

RESEARCH ARTICLE

Prevalence and Characteristics of Colorectal Polyps in Symptomatic and Asymptomatic Iranian Patients Undergoing Colonoscopy from 2009-2013

Shahrokh Iravani¹, Seyed Mohammad Hossein Kashfi², Pedram Azimzadeh^{2*},
Mohammad Hossein Lashkari³

Abstract

Background: Colorectal cancer is the third most common type of cancer in males and the second in females in Iran. Males are more likely to develop CRC than women and age is considered as a main risk factor for colorectal cancer. Prevalence of colorectal cancer has been increasing in Asian countries. **Aim:** The object of this study was to determine the clinical and pathology characteristics of colorectal polyps in Iranian patients and to investigate the variation between our populations with other populations. **Materials and Methods:** A total of 167 patients with colorectal polyps were included in our study. All underwent colonoscopy during 2009-2013 and specimens were taken through polypectomy and transferred to pathology. All data in patient files including pathology reports were collected and analyzed by SPSS 16 software. A two-tailed test was used and a P-value of < 0.05 was considered significant. **Results:** Mean age of participants was 57±15. Some 84 were females (50.3%) and 83 males (49.7%). Total of 225 polyps were detected which 119 (52.9%) were in males and 106 (47.1%) were in females. Solitary polyps were observed in 124 patients (74%), 26 (15.6%) had two polyps and 17 (10.1%) with more than two polyps (three to five). Rectosigmoid was the site of most of the polyps (63.1%), followed by 19.6% in the descending colon, 7.6% in the transverse, 5.8% in the ascending, and 3.1% in the cecum, data being missing in two cases. **Conclusions:** Recto sigmoid was site of most of the polyps. The most prevalent type of lesion was adenomatous polyps detected in 78 (34.7%). Mixed hyperplastic adenomatous type observed in 70 (31.1%). This high prevalence of adenomatous polyps in Iranian patients implies the urgent need for screening plans to prevent further healthcare problems with colorectal cancer in the Iranian population.

Keywords: Colon polyps - colorectal cancer - adenomatous polyps

Asian Pac J Cancer Prev, 15 (22), 9933-9937

Introduction

Colorectal cancer (CRC) is the third most common cancer in the United States and the second form leads to cancer death, although recently intense screening schedule declining the incidence rate (Levin et al., 2008; Siegel et al., 2012). Males are more likely to develop CRC than women (Murphy et al., 2011). Alteration in bowel habit, rectal bleeding, abdominal pain, diarrhea, constipation and weight loss are the most symptoms in affected individuals (Norrelund and Norrelund, 1996; Mulcahy and O'Donoghue, 1997).

Age is considered as a main risk factor for colorectal cancer (Howlader et al., 2010). Other risk factors for susceptibility to CRC mentioned as low physical activity, obesity (Karagianni et al., 2010) consumption of charred meats, cigarette smoking (Burnett-Hartman et al., 2011) alcohol use and diet regimen (Neri et al., 2011).

Adenomatous polyps are believed to be the precursors of most colorectal cancers both in sporadic and hereditary cases (Muto et al., 1975). People who have adenomas with villous features or high grade dysplasia are more likely to develop CRC (O'Brien et al., 1990). Size, histology and number of polyps are the most important elements in malignancies (East et al., 2008) and these are important in term of clinical management. As mentioned previously the larger is a polyp size the greater is the risk for malignancy and it has been demonstrated that it takes 10 years for a diminutive adenoma to transform into a cancer form (Winawer et al., 1997).

There have been several studies on colon polyp and CRC patients in Iranian population (Bafandeh et al., 2005; Bafandeh et al., 2008; Hodadoostan et al., 2010; Shemirani et al., 2011; Mirzaie et al., 2012) and the prevalence and risk factors of colorectal cancer has been demonstrated in many studies in Asian population as well (Kilickap

¹AJA Cancer Research Center (ACRC) AJA University of Medical Sciences, ³Surgery and Trauma Research Center, AJA University of Medical Sciences, ²Gastroenterology and Liver Diseases Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran *For correspondence: azimzadeh.pedram@yahoo.com

et al., 2012; Mosli and Al-Ahwal, 2012; Roslani et al., 2012; Safaee et al., 2012; Chen et al., 2013; Karaman et al., 2013; Ng and Wong, 2013). In one study on patients with colon polyp most of the detected polyps were adenomatous polyps (Kastuar et al., 2011). In other study tubulovillous adenomas reported to be the most common types of adenoma and the majority of polyps were in rectum and sigmoid (Zois et al., 2011). Study on Iranian patients with colon polyp revealed that the incidence of colorectal neoplasia in comparison to western countries was low (Bafandeh et al., 2008). The other study on Iranian patients adenomatous polyps were the most prevalent types of polyps in the colon and its incidence increased with age (Mirzaie et al., 2012).

