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Effect of histological parameters of appendicitis and related with age and sex

Samiea Mojbel Hamad

AL-Anbar University- College of Medicine

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Abstract: Acute appendicitis is the most common acute surgical condition of the abdomen. The most important step for appendicitis is the obstruction the eppeniceal lumen. Our study was aimed to study the histological parameter associated with appendicitis. This study was included 55 of appendix specimens, which were resects. These samples were collected from teaching Ramadi hospital. Gross examination for diameter of lumen and thickness of mucosa was performed and then the samples were fixed in 10% formalin for histological examination. The relation of age and sex with appendicitis was studied in this work. This study was recorded increase in thickness of mucosa(Mean=1.4mm) and decrease in diameter of lumen(Mean=1mm). increase incidence of appendicitis between males and females(50.9/49%).The age of the patients ranged from (8-45)years with mean (21.4).Histological study was revealed increase infiltration of white blood cell within muscularis mucosa. Congestion, destruction of mucosa, hyperplasia of lymph nodules, obstruction of lumen with found some of worm such as Enterobious vermicularis within lumen. From these results we found the ratio of incidence of appendicitis increase in males than females and ensured that by increase the histological parameters and pathological changes compare with normal.

Key words : Histology, appendicitis, sex, age.

Introduction:

Appendicitis is the second most common cause of surgical abdominal disease in late adulthood(1) and it is the most common surgical cause of abdominal pain worldwide2,3. The aetiology and pathogenesis, the most common abdominal emergency, is not known4.according to the most favored theory, appendicitis is caused by mechanical obstruction of the appendix lumen, either because of faecal stasis, kinking, peritoneal adhesions or infection induced swelling of the mural lymphoid tissue. Other possible mechanisms include a breakdown of the mucosal barrier in the appendix by the direct invasion of a pathogen, or by an inflammatory response that has been triggered by an infectious agent or some other stimulus. Geographical differences in the incidence of appendicitis and secular trends have been related to differences and changes in dietary intake of fiber and in standards of hygiene5,6. The incidence of appendicitis varies substantially by country, race, sex, age and seasonal variation7. The predisposing factors to appendicitis are thought to be multifactorial, ranging from dietary, age, gender, viral and bacterial infections8.The increasing number of

fast food restaurants where mainly high-carbohydrate, low-fiber diets, congest sweets are served could have contributed to the increase in the incidence, and large consumption of sweet and sugary diet has been implicated by some authors9,10

Materials and methods:

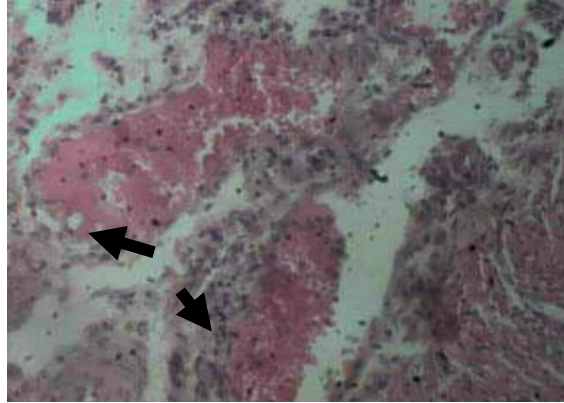
Our study consisted of 55(28 males, 27 females) appendix samples were get by appendectomy for different ages of patients were admitted to teaching Ramadi hospital. The age of patients was ranged about(8-45)years with mean of(21.4). In gross examination, the diameter of organ lumen and thickness of its wall were calculated. Resected specimens were fixed with 10% formalin and then pass throw serial processing end by embedding in paraffin wax. Serial sections 4µm in thickness slices were obtained, stain with hematoxline and eosin and examined microscopically. Thickness of muscularis externa and diameter of lymph nodules were measured for each sample.

