GASTROINTESTINAL POLYPS IN DUHOK-IRAQ. A PRACTICAL HISTOPATHOLOGICAL STUDY

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ABSTRACT

Background: To identify the frequency and types of gastrointestinal polyps in Duhok central and private laboratories.

Methods: Gastrointestinal polyp cases received in Duhok central and private laboratories during 11-year period (from 2010 to 2020) were studied, both clinically and pathologically.

Results: A total of 689 (372 non neoplastic and 317 neoplastic) gastrointestinal polyps were reported. Hyperplastic polyps (38.71%) formed the commonest morphologic non neoplastic category followed by fibroepithelial polyps (24.46%), juvenile/retention polyps (20.43%), inflammatory polyps (14.78%), hamartomatous polyps (1.08%) and lastly fundic gland polyps (0.54%). On the other hand, tubular adenoma (93.06%) formed the commonest neoplastic: cases, followed by tubulovillous adenoma (5.36%) with a remaining 1.58% villous adenoma. Both non neoplastic and neoplastic polyps were presented predominantly in the large intestine. Only 7% of neoplastic polyps were found to be associated with adenocarcinoma.

Conclusion: Hyperplastic polyps and tubular adenoma formed the most common non-neoplastic and neoplastic polyps, respectively. The large intestine was the most dominant location. Associated colorectal cancer cases were exclusively associated with the neoplastic polyps.

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Keywords: *Clinicopathological classification, Gastrointestinal polyps, Neoplastic, Non neoplastic.*

Gastrointestinal polyps can be broadly defined as luminal projections above the plane of mucosal surface. They are clinically important and frequently encountered among the routine pathology. Polyps may occur sporadically or as part of polyposis syndromes, such as familial adenomatous polyposis coli (FAP), Peutz–Jeghers syndrome (PJS), juvenile polyposis, Cowden's disease, or others (Oberhuber and Stolte, 2000)[1]. The endoscopic appearance of gastrointestinal polyps is variable, ranging from slightly raised plaques to soft multilobed nodules. They may appear as broad-based or sessile lesions and cannot be distinguished with certainty, on the basis of the endoscopic appearance, non-neoplastic polyps from neoplastic ones which may be the leading cause for malignancy. Therefore, histological examination is essential (Park and Lauwers, 2008)[2].

The present study was undertaken to view information about the relative frequency of different histopathologic types of gastrointestinal tract polyps in Duhok Governorate, North of Iraq, their distribution with regards to location, age and sex.

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MATERIALS AND METHODS

Across sectional analysis was conducted covering data of 11 years (January 2010 to December 2020). This study enrolled 689 endoscopic biopsy cases of morphologically diagnosed gastrointestinal polyps using Hematoxylin and Eosin (H&E) stains. Cases were received in the Departments of Histopathology in Central General Laboratories and Vin Private Laboratories in Duhok-Iraq. Ethical approval was obtained, before conducting the study, from Duhok Directorate of Health regarding the processing of personal data. Data were retrieved from the patients reports. Cases were categorized morphologically according to the latest WHO recommendations; the 5th edition, 2019.

The collecting data were analyzed using Microsoft® Excel version 2013. The descriptive analysis focused on frequencies and percentages. T-test was used to assess the statistical association between study groups; a level of p-value less than 0.05 was considered significant. (Shrestha, J, 2019)[3].

RESULTS

Nonneoplastic polyps (n= 372)

Patient's ages with non-neoplastic polyps (n= 372) ranged from 9 months to 87 years (average: 41) with a significantly higher frequency among patients older than 30 years, p= 0.03 (Table 1).

Table-1. Age distribution of non-neoplastic gastrointestinal polyps.

Polyp Type		Age (%)								Total of Each Polyp Type
		< 1	1 -- 10	11 – 20	21 -- 30	31 -- 40	41 – 50	51 – 60	60 <	
Hyperplastic Polyp	N. (%)	1(0.27%)	1(0.27%)	0(0.00%)	9(2.42%)	24(6.45%)	33(8.87%)	31(8.33%)	45(12.10%)	144(38.71%)
Fibroepithelial Polyp	N. (%)	0(0.00%)	2(0.54%)	8(2.15%)	9(2.42%)	22(5.91%)	23(6.18%)	16(4.30%)	11(2.96%)	91(24.46%)
Inflammatory Polyp	N. (%)	0(0.00%)	3(0.81%)	2(0.54%)	10(2.69%)	10(2.69%)	8(2.15%)	12(3.23%)	10(2.69%)	55(14.78%)
Retention\Juvenile Polyp	N. (%)	0(0.00%)	32(8.60%)	6(1.61%)	10(2.69%)	11(2.96%)	5(1.34%)	7(1.88%)	5(1.34%)	76(20.43%)
Hamartomatous Polyp	N. (%)	0(0.00%)	0(0.00%)	0(0.00%)	2(0.54%)	0(0.00%)	1(0.27%)	0(0.00%)	1(0.27%)	4(1.08%)
Fundic Gland Polyp	N. (%)	0(0.00%)	0(0.00%)	0(0.00%)	1(0.27%)	0(0.00%)	1(0.27%)	0(0.00%)	0(0.00%)	2(0.54%)
Total	N. (%)	1(0.27%)	38(10.22%)	16(4.30%)	41(11.02%)	67(18.01%)	71(19.09%)	66(17.74%)	72(19.35%)	372(100.00%)

Females were slightly more affected (n= 200, 54%) than males (n=172, 46%) with a male to female ratio of 1:1.17. The difference didn't reach the level of significance (P value > 0.05).

Generally, as shown in Table 2, large intestine (n=234, 62.90%) formed the commonest location followed by stomach (n=90, 24.19%), oral cavity (n=40, 10.75%), small intestine (n=6, 1.61%) and lastly esophagus (n=2, 0.54%).

Table 2. Distribution of nonneoplastic Polyps Regarding the Location in the gastrointestinal tract.