A significant association between age and increasing in the size of the polyp in both genders also reported (Lowenfels et al., 2011). Since distal neoplasm is common in males, proximal neoplasm development is more likely to involve female gender. Another group of polyps which have gained so many attentions in the molecular and clinical fields in the last few years include serrated polyps. Histopathologically, serrated polyps classified in to three forms: Hyper plastic polyps (HPs), traditional serrated adenomas (TSAs), and sessile serrated adenomas (SSAs). HPs are the most common types of serrated polyps (80-90%), they are known to be non-neoplastic and develop mostly in the distal part of the colon and Rectum. In the last few years many studies suggested that some serrated polyps may follow specific pathway and acquire mutations prerequisite for tumorigenesis and malignancies (O'Brien et al., 2006; Spring et al., 2006). The object of our study was to determine the clinical and pathology characteristics of colorectal polyps in Iranian patients with colorectal polyps and to investigate the variation between our populations with other populations.

Materials and Methods

In this cross-sectional study 167 patients with colorectal polyps who were referred to Imam Reza hospital for medical care in 2009-2013 with symptoms

include: abdominal pain, constipation, gastrointestinal bleeding, weight loss, diarrhea and anemia were evaluated. The patients underwent colonoscopy and specimen was taken through polypectomy transferred to pathology. All data in patients file beside pathology report collected and analyzed by SPSS 16 software. Chi2, ANOVA and Fisher's exact tests performed and a P-value of <0.05 was considered significant.

Results

A Total of 167 patients include 84 female (50.3%) and 83 male (49.7%) examined in this study. Mean age of participants was 57±15. Total of 225 polyps were detected in this study. Solitary polyps observed in 124 patients (74%), 26 (15.6%) had two polyps and 17 (10.1%) with more than two polyps (three to five polyps). 119 (52.9%) were in male and 106 (47.1%) were in female. Recto sigmoid were site of most of the polyps with (63.1%), (19.6%) in descending colon, transverse (7.6%), ascending (5.8%), Cecum (3.1%) and in two cases data were missing (Table 1). The most prevalent type of lesion was adenomatous polyps detected in 78 (34.7%). Mixed hyperplastic adenomatous in 70 (31.1%) polyps, hyperplastic polyps in 52 (23.1%), juvenile 2 (0.9%), Adenocarcinoma 9 (4%), inflammatory 3 (1.3%), in hamartomatous 3 (1.3%) Normal colonic epithelial in 6 (2.7%) in 2 Unknown. Among 78 adenoma polyps 40 were in male and 38 were in female. In 70 Mixed hyperplastic adenomatous polyps 44 were in male and 26 were in female. The subtypes of adenoma were including: tubular adenoma in 56 (24.9%), tubulo villous adenoma 16 (7.1%), villous adenoma 6 (2.7%). low grade dysplasia was detected in 6 (2.7%), mild 12 (5.3%), high 12 (5.3) and 195 (86.7%) polyps were negative for malignancy or dysplasia. Among 167 patients, 14 (8.4%) were past smokers, current smokers 26 (15.6%) and 121 (72.5%) never smoked. Past alcohol users were 7 (4.2%), current alcohol users 13 (7.8%) and 147 (88%) never used an alcohol. Family history of colon cancer detected in 20 cases (12%) and 147 (88%) patients didn't have family

Table 1. Anatomical Distribution of Colorectal Adenomatous Polyps

Polyp type/Polyp location	Ascending	Transverse	Descending	Rectosigmoid	Cecum	Total (%)
Tubular adenoma	1	1	18	35	1	56(24.9)
Tubulo villous adenoma	0	0	0	6	0	6 (2.7)
Villous adenoma	0	1	4	11	0	16 (7.1)
Hyperplastic	3	6	6	34	2	52(23.1)
Inflammatory	0	0	0	3	0	3 (1.3)
Hamartomatous	0	0	0	3	0	3 (1.3)
Mixed hyperplastic adenomatous polyp	7	9	10	40	4	70(31.1)
Adeno carcinoma	0	0	5	4	0	9 (4.0)
Juvenile	1	0	1	0	0	2 (0.9)
Normal epithelial	1	0	0	6	0	7 (3.1)
Total(%)	13(5.8)	17(7.6)	44(19.6)	142(63.1)	7(3.1)	

