Colonoscopy is currently accepted as the golden standard in the detection of pre-malignant lesions, and reduction of the incidence of colorectal cancer in patients with adenomatous polyps. The aim of the study was to determine the diagnostic value of colonoscopy in case of patients with clinical symptoms suggesting the possibility of colorectal pathology, as well as evaluate the technical aspects and results of colonoscopic polypectomies, considering the efficacy and safety of the above-mentioned procedures.

Material and methods. Retrospective analysis of the course and results of the polypectomies performed during 3638 colonoscopies was undertaken, considering patients with suspicion of colorectal pathology.

Results. Complete colonoscopy with cecal intubation was performed in 3310 (91%) cases. Colonoscopic polypectomies were performed during 806 (22.1%) examinations. Single polyps were detected in 459 (56.9%) cases, while multiple lesions in 347 (43.1%) cases. The total number of removed polyps amounted to 1184. There were 882 (74.6%) adenomas of which 225 (25.5%) were considered as an advanced pathology. Moreover, the pathologist detected 4 malignant polyps with features of adenocarcinoma. In case of 30 examinations, adenomas coexisted with colorectal cancer and were removed preoperatively. Post-polypectomy bleeding was observed after 15 (1.7%) polypectomies, although only two patients required surgery. Moreover, amongst the 343 rectal polyps, 19 (6%) non-pedunculated lesions were surgically removed (18 of them by means of the trans-anal approach).

Conclusions. The method proved effective and the polyps were detected and removed in more than 22% of the colonoscopic examinations. In two (0.28%) cases surgical intervention was required, in order to stop post-polypectomy bleeding from the polyp’s peduncle. Some of the rectal polyps (6%) had to be surgically removed. Preoperative endoscopic “clearance” of large bowel polyps, facilitated the adjustment of the resection margin in subsequent colorectal cancer surgery.

Key words: colonoscopic polypectomy, adenoma detection rate, post-polypectomy complications
The aim of the study was to determine the diagnostic value of colonoscopy in case of patients with clinical symptoms suggesting the possibility of colorectal pathology, as well as evaluate the technical aspects and results of colonoscopic polypectomies, considering the efficacy and safety of the above-mentioned procedures.

MATERIAL AND METHODS

Retrospective analysis considered data obtained from patients subject to colonoscopies at the Department of General Surgery, during the period between 2001 and 2009. Indications to perform colonoscopy were as follows: defecation rhythm disturbances, active and past gastrointestinal bleeding, and diagnostics of anemia. Screening examinations were not performed. 3638 colonoscopies were performed during the analysed period. Polyps were diagnosed in case of 806 (22.1%) examinations. Cancer lesions were diagnosed in 216 (5.9%) cases, diverticulae in 485 (13.3%) cases, and inflammatory lesions in 308 (8.5%) cases. Depending on the reported symptoms patients received intravenous midazolam, at a dose of 3-5mg and fentanyl, at a dose of 0.05-0.1 mg during the examination. General anesthesia was required in case of total lack of cooperation with the patient. Total colonoscopy with the image of the cecum or small-large bowel anastomosis was obtained in 3310 (91%) cases. The intubation time of the entire bowel ranged between 5-25 minutes, and the endoscope withdrawal time between 5-7 minutes, being prolonged in case of polypectomy, biopsy, or improper bowel preparation. Polypectomies were performed in 360 female and 446 male patients, including 426 examinations in patients <65 years, and 380 examinations in patients aged >65 years. Most procedures were performed using the standard diathermy loop. The so-called „hot-biopsy” or „mechanical forceps macrobiopsy” method was used in case of polyps 3-4 mm in diameter. The “piece-meal” technique consisted in the removal of 2-4 cm polyps and was performed in 11 cases, while polypectomy during laparotomy in two cases.

RESULTS

A single polyp was diagnosed during 459 (56.9%) colonoscopies, while multiple polyps (725) during 347 (43.1%) colonoscopies. The location of the polyps was as follows: rectum –343 (42.6%), cecum and descending colon – 225 (27.9%), transverse colon and the right side of the large bowel – 238 (29.5%). The total number of removed polyps was 1184, including 29 (2.4%) which were not collected for histopathological sampling. The number of polyps of adenomatous character amounted to 882 (74.6%). Considering the 298 non-adenoma lesions dysplasia foci were diagnosed in 13 (4.3%) cases (tab. 1).