Results:

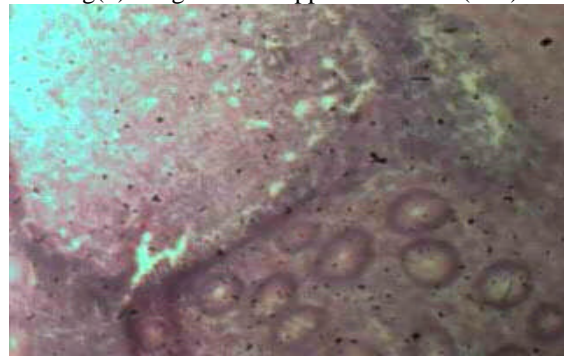
The mean of lumen diameter is(0.6mm), and the wall thickness (1.2mm). Histological parameters under microscope was revealed increase in thickness of muscularis at

mean(0.06mm) (0.061mm/0.054mm male/female) and the diameter of lymph nodules at mean (0.035mm)(0.06mm/0.043mm male/female). Histological examination was recorded congestion within tissues fig (1), hyperplasia of lymph nodules fig(2),

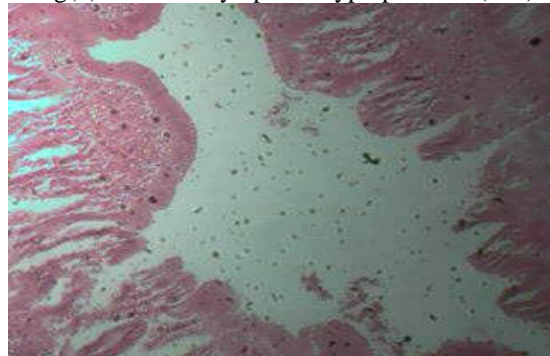
obstruction of lumen with destruction of mucosa fig(3), increase infiltration of white blood cells within sub mucosa and muscularis fig(4) and accumulation of worm (Enterobius vermicularis) within lumen fig (5)



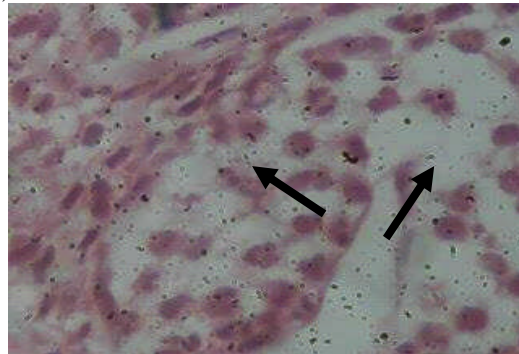
Fig(1) congestion in appendix tissue. (30x)



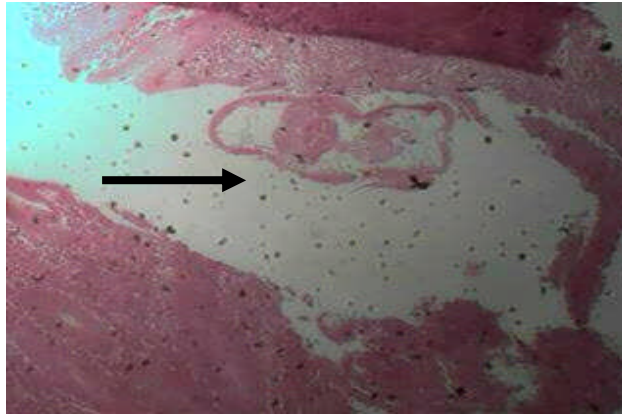
Fig(2) Show the lymphoid hyperplasia. (30x)



Fig(3) obstruction of lumen and destruction of mucosa.(30x)



Fig(4)infiltration of white blood cell (neutrophil). (120x)



Fig(5) Presence of worm within lumen of appendix. (75x)

Discussion:

