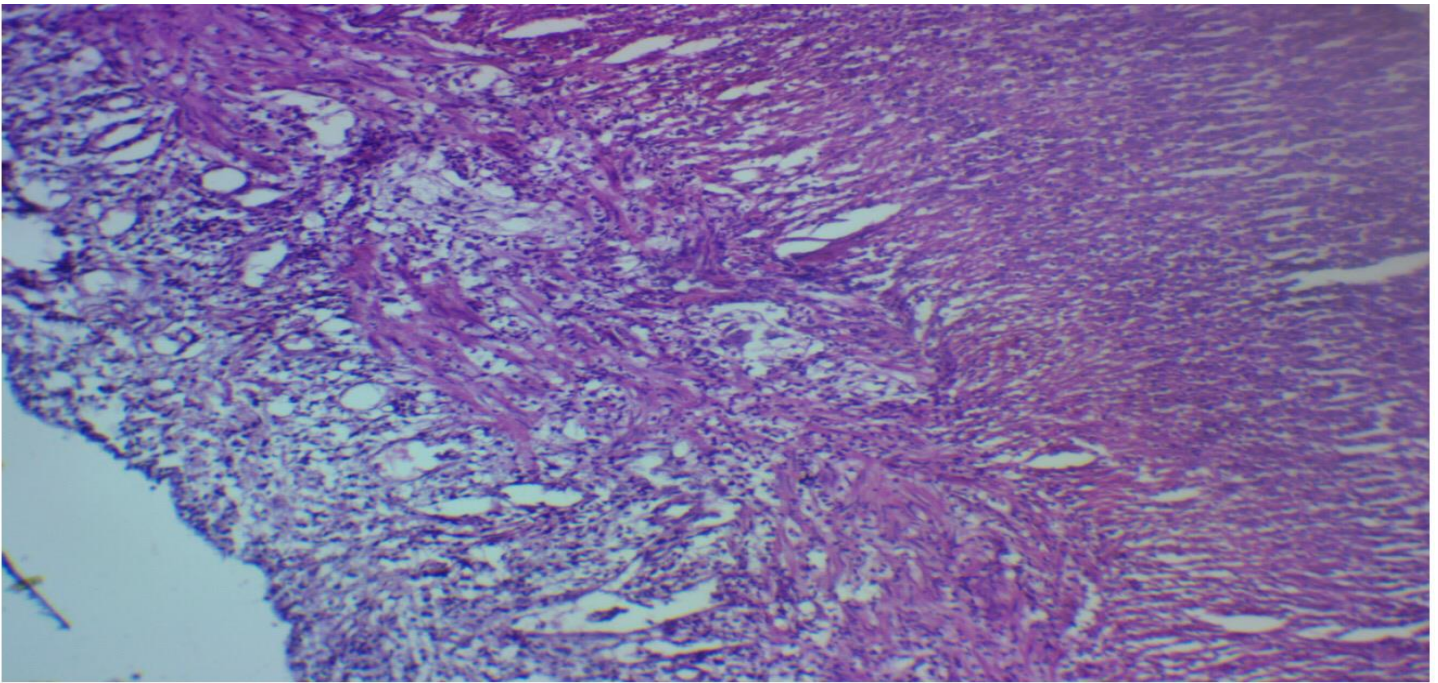
Fig(3): Distribution of cases according to age by pie chart