Table 1. Non-adenomatous polyps and presence of dysplasia

<table>
<thead>
<tr>
<th>Type</th>
<th>Number</th>
<th>Presence of dysplasia in polyps *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hyperplastic</td>
<td>201</td>
<td>9x (including serrated polyps)</td>
</tr>
<tr>
<td>Inflammatory</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>Lymphoid</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Peutz Jeghers’</td>
<td>6</td>
<td>4x</td>
</tr>
<tr>
<td>Lipomas</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Sample not analysed</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>298</td>
<td>13x (4.3%)</td>
</tr>
</tbody>
</table>

Table 2. Size of the adenoma and degree of dysplasia

<table>
<thead>
<tr>
<th>Size</th>
<th>≤1 cm</th>
<th>≥1 cm (*)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>676</td>
<td>206</td>
<td>882</td>
</tr>
<tr>
<td>Significant dysplasia</td>
<td>19</td>
<td>39</td>
<td>58 (6.6%)</td>
</tr>
<tr>
<td>(villous)” structure was only present in adenomas ≥1 cm.</td>
<td>(2.81%)</td>
<td>(18.,9%)</td>
<td></td>
</tr>
</tbody>
</table>
existing polyps were also excised. In 21 cases they were located distally, and in 9 cases proximally to the neoplastic lesion. All investigated polyps were adenomas. Considering rectal polyps, which were diagnosed during 343 colonoscopies, 19 (6%) large and non-pedunculated lesions were surgically removed: 18 by means of the trans-anal approach and one by means of laparotomy.

806 (22.1%) patients were diagnosed with 1184 polyps, including 882 (74.6%) adenomas. 225 (25.5%) of these polyps presented features of an advanced pathology. In case of 13 (4.3%) non-adenoma polyps, dysplastic foci were also diagnosed.

Considering the observed complications bleeding from the pedunculated polyp was most frequently diagnosed, being controlled in 13 cases by means of endoscopy. Two patients underwent surgery. In case of the first patient the ascending colon polyp was removed, followed by laparotomy and the implantation of hemostatic sutures. Considering the second patient, a large splenic flexure adenoma was removed, followed by left-sided hemicolectomy. Another patient with a cecal polyp was also subject to surgical intervention, due to extensive sigmoid perforation during intestinal intubation. Emergency laparotomy was performed with closure of the perforation and exteriorization of the transversostomy. The polypectomy was performed in another center after the placement of the colonoscope through the transverse colon fistula followed by gastrointestinal tract continuity restoration. Apart from the above-mentioned complications, 2 (0.29%) patients presented with respiratory insufficiency, which was probably connected with the analgesia.

DISCUSSION

The quality of the colonoscopic examinations and procedures have been the subject of many studies (2, 7-10). The aim of our study was to evaluate the technical aspects and colonoscopic polypectomy results, considering their efficacy and safety. Screening colonoscopy procedures were not considered in the analysis. The study material comprised patients hospitalized in surgical and internal medicine departments, being subject to colonoscopic examinations and diagnosed with symptoms suggesting lower gastrointestinal pathologies.

The first factor that influenced the quality of colonoscopy and diagnosis of pathological lesions was the degree of bowel preparation. Our patients received 3-4 liters of polyethylene glycol the day before the examination. Usually the time elapsed between the end of bowel preparation and beginning of the examination exceeded 14 hours, as recommended by Church in 1998 (11), and was aimed at preparing the bowel for optimal identification of small polyp lesions. Due to the presence of pain and discomfort some patients required the so-called “conscious sedation”, which consisted in the administration of 0.05 – 0.1mg intravenous fentanyl and 3-5 of midazolam. General anesthesia was limited to cases of total lack of cooperation with the patient. In case of Multicenter European studies the percentage of anesthetized patients amounted to 26%, which might be connected with the greater availability of anesthetic staff in large clinical centers (2).

