



Original Article

## Characteristics of adenomatous colorectal polyps among a Saudi population



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### المخلص

**أهداف البحث:** يعد سرطان القولون والمستقيم سببا شائعا للوفيات المرتبطة بالسرطان في المملكة العربية السعودية مع ارتفاع معدل الإصابة به. على الرغم من أن الأورام الحميدة الغذائية معروفة جيدا كسلانف لسرطان القولون والمستقيم، إلا أن البيانات المحلية نادرة. لذلك هدفنا في هذه الدراسة إلى تقييم خصائص أورام القولون الغذائية في السكان السعوديين.

**طريقة البحث:** قمنا بمراجعة قواعد البيانات الإلكترونية بأثر رجعي لجميع المرضى الذين خضعوا لتنظير القولون لأي إشارة بين يناير 2015 وديسمبر 2019 في المستشفيات التخصصية. تضمنت هذه الدراسة المرضى البالغين الذين وجد أنهم مصابون بسلانل القولون والمستقيم مع تقارير علم التشريح المرضي المحددة. قمنا بجمع البيانات السريرية والمرضية، بما في ذلك عمر المريض والجنس وخصائص الزوائد اللحمية النسيجية.

**النتائج:** تم تضمين ما مجموعه 183 مريضا يعانون من الأورام الحميدة القولون والمستقيم مع تقارير التشريح المرضي في التحليل. من بين هؤلاء ، كان 129 (70.4%) مريضا تتراوح أعمارهم بين 50 سنة أو أكثر، و 134 (73.2%) كانوا من الذكور. من بين جميع الأورام الحميدة، كان 126 منها غدبا (68.8%)، 31 (16.9%) مفرط التنسج، و 24 (13.1%) كانت النهائية. بالنسبة للزوائد اللحمية الغذائية، لوحظ 31 (24.6%) في المرضى الذين تقل أعمارهم عن 50 عاما، ولوحظ خلال التنسج عالي الدرجة في 23 (18%) من الأورام الحميدة. بين

المرضى الذين يعانون من الأورام الحميدة الغذائية، كان الموقع التشريحي كالتالي: 27 (23%) في القولون الصاعد ، 12 (9%) في القولون المستعرض ، 45 (35%) في القولون النازل والسيني ، 25 (19%) في المستقيم ، و 18 (14%) في مواقع متعددة. كان العمر > 50 سنة مرتبطا بشكل كبير مع الأورام الحميدة الغذائية.

**الاستنتاجات:** تم اكتشاف ما يقرب من ثلث الأورام الحميدة الغذائية بالقرب من الثنية الطحال. على الرغم من أن الأورام الحميدة الغذائية كانت مرتبطة بشكل كبير مع تقدم العمر، لوحظ 24% في المرضى الذين تقل أعمارهم عن 50 عاما. يدعم هذا الاكتشاف التوصية الحالية لبدء الفحص في سن 45.

**الكلمات المفتاحية:** سرطان قولوني مستقيمي؛ الأورام الحميدة القولون والمستقيم؛ الأورام الحميدة؛ تنظير القولون؛ الورم الحميد

### Abstract

**Objectives:** Colorectal cancer is a common cause of cancer-related mortality in KSA with a rising incidence. Although adenomatous polyps are well-recognized as precursors of colorectal cancer, local data are scarce. Therefore, in this study, we aimed to evaluate the characteristics of adenomatous colon polyps in the Saudi population.

**Methods:** We retrospectively reviewed the electronic databases of all patients who underwent colonoscopy for any indication between January 2015 and December 2019 at a tertiary care hospital. This study included adult patients who were found to have colorectal polyps with identified histopathology reports. We collected clinical and pathological data, including patient age, sex, and

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histopathological polyp characteristics. A p-value  $<0.05$  was considered significant for descriptive and analytical statistics.

