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Research Article

The prevalence of high dysplastic colonic adenomatous polyps in a 3 year endoscopic retrospective study from a single clinical center

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Abstract

Introduction: Many colon neoplastic tumors come from the malignancy of adenomatous polyps (70%-90%) that were not timely diagnosed in order to be resected. **Materials and Methods**: We conducted a retrospective study regarding the incidence of adenomatous polyps during 1.000 consecutive colonoscopies performed in our Upper and Lower Digestive Endoscopy Laboratory during a three-year period. **Results**: During these colonoscopies, some targeted polyps were biopsied or completely removed and the samples had been sent to a complete anatomopathological examination. Taking into consideration the results, the polyps were classified after the histological type and the form of dysplasia, in order to determine the polyp forms that present a high risk of malignancy. **Conclusion**: Given the rather high frequency of malignant polyps discovered during our study, we highly recommend colonoscopy as a method of choice for routine monitoring of selected cases.

Keywords: adenomatous, polyps, dysplasia, endoscopic, retrospective, study

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Introduction

Colon polyps represent an important chapter in digestive system pathology. They are frequently discovered when investigating the large bowel, often on a routine basis or part of a larger therapeutic plan. Recent statistics indicate more than 30% of all patients above 60 years of age present colon polyps (1). The importance of these polyps is represented by the fact that some may suffer degenerations and true neoplastic transformations, therefore becoming a precursor for malignant colonic tumors.

Usually, colon polyps are asymptomatic and are discovered completely by chance. In advanced cases, these polyps can cause occult bleedings and determine secondary anemia, or even inferior digestive hemorrhages, that can occur spontaneously or mixed with fecal matters. More rare clinical signs are intestinal obstruction in the case of very large polyps, or liquid stools in the case of voluminous villous polyps (2, 3).

The worst complication is the malignant transformation of the polyps, a process that completely changes the evolution and prognosis of the disease. Medical studies indicate that 0.2-11% of the resected polyps during endoscopic interventions have been discovered with malignant transformations (4).

From a histological point of view, polyps are well defined lesions that can emerge from abnormal growth of the colon mucosa (epithelial polyps) and submucosa (non-epithelial polyps). Whether the control of DNA replication is lost or preserved can further differentiate the polyps into neoplastic polyps or non-neoplastic polyps. Neoplastic polyps with high malignancy rates can be in the form of tubular adenoma, villous or tubulo-villous adenoma, malignant adenoma, carcinoma and serrated polyps, which in turn can be in the form of hyperplastic or mixed (with characteristics of both hyperplastic of adenomatous polyps) (5, 6).

Studies show that 70% of the extracted polyps are tubular adenomatous polyps and 15% are tubule-villous polyps. The mucosal, hyperplastic and inflammatory polyps, or pseudo polyps, which appear in Crohn disease, ulcerative colitis or ischemic colitis, are part of the second category, and have a low malignancy rate (7).

From the numerical point of view, polyps can be either solitary, multiple or spread all over the colonic surface, in all segments, such as in the case of Familial Adenomatous Polyposis (FAP) (8, 9). Regarding their shape, polyps can be classified as pedunculated, semi-pedunculated or sessile. The diameter of the polyps further divides them as very small (with an diameter of up to 5mm), small (diameter between 5 and 10 mm), large (a diameter greater than 10 mm)and very large, usually with a diameter above 20 mm. All studies consider that very small polyps have a rather negligible malignancy potential but regard all very large polyps with a rate of over 50% in malignancy potential (10).

Materials and Methods

This paper represents a retrospective anatomo-pathological study of all types of polyps discovered during 1.000 consecutive colonoscopies performed between March 2013 and April 2016, in the Upper and Lower Digestive Endoscopy Laboratory of Witting Clinical Hospital, Bucharest.

The polyps have been classified taking into consideration the histological point of view, the forms with severe dysplasia being recorded separately from the ones with low and mild dysplasia. Moreover, all the cases of malignant tumors first discovered during these investigations were recorded.

Instrumentation used during the endoscopic study was a standard 170 cm long Pentax video endoscopy equipment with a ERBE™ ICC200 constant voltage output cutting and electrocoagulation platform; image

recording subsystem consisted of a thermal transfer color printer and external recording equipment for digital images – a PC based station. All tissue samples obtained were processed in the pathologic anatomy laboratory of our hospital or, whenever considered appropriate by our pathologist, samples were referred to a specialized laboratory for immune-histochemical processing, not yet available in our facility.