Table 2. Frequency of Different Polyps in Various Size Groups

Polyp type	Tubular adenoma	Tubulovillous adenoma	Villous adenoma	Hyperplastic	Mixed hyperplastic adenoma	Total(%)
Polyp size						
<1 cm	40(71.4%)	11(68.8%)	3(18.8%)	39(75.0%)	46(65.7%)	139(70.7%)
1-2 cm	7(12.5%)	3(18.8%)	3(18.8%)	7(13.5%)	13(18.6%)	33(15.6%)
>2 cm	9(16.1%)	2(12.5%)	0	6(11.5%)	11(15.7%)	28(13.8%)
Total(%)	56(100%)	16(100%)	6(100%)	52(100%)	70(100%)	

history of colorectal cancer. In 60 (35.9%) family history of other cancer detected and in 107 patients (64.1%) we didn't observe any family history of other cancers. History of gastrointestinal diseases in affected was also evaluated in 35 (21%) patients and 132 patients (79%) were negative for any types of gastrointestinal disease. Totally 139(70.7%) polyps were lower than 1centimeter(cm), 33(15.6%) polyps were 1cm to 2cm and 28(13.8%) polyps were more than 2cm (Table 2). Among 78 adenoma polyps 54 (69.2%) were lower than 1cm in size. In 100(70.4%) out of 144 polyps less than 1cm, 23 among 30 polyps between 1cm and 2cm, 19 (13.4%) out of 27 polyps more than 2cm, polyps were located in rectosigmoid. 46 (24.9%) tubular adenoma was detected in patients more than 40 years of age. 37 out of 52 hyperplastic polyps was detected in patients more than 40 year of age. Among 70 mixed hyperplastic adenomatous polyps 64 (34.6%) were in patients more than 40 years old. In each group size (polyps less than 1cm, between 1 and 2cm and polyps more than 2cm) we observed that the number of polyps increased with age. In this study 23 out of 31 advanced polyps (larger than 2cm) detected in patients more than 40 years of age. In our findings we found that out of 142 polyps located at rectosigmoid 113 polyps belonged to patients more than 40 year of age. Among 225 polyps 151 were pedunculated polyps, 56 were sessile and in 18 cases the data were missing. In 78 adenoma polyps 52 were in rectosigmoid: 35 tubular adenomas, 11 tubulovillous and 6 villous adenoma were in rectosigmoid.

Discussion

Since the majority of malignancies and colorectal cancer begin with diminutive polyp and many risk factors like age, family history of colorectal cancer, smoking and alcohol use associated with polyp incidence evaluating these polyps in term of histology with the latter risk factors provide new insight into understanding the mechanisms underlying the polyp incidence and this will help to improve clinical managements for patients with polyps. In our study totally 167 patients 84 female (50.3%) and 83 male (49.7%) were evaluated. Totally 225 polyps were detected and Solitary polyps observed in 124 patients (74%), 26 (15.6%) had two polyps and 17 (10.1%) with more than two polyps (three to five polyps). Recto sigmoid were site of most of the polyps with (63.1%), In 70 mixed hyperplastic adenoma polyps 44 in male and 26 were in female. Tubular adenoma was detected in 56 (24.9%), tubulo villous adenoma 16 (7.1%), villous adenoma 6 (2.7%). We observed low grade dysplasia in 6 (2.7%), mild 12 (5.3%), high 12 (5.3) and 195 (86.7%) polyps were negative for malignancy or dysplasia. We also observed the significant number of mixed hyperplastic adenomatous polyps in our study. Bafande et al. In 2008 examined 480 symptomatic Iranian patients and found that the majority of the adenoma polyps were tubular (65%) and located left side of the colon (Bafandeh et al., 2008). In other study of 210 patients with gastrointestinal polyps in Iran, Mirzaie et al. showed that most (74.2%) of the lesions are located at Colon and sigmoid (Mirzaie et al., 2012). In 2010 Hodadoostan et al revealed that