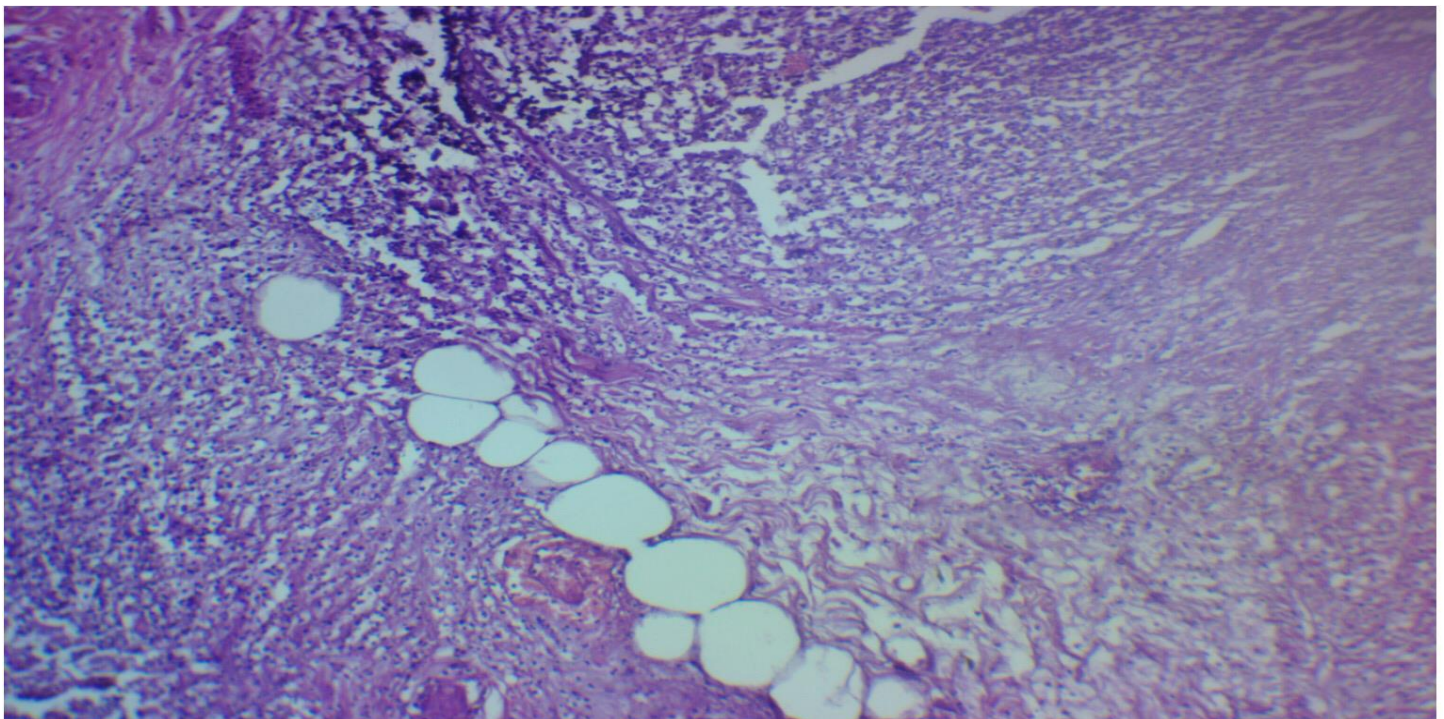
Fig(4): Distribution of cases according to age by bar chart

Fig(5): Unusual histopathologic findings Of acute appendicitis

[hematoxylin and eosin (H&E) ×40]



Fig(6): Unusual histopathologic findings Of acute appendicitis
[hematoxylin and eosin (H&E) ×40]



Fig(7): Unusual histopathologic findings Of acute appendicitis

Discussion:

Patient demography :

Distribution of appendix disease according to gender :

The study show that appendix disease was occurrence in male 46%(23) compared to female 54%(27) due to Ovarian pathologies, dysmenorrhea, and urinary tract infections, which occur more frequently in girls compared with boys, widen the spectrum in the differential diagnosis and may lead to missed diagnosis of appendicitis or misdiagnosis.

But in general term there is slight male preponderance of 3:2 in teenage and adult. While the incidence of primary appendectomy is equal in both sexes.

Distribution of appendix disease according to age

The study show that appendix disease was occurrence according to age **18** cases in **13-20 y**, **17** cases in **21-30 y**, **9** cases in **31-40 y**, **2** cases in **51-60 y** and **2** cases in **51- 60 y**.

Note that appendix diseases are more likely to occur in younger age than adult, it can develop at any age, but it is most common in young people from 10 to 20 years old. For example Appendicitis, Around 40,000 people are admitted to hospital with appendicitis each year in England. It's estimated that around one in every 13 people will develop it at some point in their life.

Histopathological study :

In the present study the histopathological changes observed in appendix were presence of extravascular polymorphs in the epithelium, lamina propria, or muscular layers was the main diagnostic feature of acute inflammation (Figure 5). The wall of appendix, was clearly visible and the mucosa was largely destroyed (figure 6), and there was extensive neutrophil infiltrate extending throughout the submucosa and into the

muscularis externa. The was seen in all specimens. The glands of appendix was largely affected, and shows the mucosa glands was destroyed and pus present at the base of the gland and with only few remnant of glands in the figure(7)

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