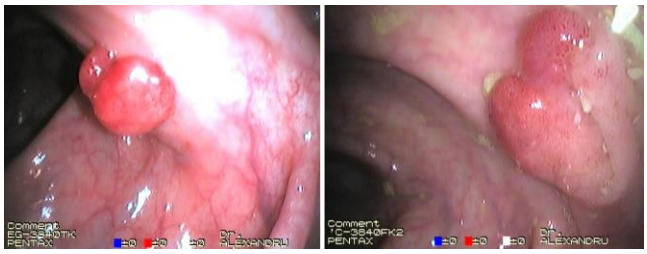

Fig. 1. Different endoscopic aspects of polyps located at the level of the left colon.

All sessions consisted of total colonoscopies performed with deep analgo-sedation and monitoring by a fellow ICU specialist and a trained nurse. During each session, we performed polyp resections and right colon polyp monitoring, from where tissue sampling has been obtained previously (Figure 1); also, polyps larger than 1 cm were removed whenever it was possible.

We also emphasize that polyps located at the level of right colon are much harder to remove because they usually appear in large numbers and many of these polypoid agglomerations are present, thus making the process of resection more complicated and subsequently less safe for the patient (Figure 2).

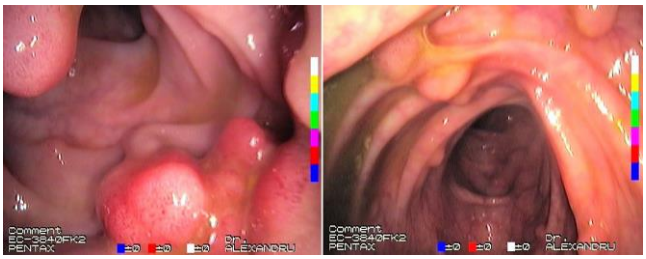

Fig. 2. Several endoscopic snapshots of larger polyps that made the resection process more difficult.

After each session, patients were transferred for observation in ICU for about 2 hours where all vital signs were carefully monitored for possible complications, such as bleeding or colonic perforation. No special medication was used after the procedures and no complications have been recorded during this entire study. Also, the standard bowel preparation was applied with a minimal restriction in food intake for 24 hours prior to the investigation.

Results

Out of 1.000 colonoscopies performed, we discovered 144 polyps and 32 neoplastic tumors, as the chart in Figure 3 showcases.

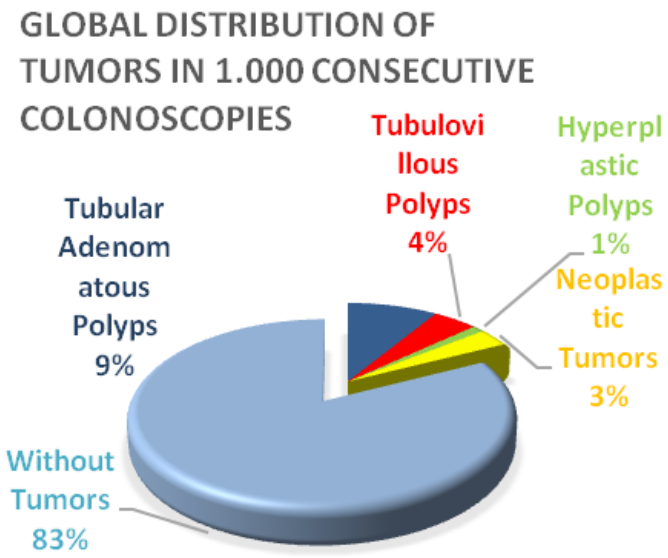

Fig. 3. Global distribution of tumors in our study.

Regarding the histopathological study of the polyps, there were 132 polyps with neoplastic behavior (tubular adenoma and tubulo-villous adenoma), representing 91% of the cases (Figure 4). The non-neoplastic polyps (hyperplastic polyps) were only 12, representing the remaining 9%.

Out of the 132 neoplastic polyps, 88 were tubular adenomatous and the other 44 neoplastic polyps were tubule-villous polyps.

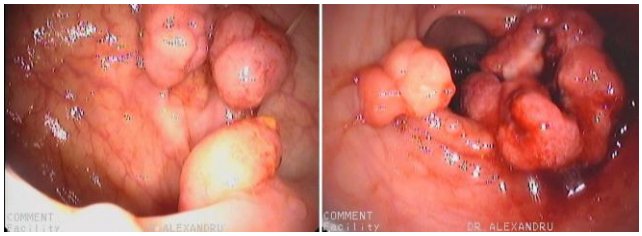

Fig. 4. Endoscopic aspects of a left colon cancer recorded in a patient during the paraclinical exams following his admission in our clinic for rectal bleedings. Notice the large tumoral mass with all the major macroscopic characteristics for a malignant transformation of a polyp.