Another evaluated parameter was the so-called „complete colonoscopy“. The cecum or anastomosis between the transverse colon and small bowel in previously operated patients was accessed in 3310 (91%) colonoscopies. The above-mentioned result corresponds to data obtained from reference centers (2, 8, 9), where the cecum should be accessed in 85% – 90% of cases. However, literature data demonstrated that numerous endoscopic laboratories might not fulfill the above-mentioned criterion (12, 13). Based on available gastrological society recommendations (7, 14, 15) proper bowel inspection should comprise a minimum of 6-10 minutes of endoscope withdrawal from the cecum to the anus. The time elapsed in case of our patients was consistent with the above-mentioned recommendations, although could have been prolonged, due to the possibility of polypectomy, sample collection or inspection of the insufficiently prepared bowel.

As a measure of effectiveness, one considers the number of detected and removed polyps, especially adenomas, in relation to the total number of performed colonoscopies. Reguly et al. and Barclay et al. (9, 14) diagnosed adenomas during screening examinations in 21 -23.5% of cases, while advanced pathologies (16) (size exceeding 1cm or significant dysplasia) in 5.2 – 5.8% of cases (14, 17). The polyp
Colonoscopic polypectomy — evaluation of the effectiveness and safety (single center experience)

detection rate, obtained by Kohut et al. from European gastrointestinal centers amounted to 28% (2). In our study polyps were diagnosed in 22.1% of cases, although only 74.5% of the removed polyps presented adenoma characteristics.

Considering the size of the removed polyps, advanced lesions consisted of 206 adenomas with a low dysplastic degree, exceeding 1 cm, as well as 19 small adenomas with significant dysplasia (Tab. 2). This seems important, since the above-mentioned group of 225 patients was qualified for frequent colonoscopic examinations. Malignant polyps were diagnosed in four cases. However, in accordance with other Authors (6, 16-19) two of the above-mentioned cases were not subject to resection, due to the low risk of invasiveness to the lymph or venous systems, considering the intestinal submucosa. These patients were qualified for frequent control examinations.

The gathered material justifies the need to remove and examine all polyps, due to the possibility of significant dysplasia even in case of small lesions (2.81%). Increased detection of small and flat lesions is possible thanks to the use of chromoendoscopy with image magnification or Narrow Band Imaging (NBI). However, the experience of the physician performing the examination seems most important (3). Although small lesions may constitute an obvious difficulty in their identification, large non-pedunculated polyps might pose a problem, considering their complete excision (19).

In case of large rectal polyps surgery by means of the trans-anal approach is an alternative, which was the case in 18 of our patients. The lesion may be completely removed by means of the classical method (using Parks’ dilator), or the TEM (Transanal Endoscopic Microsurgery) technique (using a special surgical rectoscope). When removing large polyps the “piece-meal” technique is also accepted, which was performed in 11 cases. After using the technique the remaining lesions should be destroyed by means of coagulation or argon beamer (19). The above-mentioned method was performed during control endoscopic interventions after 3-6 months in 5 cases.

Bleeding from the peduncle of the polyp was the most significant complication after endoscopic polypectomies. It occurred in case of 15 (1.3%) procedures. Literature data values proved similar. Bleeding is observed in 0.4 to 2.2% of polypectomies (5, 20, 21, 22), although if the lesion exceeds 3 cm, values might amount to 3.7% (21). In most cases bleeding may be controlled by means of endoscopy: peduncle coagulation in six cases, loop constriction in two cases, and argon beamer in 5 cases. However, two of our patients required surgical intervention, which is rarely described. Intestinal perforation was observed in one (0.15%) patient, due to forced sigmoid intubation, prior to the performed polypectomy. Literature data values ranged between 0.13 and 0.7% (5, 12, 22).

CONCLUSIONS

Large bowel polyps were diagnosed and removed during colonoscopic examinations in more than 20% of patients hospitalized with suspicion of large bowel disorders. Dysplasia was observed in 4.3% of cases without signs of adenoma presence. Some (6%) large and non-pedunculated rectal polyps required surgical excision. The so-called preoperative bowel "cleaning" from polyps, coexisting with neoplastic lesions enabled to limit the extent of the resection to the stage of the tumor and location. Colonoscopic polypectomies were burdened with the risk of complications, possibly requiring emergency surgical intervention.

REFERENCES