Our study was revealed increase incidence of appendicitis between males compare with females, that may related with female sex hormones has been proposed because of lower incidence among women and incidence variations during the menstrual cycle¹¹ Anderson and lamb were found inverse relation between pregnancy and appendicitis, this suggests that pregnancy protects against appendicitis, especially in the third trimester. During pregnancy a range of physiological changes take place that may influence the pathogenesis of appendicitis¹². Our finding was agree with (oguntola et al; 2010) who reported increase of incidence of appendicitis in males. This due to variation in body physiology between male to female¹³. In our study the mean of age about(21.4)years, that cited by (Omran, et al;2003) who reported that incidence of appendicitis is generally a disease of young age¹⁴. (Lee, et al;1962) was reported in his study the incidence outcome of appendicitis are related to age in young people. It has been suggested that the peak in the development of lymphoid tissue which occurs during adolescence leads to an increased liability of the appendix to obstruct, and so accounts for the high incidence of the disease. This may be compared with the steady trend towards earlier physical maturity in children and adolescents¹⁵. obstruction of the appendiceal lumen seems to be essential for development of appendiceal infection, gangrene and perforation. This obstruction occurs due to mucosal inflammation and lymphoid hyperplasia, once obstruction occurs, continued mucus secretion and increase intraluminal pressure, which obstructs lymphatic drainage and edema, mucosal ulceration and may cause venous obstruction, finally ischaemic necrosis of appendix wall

produces gangrenous appendicitis¹⁶. In our study show lymphoid hyperplasia Fig(2) with increase in lymph nodules diameter. These lead to obstruction. The more common unusual finding in appendectomy specimens are intestinal worm Fig(3). This finding agree with Polat, et al who founded the appendicitis may be due to some parasitic infestation as well¹⁷ and increase in the incidence of bacterial and viral infections (causing lymphoid hyperplasia and appendix lumen obstruction)¹⁸. Our study was revealed increase in wall thickness of appendix grossly and narrow lumen Fig(4), with increase in thickness of muscularis mucosa with infiltration of white blood cells was very visible Fig(5). This finding agree with Aravindan¹⁹ and Ciani, et al²⁰, they recorded infiltrate of eosinophil and lymphocyte in the muscularis mucosa and sub mucosa.

There is increase incidence of appendicitis influence by age and sex. We show increase incidence in males than female and there are several causative agents of appendicitis such as worm, bacterial and viral infection all these agents lead to histological changes in appendix tissue with infiltrate of white blood cells which represent a regression phase of acute appendicitis.

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دراسة نسجية لالتهاب الزائدة الدودية وعلاقتها بالجنس والعمر

سميحة مجبل حمد

Email: scianb@yahoo.com

الخلاصة

تضمنت الدراسة جمع عينات الزائدة الدودية التي تم استئصالها من ٥٥ مريض دخلوا مستشفى الرمادي التعليمي تتراوح اعمارهم بين (٨-٤٥) سنة بمعدل ٢١.٤ وكانت نسبة الذكور الى الاناث (٤٩-٥٠.٩) % ، تم قياس قطر العينات وسمك الجدار عيانيا ثم حفظت العينات في محلول ١٠% فورمالين ، بعدها تم تحضير المقاطع النسجية وصبغت بالايوسين والهيمااتوكسولين . اظهر الفحص المجهرى تضيق في قطر العضو مع زيادة في سمك الجدار العضلي الداخلي و تهتك في الطبقة الظهارية كما تبين تضخم وزيادة في قطر العقيدات للمفاوية بالاضافة الى تجمع كريات الدم البيض ضمن النسيج العضلي الداخلي وظهور اكياس لبعض الديدان في الفسحة الداخلية للزائدة الدودية وتعزى هذه التغيرات الى اصابات بكتيرية او فايروسية او طفيلية وبعض الاحيان تعزى الى السلوك الغذائي الخاطئ. ويعود قلة حدوث الالتهاب عند النساء الى الاختلاف الفسلجي وتأثير بعض الهرمونات خاصة في فترة الحمل، كما يلاحظ غالبا ازدياد حدوث الاصابة في المراحل الاولية (في عمر المراهقة) لان الجسم يكون في مراحل النمو السريع وتطراً عليه تغيرات فسلجية كثيرة.