Polyp Type		Site (%)					Total of Each Polyp Type
		Oral Cavity	Esophagus	Stomach	Small Intestine	Large Intestine	
Hyperplastic Polyp	**N (%)**	0(0.00%)	1(0.27%)	70(18.82%)	1(0.27%)	72(19.35%)	144(38.71%)
Fibroepithelial Polyp	**N (%)**	39(10.48%)	0(0.00%)	2(0.54%)	0(0.00%)	50(13.44%)	91(24.46%)
Inflammatory Polyp	**N (%)**	1(0.27%)	1(0.27%)	13(3.49%)	3(0.81%)	37(9.95%)	55(14.78%)
Retention\Juvenile Polyp	**N (%)**	0(0.00%)	0(0.00%)	1(0.27%)	1(0.27%)	74(19.89%)	76(20.43%)
Hamartomatous Polyp	**N (%)**	0(0.00%)	0(0.00%)	2(0.54%)	1(0.27%)	1(0.27%)	4(1.08%)
Fundic Gland Polyp	**N (%)**	0(0.00%)	0(0.00%)	2(0.54%)	0(0.00%)	0(0.00%)	2(0.54%)
<	**N (%)**	40(10.75%)	2(0.54%)	90(24.19%)	6(1.61%)	234(62.90%)	372(100.00%)

Microscopically, hyperplastic polyps (n=144, 38.71%) formed the commonest morphologic category, 2 of which were shown to have dysplastic changes. The second type included fibroepithelial polyps (n=91, 24.46%), followed by retention\juvenile polyps (n=76, 20.43%), inflammatory polyps (n=55, 14.78%), hamartomatous polyps (n=4, 1.08%) and fundic gland polyps (n=2, 0.54%). Individually, retention/juvenile and hamartomatous polyps showed an equal sex distribution, fundic gland polyps were found only in females whereas the remainders showed no significant sex distribution (Figure 1). The difference did not reach the level of significance (p value > 0.05).

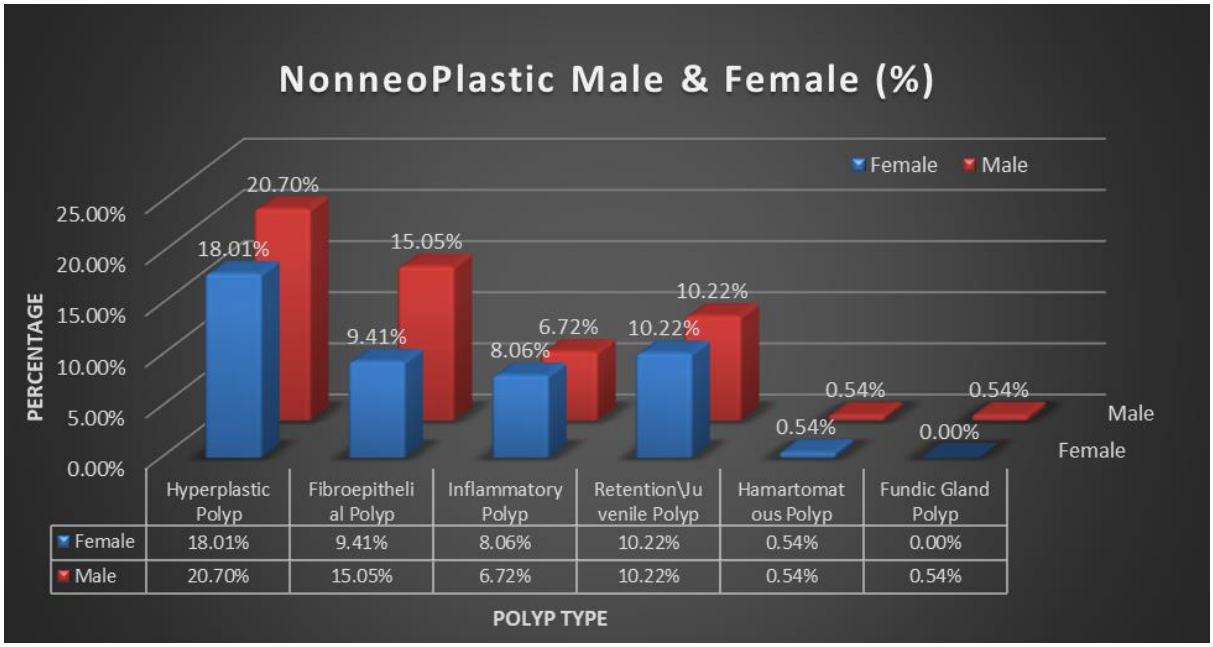

Figure-1. Nonneoplastic gastrointestinal polyps and sex distribution.

Figures (2-8) show the morphologic (H&E-stained) features of nonneoplastic gastrointestinal polyps described in the current study.

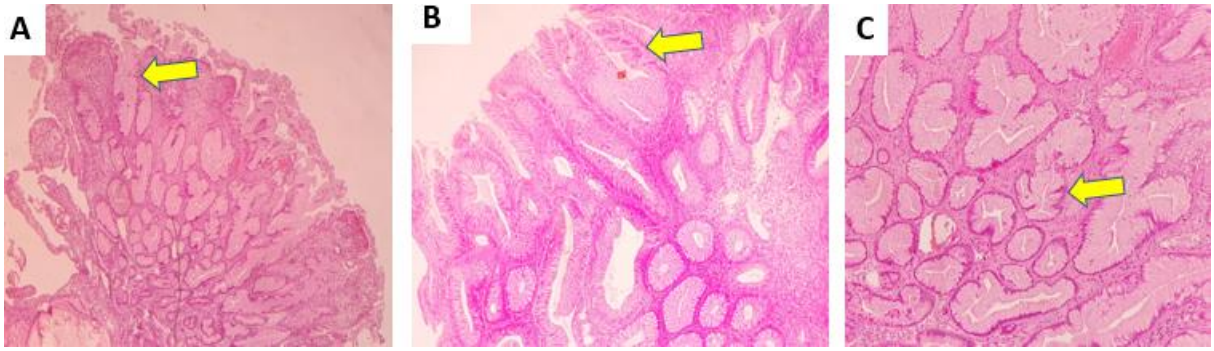

Figure 2. Hyperplastic polyp showing dilated, tortuous and serrated hyperplastic glands (arrows) set within inflamed stroma and covered by proliferated surface epithelium without atypia (A, X100; B and C, X200).