**Results:** A total of 184 patients with colorectal polyps with identified histopathology reports were included in the analysis. Of these, 130 (70.6%) patients were aged 50 years or older, and 135 (73.3%) were male. Among all polyps, 127 (69%) were adenomatous, 31 (16.8%) were hyperplastic, and 24 (13%) were inflammatory. For adenomatous polyps, 31 (24.4%) were observed in patients younger than 50 years, and high-grade dysplasia was observed in 23 (18%) polyps. Among patients with adenomatous polyps, the anatomical location was as follows: 27 (23%) in the cecum/ascending colon, 12 (9%) in the transverse colon, 45 (35%) in the descending/sigmoid colon, 25 (19%) in the rectum, and 18 (14%) at multiple sites. Age  $>50$  years was significantly associated with adenomatous polyps ( $P = 0.03$ ).

**Conclusion:** Approximately one-third of adenomatous polyps were detected proximal to the splenic flexure. Although adenomatous polyps were significantly associated with increasing age, 24% were observed in patients younger than 50 years of age. This finding supports the current recommendation to start screening at the age of 45.

**Keywords:** Adenoma; Colonoscopy; Colorectal cancer; Colorectal polyps; Polyps

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## Introduction

In the KSA, colorectal cancer has become the third most common malignancy in the population and is rated second among males and second or third among females.<sup>1–3</sup> The incidence of colorectal cancer in KSA increased from 1994 to 2003.<sup>4–7</sup> However, this is still less than that in the United States of America and the Western population.<sup>8</sup> There are several key risk factors, including a sedentary lifestyle, increased body mass index, and central obesity.<sup>8–11</sup>

The precursor lesion for colorectal cancer (CRC) is an adenomatous colorectal polyp.<sup>4–7</sup> Therefore, the risk of developing colorectal cancer can be anticipated based on the characteristics of both patients and polyps.<sup>12,13</sup> However, a wide variation is observed in the frequency and features of adenomatous colorectal polyps in diverse populations.<sup>14</sup> Understanding the natural occurrence and characteristics of colorectal cancer is essential<sup>15</sup> if we are to develop a preventative strategy because screening programs followed by the removal of polyps will reduce the incidence and eventually prevent the disease.<sup>16</sup>

Adenomas comprise approximately two-thirds of all colonic polyps. Thirty to fifty percent of colons with at least one adenoma also have at least one synchronous adenoma.<sup>17</sup> The prevalence of colorectal adenomatous polyps varies greatly

across countries and is strongly associated with the incidence rates of colorectal cancer in each country.<sup>18</sup> The prevalence of adenoma increases to 10% in sigmoidoscopy studies and more than 25% in colonoscopy studies.<sup>19</sup> In western screening populations (aged 50–75 years), the prevalence of adenoma can increase to as high as 40%, and a higher prevalence is noted if the patient is male and elderly. However, owing to significant variability in adenoma progression, the lifetime risk of CRC is only 5.5%.<sup>20–26</sup> Regardless of size and histology, advanced age plays a significant role in the development of colonic adenomas and is related to high-grade dysplasia within an adenoma. In general, the 10-year cumulative risk of adenoma to carcinoma is  $<10\%$ .<sup>27</sup>

Very few studies have been conducted on colorectal polyps in the KSA. According to a previous study, 66.5% of patients with colorectal polyps were men, and 33.5% were women; the average age of patients with colorectal polyps was 49 years.<sup>27</sup> Given that adenomatous polyps are well-recognized as precursors for CRC, it is essential to understand their features and how they naturally occur. Therefore, we aimed to evaluate the characteristics of adenomatous colon polyps in a Saudi population in this study.

## Materials and Methods

This was a retrospective study conducted at King Fahd Specialist Hospital, the largest tertiary healthcare hospital in the Qassim region of KSA. Using an endoscopic reporting system, all patients who underwent colonoscopy and were found to have colonic polyps between January 2015 and December 2019, were included after applying the inclusion and exclusion criteria. Patients were included if they were adult patients ( $>18$  years) with a confirmed polyp in colonoscopy and pathology reports at King Fahad Specialist Hospital (KFSH). Pediatric patients ( $<18$  years), those with inflammatory bowel disease, and those previously diagnosed with colorectal cancer, were excluded. Incomplete colonoscopies were also excluded. Colonoscopies were performed by multiple gastroenterologists at a consultant level.

