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The Detection of Proximal Colon Polyps and Its Importance in Screening Colonoscopy

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ABSTRACT

Background: Colon polyps are precursors of colorectal cancer (CRC), therefore their endoscopic detection is very important. A shift of in the localization of colorectal polyps toward the proximal colon has been recently observed in Western countries. **Aim:** The aim of this paper was to establish the most important clinical and endoscopic aspects of right colon polyps and to correlate them with their histopathological types, with an emphasis on sessile serrated adenomas/polyps (SSA/Ps). **Material and method:** We perfomed a retrospective study on a series of consecutive patients who underwent colonoscopy in the Gastroenterology and Endoscopy Unit of the County Emergency Clinical Hospital of Tîrgu Mureș between January 1, 2010 – December 31, 2014, comparing the results with those of patients who underwent colonoscopy between January 1, 2005 – December 31, 2009. In all cases with abnormal aspects at endoscopy, multiple biopsies were taken for histopathological examination. Only cases where the diagnosis of colon polyp was confirmed by the Histopathology Department were included in the study. **Results:** In the 2010–2014 period there were 871 patients diagnosed with colon polyps (1,038 polyps), with a mean age of 62.28 years. The most frequent histopathological form was tubular adenoma in 55.97% of cases (n = 581). SSA/Ps were found in 66 patients (75 polyps). Considering all polyps, the most frequent localization was in the sigmoid colon in 32.36% of cases (n = 336), but for SSA/Ps the most common localization was the ascending colon in 24% of cases (n = 18), followed by the sigmoid colon in 21.33% of cases (n = 16). Compared with patients investigated between 2005 and 2009, we found an increasing localization in the right colon, from 10.43% (n = 67) in 2005–2009 to 15.41% (n = 160) in 2010–2014. SSA/Ps were found in the right colon in 5.97% of cases (n = 4) in the first period compared with 11.25% of cases (n = 18) in the second period. **Conclusions:** In the last years we found an increasing localization of colon polyps in the right colon. These findings underscore the importance of high quality colonoscopy to maximize protection against colorectal cancer.

Keywords: sessile serrated adenomas, endoscopy, right colon

INTRODUCTION

Colon polyps can be considered a bridge to colorectal cancer (CRC) due to their ability to evolve into malignancy. Early diagnosis and endoscopic removal are essential in preventing CRC.

CRC is one of the most common cancers in Western countries, its incidence occupying second place after lung cancer, with 446,000 new cases each year in Europe and a mortality rate for both genders of 214,000 deaths/year.[1]

Elevated incidence rates of CRC were recorded in Slovakia, with 92 per 100,000 in males in 2012, and the lowest incidence rate was found in Albania, with 13 per 100,000.[2]

The data provided for our country shows an incidence of 38.3/100,000 and a mortality of 20.1/100,000.[1] Worldwide, CRC is estimated to reach 1.36 million cases in males and 1.08 million in females by the year 2035.[3] A change in the incidence of polyps with increased localization in the proximal colon has been observed in recent years in Western countries, with an increasing number of sessile serrated polyps (SSP).

The notion of sessile serrated polyp/adenoma was introduced in 2003 in order to distinguish this type from the traditional serrated adenoma.[4] It has been proved that SSPs are involved in sporadic colorectal cancer due to microsatellite instability.[5] The common molecular denominator of this type of polyps and sporadic CRC is the BRAF gene mutation and gene hypermethylation. Data from the literature highlights the importance of early detection of colon polyps in the prevention of CRC and implicitly the decrease of morbidity and mortality through this condition.

The aim of this paper was to establish the most important clinical and endoscopic aspects of right colon polyps and to correlate them with their histopathological types, with an emphasis on sessile serrated adenomas/polyps (SSA/Ps).

MATERIAL AND METHOD

We conducted a retrospective study on two series of consecutive patients who underwent colonoscopy in the Gastroenterology and Endoscopy Unit of the County Emergency Clinical Hospital of Tîrgu Mureș between January 1, 2005 to December 31, 2009 and January 1, 2010 to December 31, 2014. In all cases with abnormal macroscopical aspects at endoscopy, multiple biopsies were taken for histopathological examination. We compared the results between the two study groups in order to establish which among the two periods is associated with a higher incidence of SSPs. Only cases where the diagnosis of colon polyp was confirmed by the Histopathology Department were included in the study.