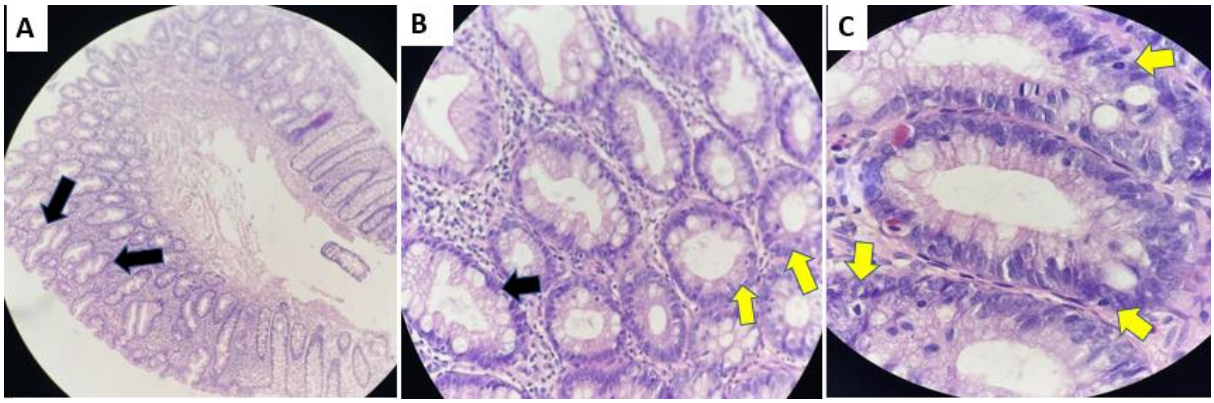

Figure 3. Hyperplastic polyp showing superficial nonneoplastic serrated glands (black arrows) and deep dysplastic glands with a prominent mitotic activity (yellow arrows), (A, X100; B, X200; C, X400).

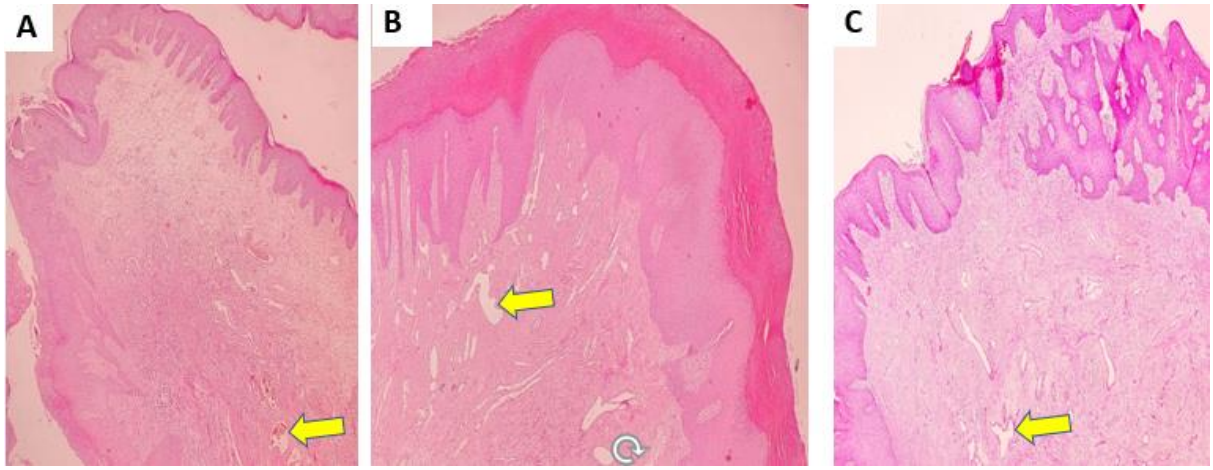

Figure 4. Fibroepithelial polyps covered by hyperplastic squamous epithelium with underlying dilated blood vessels (arrows) within variably inflamed, edematous connective tissue (A, X100; B and C, X200).

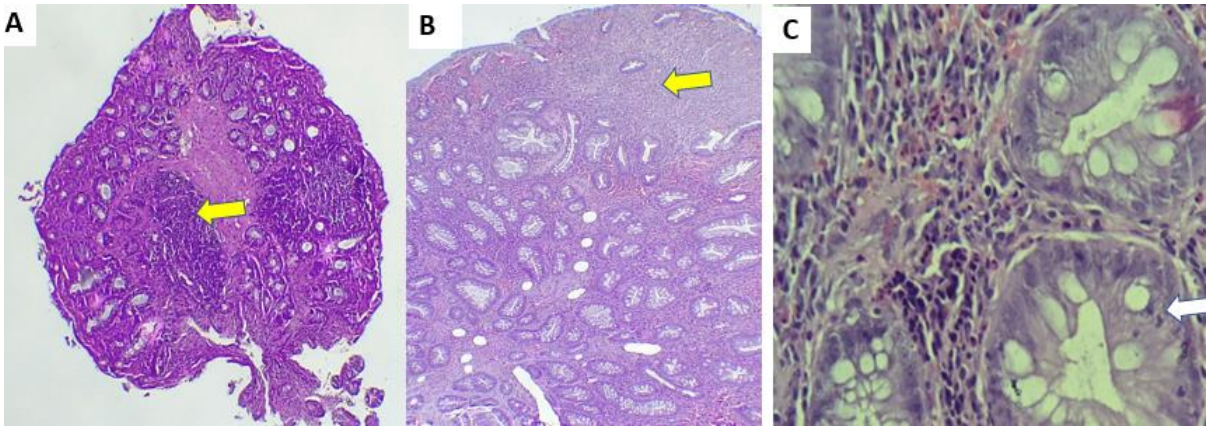

Figure 5. Inflammatory polyps consisting of normal looking colonic mucosa. The increased inflammation causes expanded lamina propria (yellow arrows) and cryptitis (white arrow) (A, X100; B, X200; C, X400).