A data extraction form was drafted according to the objectives of this study and collated the following information: demographic data (including age and sex), indication for colonoscopy, location of the polyps, and types of polyps according to the histology report. Adenomatous polyps were classified according to the dysplasia grade as low-grade or high-grade dysplasia. A right sided colonic polyp was defined as a polyp located in the cecum or ascending colon. A left sided colonic polyp was defined as a polyp located in the descending or sigmoid colon. The study was approved by the Regional Ethics Board in the Qassim Region and the local committee at King Fahd Specialist Hospital.

## Statistical analysis

Percentages and counts were used as categorical variables. Statistical analysis of categorical variables was performed using the chi-squared test or Fisher's exact test, as appropriate. A p-value of less than 0.05, with a two-tailed test, was considered statistically significant. Statistical analysis was

performed using R statistical software, version 1.2.5042 2009-2020 (RStudio, Inc.)

**Results**

*Characteristics of colonic polyps*

A total of 184 patients who underwent colonoscopy and were found to have colorectal polyps with identified histopathology reports were included in this analysis. The ages of the participants ranged from 18 to 93 years. A total of 130 (70.6%) patients were aged 50 years or older, and 135 (73.3%) were male. Most colonoscopies were performed for rectal bleeding indications, followed by screening indications. **Table 1** shows the patient characteristics and indications for colonoscopy.

Regarding the location of the polyps, 67 (36.4%) had left-sided polyps, 39 (21.1%) patients had right-sided polyps, 36 (19.5%), had rectal polyps, and 16 (8.6%) had transverse colon polyps; 26 (14.1%) patients had multiple polyps in different locations. Of all polyps, 127 (69%) were adenomatous, 31 (16.8%) were hyperplastic, and 24 (13%) were inflammatory. One polyp was juvenile (0.5%), and one was a hamartoma (0.5%).

*Characteristics of adenomatous polyps*

**Table 2** shows the characteristics of adenomatous polyps. For adenomatous polyps, 31 (24%) were seen in patients younger than 50 years. High-grade dysplasia was seen in 23 (18%) polyps. There was one case of malignant polyp located in the sigmoid colon in a 65-year-old man. Among patients with adenomatous polyps, the anatomical location was: 27 (23%) in the right colon (cecum/ascending colon), 12 (9%) transverse colon, 45 (35%) in the left colon (descending/sigmoid colon), 25 (19%) in the rectum and 18 (14%) had polyps at multiple sites. Regarding polyps with high-grade dysplasia or cancer, 45% were located on the left side. Age above 50

**Table 2: Characteristics of adenomatous polyps, n = 127.**

Characteristic	n (%)
Grade of dysplasia	
Low	103 (81.7%)
High	23 (18.2%)
Invasive adenocarcinoma	1 (0.7%)
Location	
Right side	27 (21.4%)
Transverse	12 (9.5%)
Left side	45 (35.7%)
Rectal	25 (19.8%)
Multiple	18 (14.2%)
Age distribution	
<30	5 (3.9%)
30–39	5 (3.9%)
40–49	21 (16.6%)
50–59	41 (32.5%)
60–69	31 (24.6%)
≥70	24 (19%)
Gender	
Male	92 (72.4%)
Female	35 (27.5%)

years was significantly associated with adenomatous polyps (p = 0.03). Gender was not associated with an increased risk for adenoma (p = 1).

*Characteristics of colonic polyps according to age of the patient*

**Table 3** shows the characteristics of different polyps according to the age group of the patients. Among patients <50 years of age, 56.3% were adenomatous, 22.8% were hyperplastic and 18.1% were inflammatory. In patients aged 50 years or more, 74.4% of polyps were adenomatous, 14.7% were hyperplastic and 10.8% were inflammatory. **Table 3** shows the polyp characteristics according to age groupings.