of all 856 polyps 77 were non-neoplastic and 779 were neoplastic. They showed that most of the lesions (adenomas, carcinoma) are located to lie proximal to the splenic flexure. Adenomas were detected in 727 (85%) patients and Carcinoma was observed in 52 cases. They also detected 354 advanced polyps which 87 were found in patients less than 50 years of age (Hodadoostan et al., 2010). In 2011 Christos D. Zois et al examined 150 patients with colorectal polyps ≥ 0.5 cm. The majority of the polyps were in rectum and sigmoid 114 (76.6%). They observed that from 128 (87.1%) patients with neoplastic polyps 50.8% were tubulovillous adenomas. Mixed hyperplastic adenomatous polyps was detected in 10 patients (6.8) (Zois et al., 2011). Kastuar et al. (2011) evaluated the presence of polyps in 405 Indian asymptomatic patients Out of 74 colon polyps detected in the population 45 were adenomatous polyps, 14 were hyperplastic and 8 were villous adenoma. In their study the prevalence of advanced adenoma was 3.3 %. Lowenfels et al. examined 82641 asymptomatic patients in 2011 (Lowenfels et al., 2011). They observed significant association between age and increasing in the size of the polyp in both genders ($p < 0.0001$). They also found that younger cases are likely to have smaller polyps in size compared to older patients. smoking is an important factor which could have impact on Polyp growth formation (Botteri et al., 2008). Joseph Carl Anderson et al. (2009) evaluated 2707 patients and found that heavy smokers are at high risk to develop colorectal cancer and who smoked more than 30 pack-years developed colorectal cancer with 2 times more than patients who never smoked. Among screening methods colonoscopy remains the best technics to detect the high risk patients. study on 213 advanced adenomas and 172 sessile serrated polyps(SSP) patients In 2012 revealed that previous endoscopy had a significant decrease in development of advanced adenoma in both the rectum/distal colon and proximal colon but their findings wasn't significant in SSps cases (Burnett-Hartman et al., 2012) Most of the polyps in our study located in rectosigmoid (63.1%). This is similar to study of Bafandeh et al. (2008), Mirzaie et al. (2012) and Hodadoostan et al. (2010) in which they found rectum and sigmoid together the most common site of the lesions in Iranian patients with colon polyps. The same finding also observed in other studies in western countries by Zois et al. (2011) and Luigiano et al. (2010). In this study most prevalent type of polyps was adenomatous 78(34.7%). Kastuar et al. (2011) also found a similar finding in 2013 in Indian patients. We observed that the most subtype of adenomatous polyps was tubular adenoma detected in 56 polyps which is consistence with other studies in Iranian population (Bafandeh et al., 2008). Mixed adenomatous-hyperplastic polyps presented in a significant number of our patients (70) this is in contrast to other studies in Iranian population where they haven't reported Mixed type of adenomatous-hyperplastic polyps in their studies (Hodadoostan et al., 2010; Mirzaie et al., 2012). Although in study of Bafande and colleagues in 2005, 12 (7.5%) patients with this type of polyps was reported in Iranian population (Bafandeh et al., 2005). In another study by Zois et al. In 2011 (Zois et al., 2011) mixed hyperplastic-adenomatous polyps was detected in

10 patients (6.8). We found that 40 out of 167 patients were smokers. We didn't find any association between smoking and size or prevalence of polyps ($p > 0.05$). This is in contrary to study of Onega et al. (2010) which reported that smokers developed a significant number of polyps in both gender than nonsmokers. They also reported that occurrence of larger adenoma polyps were higher in patients with intense smoking history (more than 15 pack years). This is in consistence with Anderson et al. Findings (2009). They reported that smokers are at high risk to develop CRC (2 times) more than nonsmokers. Many studies confirmed the association between alcohol consumption and developing adenoma and polyps. In our study only 20 patients had history of alcohol use therefore no association with this risk factor and polyp formation observed ($p > 0.05$). Another important risk factor in our study was Family history of colorectal cancer. This risk factor wasn't associated with occurrence and growth of adenoma or polyps in our population ($p > 0.05$). Our results is similar to Lowenfels and colleagues (Lowenfels et al., 2011) findings but is different to Almendingen et al. study. In their study they revealed that in patients with adenoma and family history of colorectal cancer there was a fourfold higher risk likelihood of adenoma growth (Almendingen et al., 2003). Moreover we observed that 23 out of 31 advanced polyps (larger than 2cm) detected in patients above 40 years of age. In each group size (polyps less than 1cm, between 1-2cm and larger than 2cm) the number of polyps increased with age. Our finding is similar to Bhaumik and colleagues in 2009 (Patel et al., 2009). In their study they Found that there was a significant association between advanced age and number of polyps in each patients ($p < 0.02$) they found that the number of advanced adenomas (polyps > 1 cm) was more in patients above 70 years of age than in cases under 70 years. In another study by Sarah J. Diamond reported that advanced adenoma rate was higher in male than female and they revealed that this phenomenon increased with age and each decade of life (Diamond et al., 2011). In conclusion we revealed that the most common type of polyps were adenomatous polyp. Most of the polyps detected were in male. This is consistence with other studies in Iranian populations (Bafandeh et al., 2008; Mirzaie et al., 2012) and the rate is similar to western countries. We also found that mixed hyperplastic adenomatous polyps accounted for a significant number of lesions (70). This heterogeneous type of polyps may be a precursor of neoplastic polyps and involve in malignancy pathways. The high prevalence of adenomatous polyps in our study also implies the urgent need for screening plans to prevent the further healthcare problems in Iranian population. So further genetic and molecular screening evaluation might have a huge impact on understanding the mechanisms underlying latter polyps in future.

Acknowledgements

This study was supported by a grant from the AJA cancer research center (ACRC) AJA University of Medical Sciences, Etemadzadeh street, Fatemi street, Chamran highway, Tehran, Iran.

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