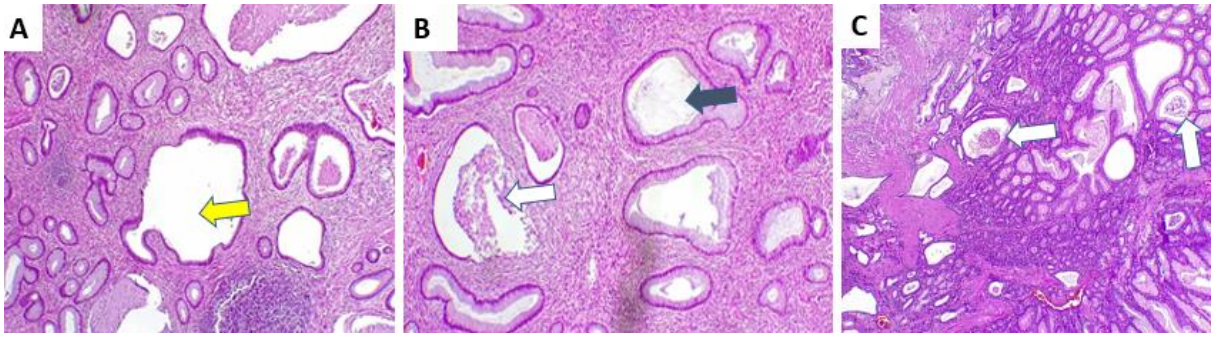

Figure 6. Retention/Juvenile polyps showing cystically dilated glands (yellow arrow) filled with mucus (black arrow) and inspissated inflammatory debris (white arrows). The glands are separated by expanded edematous lamina propria containing inflammatory cells (A, B and C, X200).

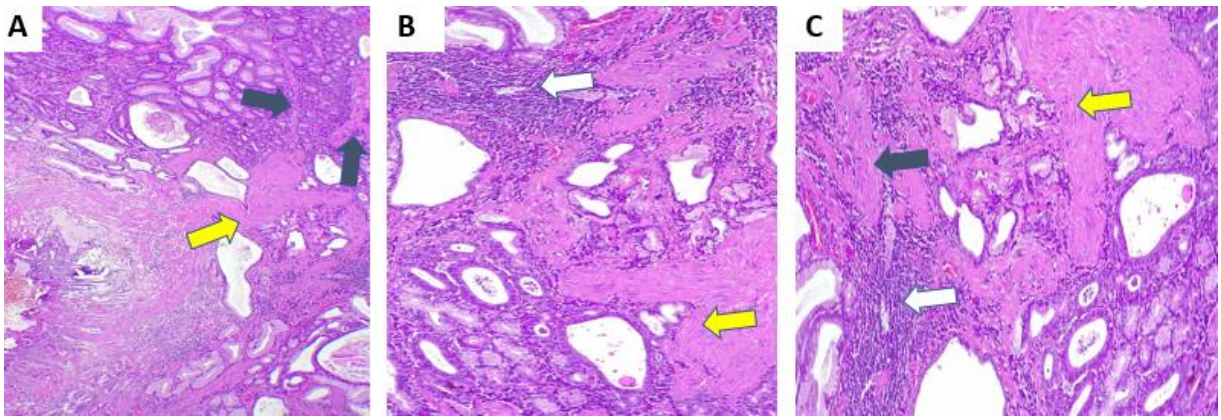

Figure 7. Hamartomatous polyps showing a complex glandular architecture lined by benign appearing epithelium. The lamina propria shows arborizing network of smooth muscle fascicles that are contiguous with the muscularis mucosa (yellow arrows). The smooth muscle fibers become progressively thinner as they reach the polyp surface (black arrows). Inflammatory aggregates are also noted within the stroma (white arrows), (A, B and C, X200).

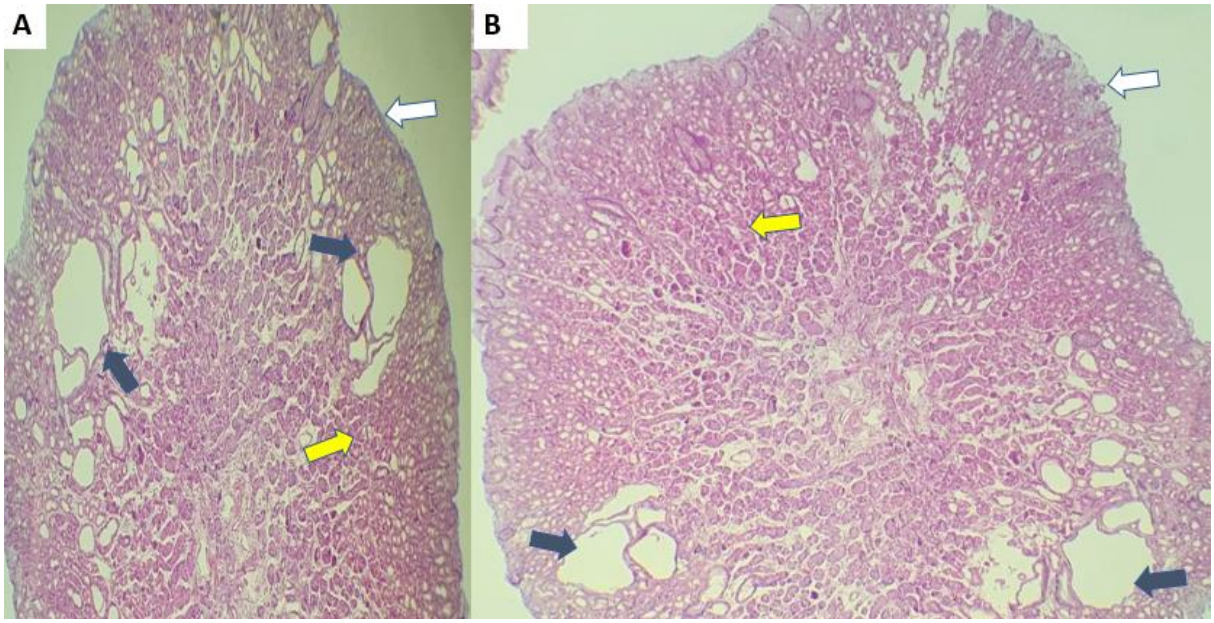

Figure 8. Fundic gland polyp covered by flattened gastric mucosa (white arrows) and filled with small fundic glands (yellow arrows), some form microcysts (black arrows), (A, X100; B, X200).

Neoplastic polyps (n= 317)

Tubular adenomas topped the list (n=295, 93.06%) of neoplastic gastrointestinal polyps, followed by the tubulovillous adenomas (n=17, 5.36%) and then villous adenomas (n=5, 1.58%). Patients aged from 4 to 99 years (Average: 55.18) with a peak tumor significantly burdened in those older than 60 years (Table 3), p = 0.01.