Discussions

Since the dawn of the endoscopic era surgeons and medical clinicians alike have been wondering if performing endoscopy exams with cascaded polypectomies could become a strong basis for an efficient method of colonic cancer screening. With the ever growing and development of newer strategies and therapeutic guidelines, this method of screening has been under continuous improvement with the addition of certain macroscopic criteria and local anatomical conditions to be met in order to restrict the indication for polypectomies. Nowadays this strategy is considered a good approach in the early detection of colonic cancer, a strategy that also reduces the number of unnecessary large colonic resections and instead promotes a targeted surgical resection, with an obvious rise of the quality of life for the operated patients.

The percentage and malignancy rate of the colonic polyps have grown in the last decades at an alarming rate, an observation that has forced may clinicians to pose a natural question: can this be attributed to the advance in the field of endoscopic technology or is it due to the way we now regard and understand reporting of dysplasia cases, based on newer and better protocols? Therefore, several studies (11, 12) have analyzed many factors such as the introduction of the video-endoscope, the new generation of imaging processors, the recent advances in image resolution on one hand, and the changes in dysplasia-reporting norms in 2006 on the other; the conclusion has been that both the technological advances and the dysplasia-ranking system are equally important to the increase of diagnosed duodenal cancers. In this regard the present study lacks a complete comparison between cases reported in recent history and those monitored in the early days of endoscopic procedure in our facility, a study with interesting conclusions that is about to be drafted (13).

The favorable evolution of the patients that underwent a targeted colectomy with an end-to-end anastomosis led us to believe that the number of total colectomies performed in patients with high dysplastic adenomatous polyps that developed colonic cancer can be lowered significantly if a careful monitoring process is established and patient compliance is assured by a carefully planned schedule. The idea behind this therapeutic plan is to perform the appropriate hemicolectomy in a timely manner, only when we detect a change in the histological pattern of the resected polyps (14).

But this approach implies several calculated risks, as may newer (8) or older (9) studies imply. The first of them is the resolution of the endoscopic check-ups. Is one year too long a period of time? Is the target of six months too frequent, placing pressure on the health system with little benefit? Too frequent endoscopic controls may also result in lower patient compliance and increased attrition. Because comparative studies are not available on this topic we considered a period of one year to blend the benefits for the patient, a relatively low risk of overshooting the target of early cancer detection, and a quite low impact on the health system (8, 15).

The other problem with timed polypectomies for early cancer detection is that such an approach implies a high risk with regards to the polyps that are chosen for the biopsy procedure during an endoscopic session, such a judgment being in close relation with existing macroscopic modifications and the personal family history of the patient (16, 17).

Also, since polypectomy is an invasive maneuver often associated with postoperative bleeding (8), a careful selection process must be applied in order to avoid any medical complications: interruption of all oral anticoagulants and switching to systemic administration of the appropriate form of heparin, in accordance with the most recent protocols, a constant monitoring of major vital parameters by a trained ICU nurse (better yet by a fellow ICU specialist), an appropriate gauge iv line, easy access to a full kit of endotracheal device for safe and rapid connection to a general anesthesia machine in case of extreme measures necessary for pulmonary mechanical assistance. Although, in our experience of 1.000 polypectomies, we never recorded any serious complications that required invasive pulmonary assistance, these situations are cited in the literature and could lead to a rapid development of irreversible coma with unpredictable outcome (18, 19).

Moreover, we recommend a minimum of 4 hours monitoring time after the polypectomy as some systemic effects can occur in these patients – such as rapid escalation of arterial blood pressure, abdominal pain due to the large bowel distension, etc. – and often they require appropriate medication under supervision.

Given these considerations, our recommendation is that polypectomies must be performed in an appropriate environment, such as a hospital or (in our case) a clinical ward with all the necessary monitoring devices and proper drugs available at all times. A close proximity with an ICU unit and a fully equipped OR is advisable but not mandatory, since uncontrollable postoperative bleedings are exceptionally rare and out of those, only a few require surgical intervention via laparotomy (8). In our study none of the patients required postoperative administration of plasma or pro-coagulant medication for excessive bleedings (20).

Conclusions

Taking into consideration that most often colon polyps are asymptomatic and rarely bring the patients to the hospital because of complications, this study represents a major argument for practicing colonoscopies on a large scale in order to obtain an early imagistic diagnosis.

Moreover, the determination of the histological type through biopsies and performing timed polypectomies when the histological pattern shifts might enable early detection of a malignant transformation of these polyps, and as such we can perform a targeted colectomy rather than a hemicolectomy in the case of a full-size tumoral mass. As a result, we have a chance of increasing the quality of life for these patients.

Acronyms and abbreviations

FAP: Familial Adenomatous Polyposis; CRC: Colorectal Cancer; ICU: Intensive Care Unit.

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