**Table 1: Characteristics of patients with colorectal polyps and indication of colonoscopy, n = 184.**

Characteristic	n (%)
Age	
>30	8 (4.3%)
30–39	14 (7.6%)
40–49	32 (17.3%)
50–59	53 (28.8%)
60–69	45 (24.4%)
≥70	32 (17.3%)
Gender	
Male	135 (73.3%)
Female	49 (26.6%)
Indication of colonoscopies	
Anemia	1 (0.5%)
Rectal bleeding	58 (31.5%)
Changes in bowel habit	15 (8.2%)
Screening	38 (20.6%)
Abnormal imaging	3 (1.6%)
Other reasons	69 (37.5%)

**Table 3: Polyp characteristics according to age groups.**

Characteristic	age <50	age >50
Gender		
Male	38 (70.3%)	96 (74%)
Female	16 (29%)	33 (25%)
Location		
Right side	11 (20%)	28 (21.9%)
Transverse	5 (9%)	11 (8.5%)
Left side	21 (38.9%)	45 (34%)
Rectal	10 (18%)	26 (20%)
Multiple	7 (12.9%)	19 (14%)
Histology type		
Adenomatous:	31 (56.3%)	96 (74.4%)
Tubular	20	57
Tubulovillous	9	36
Villous	2	2
Malignant	0	1
Hyperplastic	12 (21.8%)	19 (14.7%)
Juvenile	1 (1.8%)	0 (0%)
Inflammatory	10 (18.1%)	14 (10.8%)
Hamartomas	1 (1.8%)	0 (0%)

## Discussion

Although colonic polyps are common worldwide, little data exist on the characteristic features of colonic polyps in KSA. In this study, we evaluated the clinical and pathological characteristics of colorectal polyps in adult patients who had undergone colonoscopy for any indication. Among all polyps, 69% were adenomatous, 16% were hyperplastic, and 13% were inflammatory.

The incidence of adenomatous polyps is well known to increase with advancing age. In this report, we found a strong association between an age above 50 years and the presence of adenomatous polyps; this finding was consistent with local and international reports.<sup>2,3,5</sup> However, 24% of patients with adenomatous polyps were younger than 50 years, thus supporting the latest national guidelines to start CRC screening at 45 years.<sup>28</sup> Similarly, an increasing incidence of CRC and adenomatous polyps in younger age groups has been reported in international studies.<sup>29–31</sup> As with other studies, we found no association between gender and adenomatous polyps.<sup>14,16</sup>

A higher proportion of adenomatous polyps were located on the left side, 35% in the descending/sigmoid colon, and 19% in the rectum. The predominant location of polyps on the left side is concordant with the higher rate of CRC located on the left side found in other studies.<sup>5</sup> However, approximately one-third of patients were identified as having polyps proximal to the splenic flexure without associated left-sided polyps. This supports the current recommendation to discourage flexible sigmoidoscopy as an effective option for CRC screening.<sup>28</sup> This finding highlights the need for careful examination of the right colon. Furthermore, bowel preparation should be optimized as the right colon tends to be less prepared with adherent mucous than the rest of the colon.<sup>32</sup>

This study provides Saudi data on the characteristics of adenomatous colorectal polyps. We described the age groups and anatomical locations that will add to the limited available literature and inform developers of local guidelines. The limitations of our study include its single-center nature and small sample size. Given the retrospective nature and lack of consistent reporting, we were unable to report the quality of bowel preparation or other polyp features, such as size. We observed that none of our patients had a sessile serrated polyp. Sessile serrated polyps are relatively uncommon, but such polyps could have been misclassified as hyperplastic polyps given the similarity in histopathological findings. Larger, prospective multicenter studies are now needed to better characterize colonic polyps in KSA.

In conclusion, we found a strong association between older age and the presence of adenomatous polyps. However, 24% of adenomatous polyps were observed in patients younger than 50 years, which supports the current guidelines for screening patients from 45 years. Approximately one-third of adenomatous polyps were detected proximal to the splenic flexure with no synchronous left-sided polyps, thus necessitating complete colonoscopy and careful examination of the entire colon during CRC screening.

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## Conflict of interest

The authors have no conflict of interest to declare.

## Ethical approval

The regional ethics research committee at Qassim region (Qassim IRB-MoH) reviewed and approved the study protocol as log # 1442-82138 on August 31, 2020.

## Authors contributions

All authors conceived and designed the study, conducted research, provided research materials, and collected data. RA and MA analyzed and interpreted data, and wrote the initial and final draft of article. All authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

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