Table 3. age distribution of gastrointestinal neoplastic polyps

Polyp Type		Age Year Number (%)								Total of Each Polyp Type
		< 1	1 – 10	11 – 20	21 -- 30	31 – 40	41 -- 50	51 -- 60	60 <	
Tubular Adenoma	**N (%)**	0(0.00%)	2(0.63%)	4(1.26%)	9(2.84%)	24(7.57%)	50(15.77%)	90(28.39%)	116(36.59%)	295(93.06%
Tubulovillous Adenoma	**N (%)**	0(0.00%)	0(0.00%)	0(0.00%)	1(0.32%)	1(0.32%)	3(0.95%)	1(0.32%)	11(3.47%)	17(5.36%
Villous Adenoma	**N (%)**	0(0.00%)	0(0.00%)	0(0.00%)	0(0.00%)	1(0.32%)	0(0.00%)	1(0.32%)	3(0.95%)	5(1.58%
Total	**N (%)**	0(0.00%)	2(0.63%)	4(1.26%)	10(3.15%)	26(8.20%)	53(16.72%)	92(29.02%)	130(41.01%)	317(100.00%

Considering sex distribution, males, 193 (60.88%) outnumbered the females, 124 (39.12%) with a male to female ratio of 1.5:1 (Figure 9).

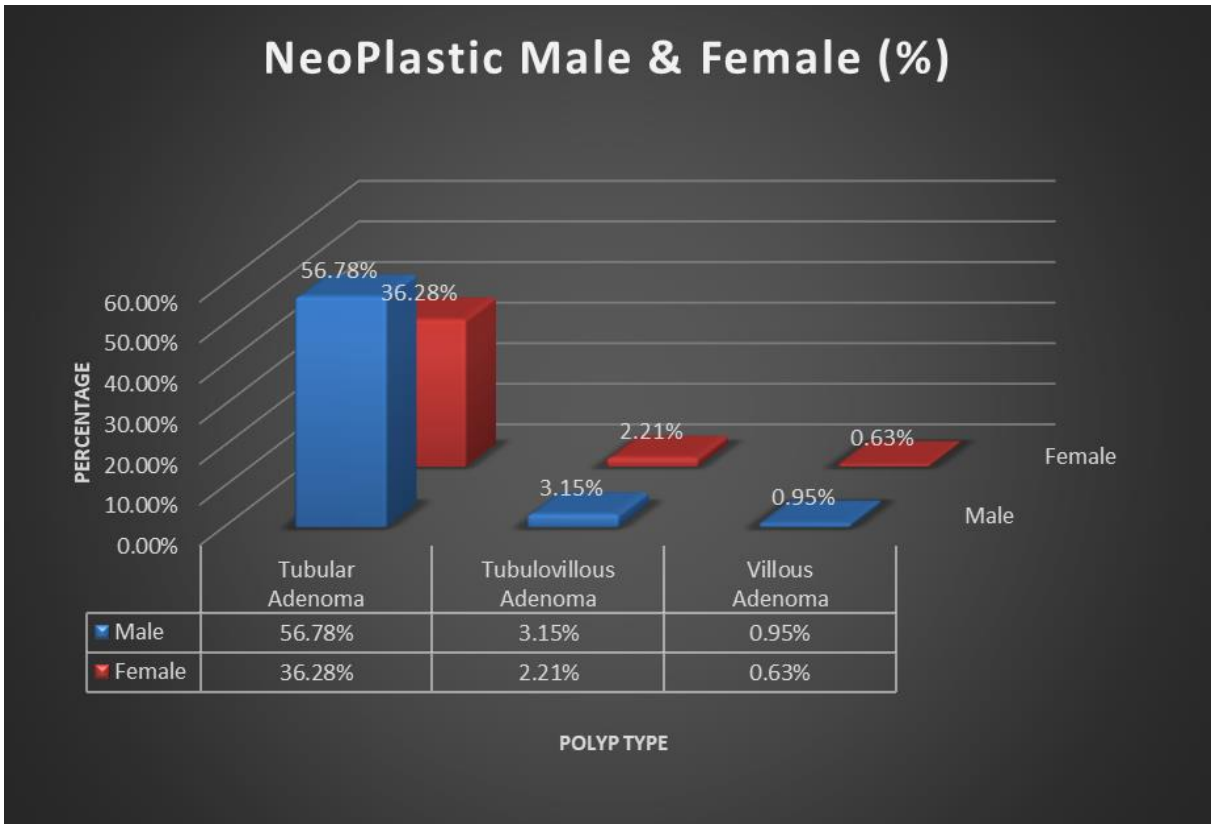

Figure 9. Neoplastic gastrointestinal polyps and sex distribution

The vast majority of the neoplastic polyps were located in the large intestine (n= 301, 94.95%) followed by stomach and small intestine, each (n= 8, 2.52%). No neoplastic polyps were found in the oral cavity or the esophagus (Table 4).

Table 4. Neoplastic Polyps and location.

Polyp Type		SITE					Total of Each Polyp Type
		Oral Cavity	Esophagus	Stomach	Small Intestine	Large Intestine	
Tubular Adenoma	**N (%)**	0(0.00%)	0(0.00%)	8(2.52%)	7(2.21%)	280(88.33%)	295(93.06%)
Tubulovillous Adenoma	**N (%)**	0(0.00%)	0(0.00%)	0(0.00%)	1(0.32%)	16(5.05%)	17(5.36%)
Villous Adenoma	**N (%)**	0(0.00%)	0(0.00%)	0(0.00%)	0(0.00%)	5(1.58%)	5(1.58%)
Total	**N (%)**	0(0.00%)	0(0.00%)	8(2.52%)	8(2.52%)	301(94.95%)	317(100.00%)

As illustrated in figure 10, associated adenocarcinoma was observed in 22 (7%) cases of neoplastic gastrointestinal polyps, mostly (86%) with tubular adenoma and 14% with tubulovillous adenoma.