General exclusion criteria were patients with serious associated clinical conditions (cardiac or hepatic conditions, respiratory failure, hemodynamic instability, serious systemic illness, end-stage disease, active gastrointestinal bleeding) that required therapeutic intervention and represented a contraindication for biopsy. We registered the endoscopy findings, histopathological reports, and personal pathological history of each patient form the admission chart. The acquired data was thoroughly analyzed. To determine the statistical significance, the Chi square and Fisher tests were used, with a significance level of $\alpha = 0.05$. All statistical analyses were performed using GraphPad Prism version 6.0 (GraphPad Software Inc. San Diego, CA, USA). Prior ethical approval was not required, as this was a retrospective review of patient charts, and patients gave consent to use of their data.

RESULTS

Between 2010 and 2014, 871 patients with colon polyps (1,038 polyps) were diagnosed, with a mean age of 62.28 years, and between 2005 and 2009, 642 polyps (502 patients) were diagnosed, with an average age of 63 years. A higher prevalence of colon polyps was noticed in male patients, with a male/female ratio of 1.48/1.

When we separately analyzed the patients with SSA/P, the mean age was similar, but we noticed a lower male/female ratio of 1.2/1.

Regarding the polyps' distribution by histopathological type in the 2010–2014 period, tubular type predominated with 56% of cases (n = 581), followed by tubulo-villous polyps in 25% (n = 260), hyperplastic type in 12% (n = 122), and serrated adenoma in 7% of cases (n = 75).

In the 2005–2009 period, an increased percentage of tubulo-villous (51%, n = 326) and tubular polyps (36%, n = 235) was noted, followed by serrated adenoma in 6% (n = 36), hyperplastic adenoma in 5% (n = 33), and other types in 2% of cases (n = 12).

Comparing the two periods, there was a statistically significant increase ($p < 0.05$) in the right-sided localization of the polyps. In the 2005–2009 period, 67 polyps were located in the ascending colon, while in the 2010–2014 period, 160 polyps were situated at this level. In both periods, the main localization of the polyps was in the sigmoid colon. Analyzing the distribution of SSPs according to their location in the two periods, we noticed an increased localization in the right colon (Figure 1).

In the 2005–2009 period, SSPs prevailed in the sigmoid colon, while in the 2010–2014 period their localization