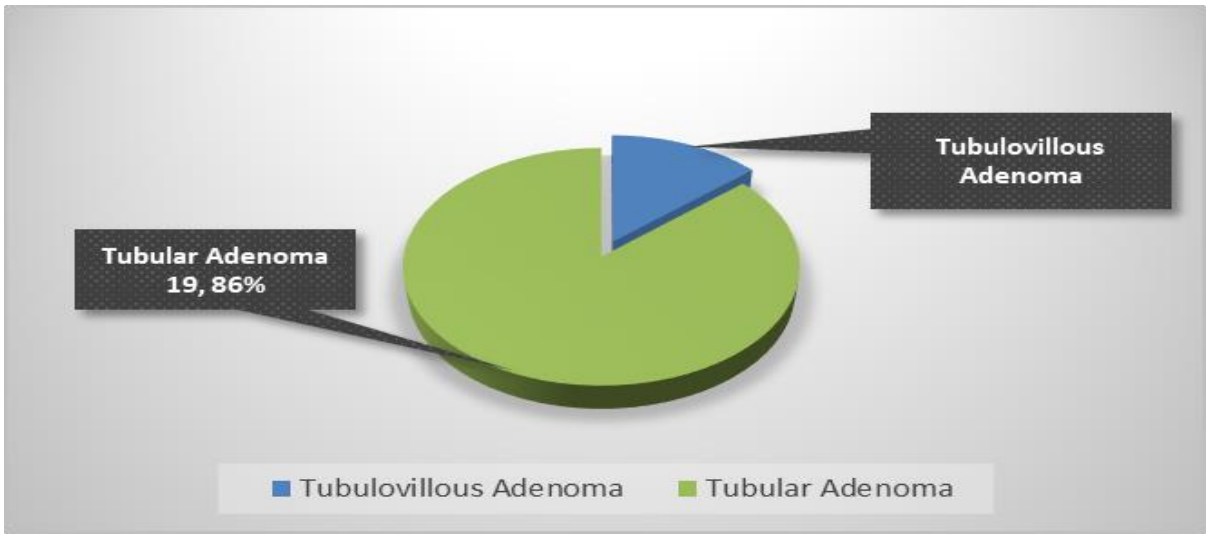

Figure 10. Malignancy associated with neoplastic polyps

Figures (11-13) illustrate the H&E morphologies of neoplastic gastrointestinal polyps described in this study.

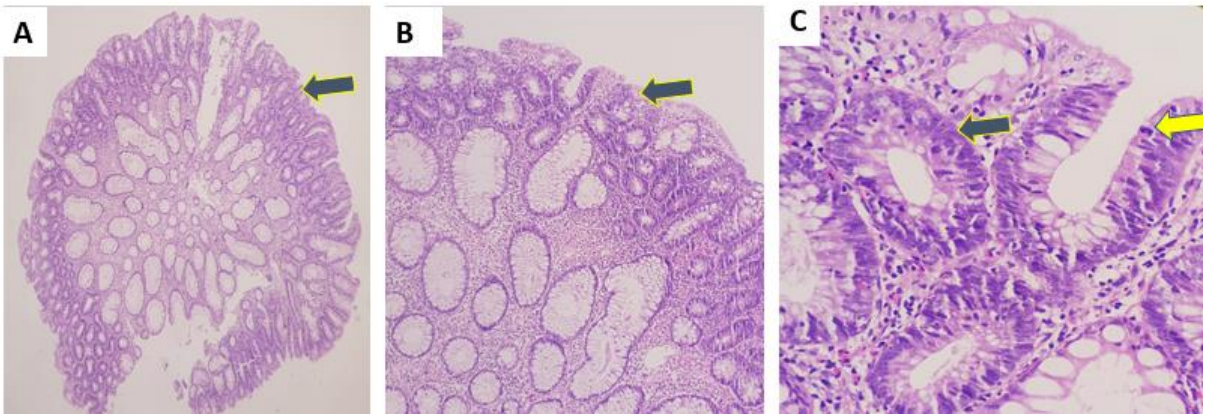

Figure 11. Tubular adenoma showing superficial decreased mucin and dysplastic changes (black arrows) with prominent superficial mitoses (yellow arrow), (A, X100; B, X200; C, X400).

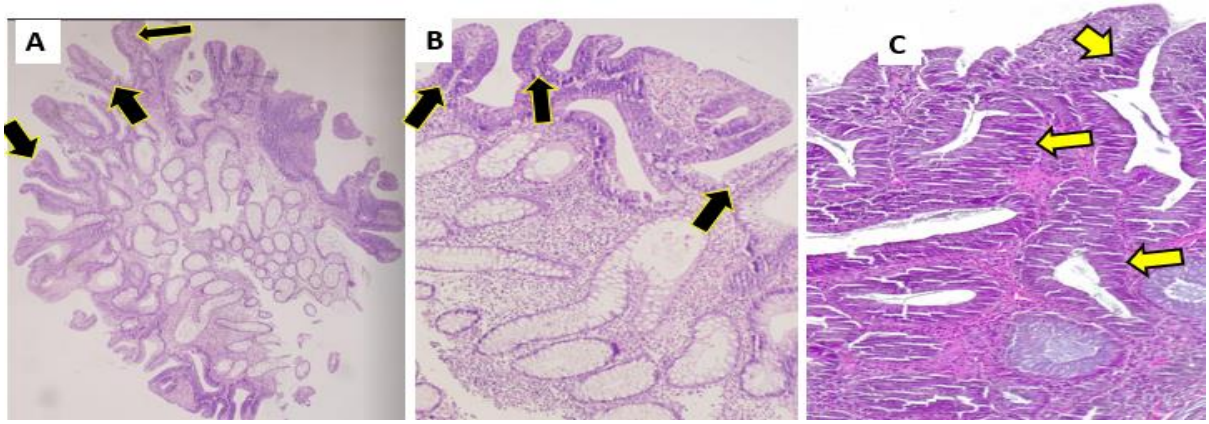

Figure 12. Tubulovillous adenoma showing relatively infrequent surface villi (black arrows), decreased mucin with dysplastic changes (yellow arrows), (A, X100; B, X200; C, X400).