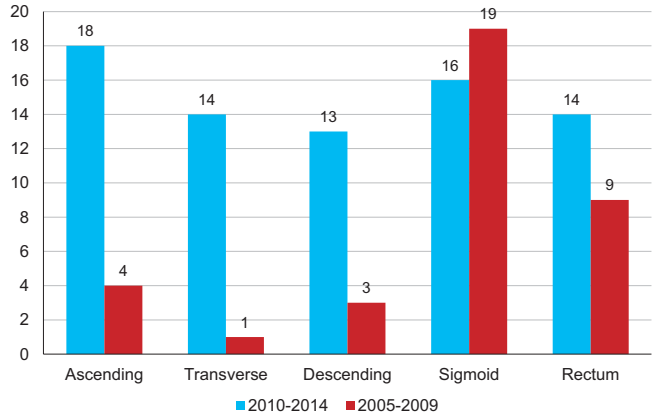

FIGURE 1. Distribution of sessile serrated polyps between 2010–2014/2005–2009

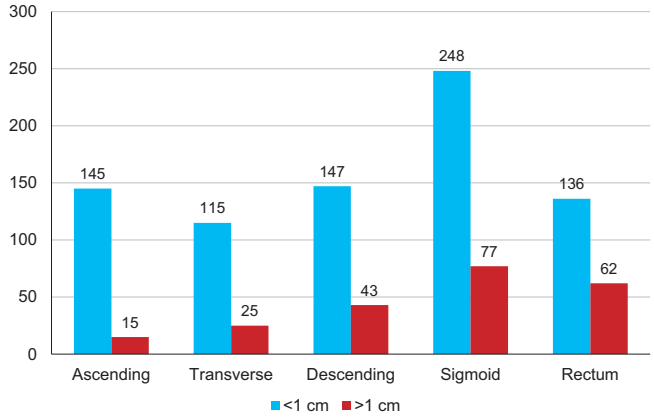

FIGURE 2. Distribution of polyps by size and localization

was noted in the ascending colon in 22.66% (n = 18) of the total number of SSA/P cases, followed by the sigmoid colon in 21.33% (n = 16) of cases. Analyzing the polyps' dimensions in the 2010–2014 period, we noticed a predominance of small polyps: 79% were under 1 cm, while large polyps (over 1 cm) were present in 21% of cases. Regarding SSPs between 2010 and 2014, 77% (n = 58) were smaller than 1 cm, and 23% (n = 17) were larger than 1 cm in size (Figure 2).

When studying the distribution of polyps by size and location, we observed the presence of small polyps in the right colon, with a ratio between small/large polyps of 9.66/1, followed by transverse colon localization with a ratio of 4.6/1, descending colon with 3.41/1, sigmoid colon with 3.22/1, and rectum with a ratio of 2.19/1 (Figure 2).

Regarding the presence and grade of dysplasia in SSPs, a net prevalence of non-dysplasia polyps was observed (92%, n = 69), compared to high-grade dysplasia in 5% (n = 4) and low-grade dysplasia in only 3% (n = 2) of cases.

Looking at the correlation between the size of the SSA/P and the presence of dysplasia, we noticed that six of the polyps presented dysplasia, two were with low-grade, and four with high-grade dysplasia. Of the polyps presenting dysplasia, five were smaller than 1 cm.

We also observed the presence of synchronus neoplasia and neoplastic history of CRC among the patients in our study. From the 871 patients that had been examined between 2010 and 2014, we registered the presence of concomitent neoplasia in 49 patients (5.62%) and neoplastic history in 32 patients (3.67%).

In the group of patients with SSA/P (75 patients) in the 2010–2014 period, we observed the presence of colon neoplasia in 2 patients (2.66%) and neoplastic history in only 2 cases (2.66%).

DISCUSSION

The present study was retrospective, comparing two 5-year periods, 2005–2009 and 2010–2014, showing a statistically significant increase ($p < 0.05$) in the number of polyps found in the proximal colon. In the time period between 2005 and 2009, 67 of the polyps were localized in the ascending colon, while between 2010 and 2014, 160 polyps were situated at this level. In both periods the main location of the polyps was in the sigmoid colon. Regarding this location, the number of patients was relatively constant, with 336 polyps in the 2010–2014 period and 314 polyps in the 2005–2009 period.

This significant increase in the number of polyps located in the right colon was revealed in studies both in Western countries and in our country. A comparative study performed in Cluj on a large number of 3,642 polyps (2,436 colonoscopies), comparing the 1996–2003 period with 2004–2011 showed a detection rate in the right colon of 9.36% in the first period compared to 12.17% in the second period ($p < 0.001$), demonstrating a significant increase in the detection rate of polyps located in the right colon.[7] The average age of patients with colon polyps between 2010–2014 was 62 years, a very important fact that is useful in establishing the optimum age for initiating CRC screening, which, according to current guidelines, is recommended at the age of 60 years.

Polyps were more common in male patients, with a male/female ratio of 1.48/1, which is similar to most of the recent data. A study published by a group of researchers in Austria showed that male gender was significantly associated with a higher prevalence of adenomas compared to females (24.9% vs. 14.8%, $p<0.001$; OR 1.9, 95% CI 1.8–2.0).[8] Regarding SSA/P, we observed a male predominance but a smaller gender gap, the male/female ratio being 1.2/1.