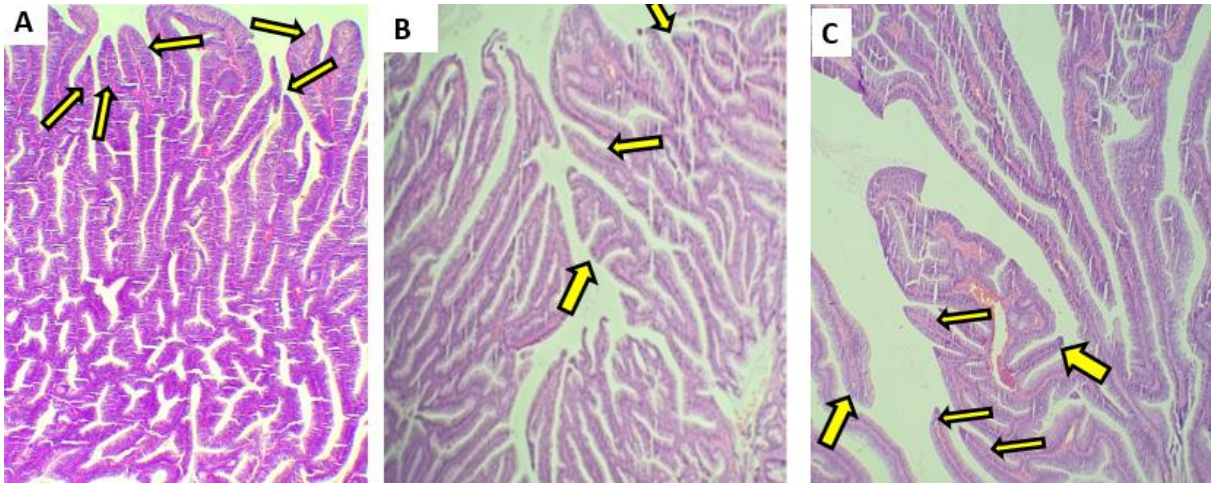

Figure 13. Villous adenoma showing frequent surface villi with dysplastic changes (yellow arrows), (A, X100; B and C, X200).

DISCUSSION

Generally, gastrointestinal polyps form a common endoscopic finding. More than 30% of autopsies performed in people older than 60 years show at least one gastrointestinal polyp (Bond, 2000)[4]. Despite the fact that our gastrointestinal polyps peaked in patients older than 60 years and more common among males compared with females with colonic dominance, no significant differences were detected regarding age, gender and lesion location. However, such variability has been mentioned by studies done in India and South Asia (Khajuria et al, 2016; Wickramasinghe, 2014) [5, 6].

Nonneoplastic polyps

In the current study, hyperplastic polyps (38.71%) occupied the most common nonneoplastic gastrointestinal polyps. A similar finding has been reported in Turkey and Brazil by (Atalay et el., 2014; Moris et al., 2007; Gencosmanoglu et al., 2003)[7,8,9]. consistent the potential of hyperplastic polyps to undergo dysplastic and malignant changes among hyperplastic polyps (Terada and Tadashi, 2011; Ginsberg et al., 1996; Daibo et al., 1987)[10,11,12], dysplastic changes were demonstrated in 2 cases, but no invasive malignancy was detected among our cases.

Fibroepithelial polyps represented the second most common nonneoplastic polyps (24.46%); all were benign. But, not like other polyps, they were commoner among females than males of all age groups and only detected in the large bowel (mainly anal region) and oral cavity. This finding goes in line with what has been reported in study done by (Groisman et al., 1998)[13] where 40 fibroepithelial polyps were studied.

Speaking of juvenile/retention polyps, in the present study these polyps represented the 3rd commonest nonneoplastic polyps. Contrarily, in Iran juvenile/retention polyps reported as the least common polyps (Irivani et al., 2014)[14]. Such contrarily may be attributed to the number of children and adolescence included in the mentioned study. Generally, these lesions frequently occur among children and form commonest in the (1st decade) (Lee et al., 2012; Adolph and Bernabe, 2008; Bhatnagar et al.,1998)[15,16,17] a similar finding goes in parallel to our results. But no case was reported under one year just similar to what has been mentioned in

studies performed in South Korea and Poland (Lee et al., 2012; Bartnik et al., 1986)[15,18]. Among our series, none of the juvenile polyps was malignant, a fact that strengthens the concept that no solitary juvenile polyps pose any increased risk for carcinoma (Chen et al., 2020; Kapetanakis et al., 1996)[19,20]. Either sex was affected with no any significant difference just in contrast to the male dominance reported by others (Lee et al., 2012; Wang et al., 2009)15,21. As well, the vast majority of cases were located in large intestine which is parallel to what has been reported by others (Lee et al., 2012; Wang et al., 2009)[15, 21].

Inflammatory polyps formed the fourth common nonneoplastic polyps in our study. In an Egyptian study which included 74 gastrointestinal polypoidal lesions, inflammatory polyps formed the second commonest nonneoplastic polyps (Kamal et al., 2018)[22] while in a south Asian study done on 188 cases; they represented the least common gastrointestinal polyps (Wickramasinghe et al., 2014)[6]. Hygiene, food style, genetic background and environmental facts have a great impact on such geographic differences.

Finally, the hamartomatous polyps and fundic gland polyps formed the least common nonneoplastic polyps in our study. This goes in line with what has been reported in South Asia, Turkey and Romania by (Wickramasinghe et al., 2014; Atalay et al., 2014; Khedr et al., 2008)[6,7,23]. Absence of family history among our series may indicate non-inherited (sporadic type) hamartomatous polyps.

Although a little bit higher frequency of fundic polyps has been registered in Turkey (Atalay et al., 2014)[7] than ours (only 2 cases), however both are considered very low compared with what has been registered in USA and Germany (Carmack et al., 2009; Stolte et al., 1998)[24, 25] where the fundic gland polyps topped the gastric polyps. It has been stated that the use of PPIs in the long term was associated with an up to 4-fold increase in the risk of fundic gland polyps alike wise finding was reported by (Peretz et al., 2012; el-Zimaity et al., 1997)[26,27]. Stress, hygiene, food style, genetic background and environmental facts may be result in diverse geographic differences.

Fundic gland polyps have almost no malignant potential (Jalving et al., 2006; el-Zimaity et al., 1997)[28,27]. Similarly, none of our 2 fundic gland polyps was dysplastic or malignant.

Neoplastic polyps

Tubular adenomas (93%) outnumbered the neoplastic (adenomatous) polyps, followed by tubullovillous (5.4%) and villous adenomas (1.6%). A similar finding has been reported in studies conducted among Indian, Iranian and Kuwait populations (Khajuria et al., 2016; Iravani et al., 2014; Al-Enezi et al., 2010)[5,29,30], but inconsistent with studies conducted in South Asia, Saudi Arabia, Egypt (Wickramasinghe et al., 2014; Albasri et al., 2014; Albadery et al., 2012)[6,31,32] where the tubulovillous adenomas formed the most prevalent adenomas. It is worthy to state that no neonatal cases have been reported, and only 0.63% and 1.26% of cases were found among pediatric and teenage group. In Egypt, no adenoma was reported under 20 years (Kamal et al., 2018)[22]. Our study neoplastic polyps were more common among males than female which is consistent with South Asia (Wickramasinghe et al., 2014)[6] but contrast to the female predominance reported in Egyptian study (Kamal et al.,

2018)[22], this can be explained by dietary habitual and other environmental factors in addition to geographic and genetic differences among local citizens compared with others.

Regarding the location, the large intestine represented the most prevalent site of all neoplastic polyps (94.9%) with non-rectal area harboring (74.4%) followed by rectum (25.3%) and anus (0.3%). This goes in line with what has been reported in South Asia and Saudi Arabia (Wickramasinghe et al., 2014; Albasri et al., 2014) [6, 31].

As stated, that colorectal cancer is significantly higher for patients with colorectal adenoma compared with non-neoplastic polyps (Duvvuri et al., 2021; Dube et al., 2017)[33,34], 7% of our neoplastic polyps were associated with adenocarcinoma. However, less frequent adenomas with associated carcinoma cases were reported in South Asia, Denmark and London (Wickramasinghe et al., 2018; Jørgensen et al.,1993; Atkin et al., 1992)[6,35, 36].

It is worth mentioning that none of the eight gastric adenoma cases registered in the current study were associated with invasive carcinoma. In contrast, a follow-up study done in Italy reported 68% invasive carcinoma among 16 adenomatous polyps with high-grade dysplasia during a mean follow-up of 30 months (Ruggee et al., 2003)[37].

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پوختە

مە رەم : زانینا جورێن گرێکێن گوشتي یین جیاواز یین گە دەی و ریڤیکان ئە وێن هاتینە وەرگرتن لتاقیگەها مەلبەندی وتاقیگەهێن تایبەت لدهوکێ.

رێکا چێکرنا ڤەکولینێ:

خاندنا کە یسێن گرێکێن گوشتی نەیێن پەنجەشێر یێن گەدەی و ریڤیکان ئە وێن هاتینە وەرگرتن لتاقیگەها مەلبەندی وتاقیگە هێن تایبەت لدهوکێ دماوێ ١١ سالان دا ژسالا (٢٠١٠ هەتا سالا ٢٠٢٠).

ئەنجام:

ژسەرجەمێ ٦٨٩ کەیسان (٣٧٢ گرێکێن نەزیدە گوشتی و ٣١٧ گرێکێن زیدەگوشت) ژگرێکێن گەدەی وریڤیکان کو راپورت هاتبون دان. گرێکێن زێدەبونا شانە یان (هایپرپلاستیك) (٣٨.٧١٪) ژ باوترین جورێن گرێکێن نەزێدەگوشتی بون، ولدویڤرا گرێکێن (فایبروئیپیثلیال)(٢٤,٤٦٪)، گرێکێن (جوفینایل) (٢٠,٤٣٪)، گرێکێن هەلئاوسانێ (١٤,٧٨٪)، گریکین (هامارتوما) (١,٠٨٪)، ولدویماهیێ گرێکێن رژینێن گەدەی (٠,٥٨٪). ژلایەکی دیترڤە گرێکێن زیدە گوشت یێن لولەی پێك دئێن ژ(٩٣,٠٦٪) ژ دیارترین گرێکێن زێدەگوشت نەیێن پەنجەشێر، ولدویفرا گرێکێن زیدەگوشت یێن لولەی وبوری (٥,٣٦٪)، وئەڤێن ماین(١,٥٨٪) گرێکێن زێدە گوشت ین بوری. گرێکین زێدەگوشت ونەیێن زیدەگوشت هەردو جور بشێوەیەکی سەرەکی ل ریڤیکێن ستویردا چێ دبن، بتنێ ٧٪ ژگرێکێن زێدەگوشت پە نجەشێر لگەلدا بون.

دەرئەنجام:

گرێکێن نەزێدەگوشتی یێن زیدە بونا شانەیان و گرێکێن زێدەگوشتێن لولەی دیارترین گرێکن. ریڤیکێن ستویر ژدیارترین جهێن گرێکانن. پەنجەشێرا ریڤیکان بتایبەت لگە ل گرێکێن زێدەگوشتی دئێن.

الخلاصة

البوليبات المعوية في دهوك - العراق. دراسة نسيجية عملية.

الخلفية والأهداف:

التعرف على تواتر وأنواع الزوائد اللحمية المعدية المعوية في مختبرات دهوك المركزية والخاصة.

الطرق والمواد:

تمت دراسة حالات السلائل المعوية المعوية التي تم استقبالها في مختبرات دهوك المركزية والخاصة خلال فترة 11 عاما (من 2010 إلى 2020)، سريريا ومرضيا.

النتائج:

تم تسجيل 689 (372 غير ورمي و 317 ورمي) من الزوائد اللحمية المعدية المعوية. شكلت الزوائد اللحمية المفرطة التنسج (38.71٪) من فئة الزوائد الغير الورمية الأكثر شيوعا تلتها الاورام الحميدة الليفية الظهارية (24.46٪)، الاورام الحميدة الصغيرة/ الاحتباس (20.43٪)، الاورام الحميدة الالتهابية (14.78٪)، الاورام الحميدة غير الورمية (1.08٪) وأخيرا الاورام الحميدة الغدية القاعدية(0.54٪).

من ناحية أخرى، شكل الورم الحميد الأنبوبي (93.06٪) أكثر الأورام شيوعا، يليه الورم الحميد الأنبوبي/ الزغبي (5.36٪). أما 1.58٪ المتبقية شوهد من نوع الورم الحميد الزغبي، معظم الزوائد اللحمية غير الورمية والورمية وجدت في الأمعاء الغليظة.

تم العثور على 7٪ فقط من الزوائد اللحمية الورمية مرتبطة بالسرطان الغدي.

الاستنتاج:

الاورام الحميدة المفرطة التنسج والورم الغدي الأنبوبي شكلا أكثر الزوائد اللحمية غير الورمية والأورام الورمية على التوالي. كانت الأمعاء الغليظة هي المكان الأكثر انتشارا. ارتبطت حالات سرطان القولون والمستقيم المصاحبة بشكل حصري مع الاورام الحميدة الورمي.