FIGURE 3. Sessile serrated polyp in white light

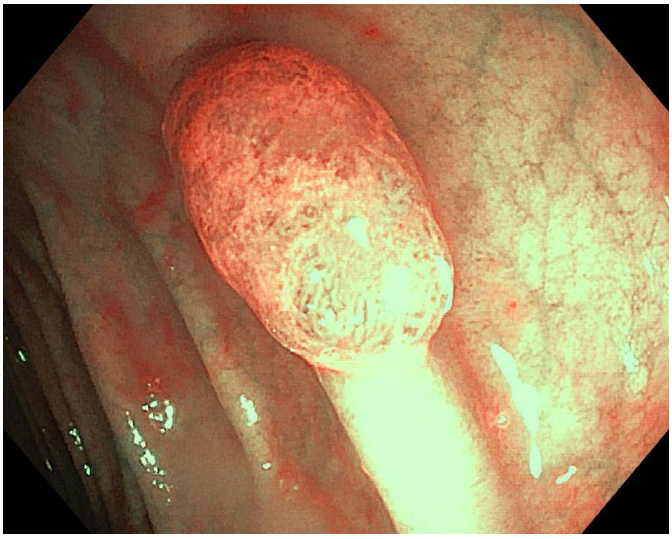

FIGURE 4. Sessile serrated polyp in narrow-band imaging (NBI)

SSA/P-type polyps are characterized by proximal colon localization and are associated with female gender. Smoking is also an important risk factor for the development of these polyps.[9]

By comparing the distribution of SSA/P according to their localization in these two periods, we noticed an increase regarding their localization in the right colon. SSPs were mainly localized in the sigmoid between 2005 and 2009, while in the 2010–2014 period their location was in the cecum and the ascending colon in 22.66% (n = 18) of the total number of SSA/P cases, followed by the sigmoid colon in 21.33% (n = 16) of cases.

One of the aims of the present study was to analyze the endoscopic and histological aspects of SSA/P. In recent years, this type of adenomas has become increasingly important, being considered a precursor of CRC. Because of their particular endoscopic appearance — pink-colored and flat — this type of polyp is difficult to see during endoscopy, or can be misinterpreted by the anatomopathologist as hyperplastic polyps (Figure 3 and Figure 4). SSA/P represented 7% of the polyps in the 2010–2014 group, a percentage similar to that of other studies published in the literature. Hazewinkel et al., in a screening study, showed that the SSA/P accounted for 7.3% of the polyps.[10]

Current data shows that SSA/Ps are much more common than previously thought. A colonoscopist with a high rate of polyp detection and an experienced anatomo-pathologist have identified a prevalence of these polyps of 8.1% in a screening population.[11] In our group, SSA/Ps showed dysplasia in 8% of cases, 5% with high dysplasia and 3% with mild dysplasia. Of the six polyps with dysplasia, five were smaller than 1 cm, which again emphasizes the importance of endoscopic excision of all polyps regardless of their size. The presence of high-grade dysplasia in small polyps has already been described in the literature.[12]

A recent study has shown that patients with SSPs are at a higher risk of developing CRC, higher than that of patients with other types of polyps.[13]

All this adds to the importance of a high-precision examination and the correct identification of preneoplastic lesions for CRC prevention. In recent years, screening programs were implemented in Europe due to the major role of polyps in the development of CRC. Early identification of preneoplastic lesions and their excision can significantly decrease morbidity and the associated mortality. Sporadic cancer is also being discussed, and an important factor in its prevention is the correct identification of serrated lesions, which can be easily omitted by the endoscopist due to the proximal aspect and location.

The highly curative potential of CRC, depending on the stage in which it is diagnosed, justifies screening programs and careful consideration of the matter. Albeit implementing a screening program is not uniform across Europe, participation in screening is essential, which is why promotion strategies need to be developed to increase adherence to these programs.

Finally, we would like to mention that our study had some limitations. It is a retrospective, endoscopic study, which can lead to some errors in data interpretation. Also, all the anamnestic data, the patients' history, and the presence of other risk factors could not be evaluated.

CONCLUSIONS

In the last years, we found an increased localization of colon polyps in the right colon. These findings underscore the importance of high-quality colonoscopy in maximizing protection against colorectal cancer.

CONFLICT OF INTEREST

Nothing to declare.

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