RESECTIONS AND PALLIATIVE PROCEDURES IN PATIENTS OPERATED ON FOR COLORECTAL CANCER IN POLAND IN 2005-2008

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The aim of the study was analysis of the number of resection and palliative procedures in patients operated on for colorectal cancer in Poland. We also analyzed the number of sphincter-sparing surgery in patients with rectal cancer.

Material and methods. Statistical data about surgical procedures performed in patients with colorectal cancer were obtained from the National Institute of Hygiene in Warsaw. The procedures were divided into palliations and resections. The analysis was performed for the period from 2005 to 2008. We analyzed the data including women and men.

Results. We observed an increase in the number of resections from 3381 to 3768 (85.6-88% of all treatments) (2005-2008) in patients with colon cancer. A similar regularity was observed in patients who underwent surgery for rectal cancer from 2335 to 2712, respectively (76.4 to 81.4% of all treatments). Similarly, the number of sphincter-sparing surgery over the course of the period has increased from 1502 to 1916 operations.

Conclusions. The increase in the percentage of resections and sphincter-sparing surgery may indicate the progress in the earlier detection of colorectal cancer. Another reason for this increase may be improving the level of education of surgeons due to the better availability of workshops and training. However, analysis is based on too short period of time and these conclusions cannot be regarded as final.

Key words: colorectal cancer, surgical treatment, statistical analysis

In our country the incidence of colorectal cancer is around 11 000 a year, the number of deaths is approximately 8 000 (1). Colorectal cancer represents 11.1% of all cancers in men and 10.2% in women. In both sexes is in the second position in terms of incidence and causes of cancer deaths. However, the prevalence of this disease remains higher in men than in women, amounting to 16.8 and 12.7, respectively. The rectum is the most common site of colorectal cancer (1, 2). The stage of cancer is one of the main prognostic factors.

Late detection results in a lower efficacy of the applied treatment. In Poland 5-year survival rate is still very low and for colon cancer ranges from 30.8% to 32.4% and for rectal cancer from 24% to 33,2% while for Western Europe is over 50%. The disease detected in the earlier stage involves a high cure rate greater than 90%, in the most advanced stages of disease, this value does not exceed
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5%, unfortunately (3). In study, where screening colonoscopies were analyzed, authors revealed that in men, regardless of age, there is a significantly higher probability of advanced colorectal cancer detected (4).

Advanced and spread disease makes curative treatment impossible, forcing the surgeon to carry out palliative procedures, often associated with a stoma. Early detection of cancer can affect the increase in the proportion of resections performed in relation to palliative procedures.

Another problem associated with the surgical treatment of patients with rectal cancer is the number of abdominal-perineal extirpations. With the introduction of mechanical anastomosis the number of sphincter-sparing surgeries increased. Ability to perform anterior resection in patients with low tumors and sufficient anal sphincters allows to avoid stoma and give a chance for a better quality of life after surgery (5).

Objective:
2. Analysis of the number of sphincter-saving operations and abdominal-perineal extirpations performed in Poland from 2005 to 2008.

MATERIAL AND METHODS

Statistical data about surgical procedures performed in patients with colorectal cancer (according to ICD-10 classification: C18, C19, C20), were obtained from the National Institute of Hygiene in Warsaw.

Surgical procedures (by ICD-9 classification) were divided into:
- palliative procedures: ileostomy, colostomy, bypass anastomosis of small intestine and small intestine, by-pass between small and large intestine,
- resections: right colectomy, resection of the transverse colon, left colectomy, sigmoid resection, resection of the rectum, abdominal-perineal extirpation.

In patients operated on for rectal cancer we evaluated the number of sphincter-sparing procedures (anterior resection of the rectum, local excision), compared with abdominal-perineal extirpation.

The analysis was performed for the period from 2005 to 2008. We analyzed the data, including for women and men.

RESULTS

Based on the available data we can conclude that in recent years total number of patients with colon cancer operated on increased from 3948 in 2005 to 4281 in 2008. It can be seen as a permanent increase in the number of resection procedures performed from 3381 to 3768. However the number of palliative procedures performed in these patients has slightly decreased. Interestingly enough is the significant increase of the resection to palliative treatment rate with 5.96 to 7.35 during the period of time (2005-2008). Details are presented in tab. 1 and fig. 1.

Analyzing patients who underwent surgery for rectal cancer at the same time you may notice a similar regularity. Increased both the total number of operations performed and the number of resections as well. Also, the ratio resections to palliations increased. It is, however, much lower than for patients with colon cancer (tab. 2, fig. 2).

Analyzing the number of sphincter-sparing procedures in patients with rectal cancer, we can conclude that over the four year period it increased the percentage of patients who underwent these procedures (1502 of patients in 2005 and 1916 of patients in 2008). The number of abdominal-perineal extirpations is maintained at similar level (833 and 796, respectively). In 2008, 29.4% of patients who underwent surgery for rectal cancer underwent abdominal-perineal extirpation. Details are shown in tab. 3 and fig. 3.

Total number of all patients with colorectal cancer has increased from 7006 in 2005 to 7612 in 2008. Patients with rectal cancer in 2005 accounted for 43.6% of all operated patients with colorectal adenocarcinoma. This percentage remained at the same level in 2008 and amounted to 43.8%.

DISCUSSION

Colorectal cancer represents 11.1% of all cancers in men and 10.2% in women. In both sexes is in the second position in terms of incidence and causes of cancer deaths. Surgical treatment is still the primary method of treat-
Table 1. Comparison of resection and palliative procedures performed in patients with colon cancer

<table>
<thead>
<tr>
<th>Year</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resections (%)</td>
<td>3381 (85.6)</td>
<td>3446 (85.7)</td>
<td>3503 (86.4)</td>
<td>3768 (88)</td>
</tr>
<tr>
<td>Palliations (%)</td>
<td>567 (14.4)</td>
<td>577 (14.3)</td>
<td>553 (13.6)</td>
<td>513 (12)</td>
</tr>
<tr>
<td>Together</td>
<td>3948</td>
<td>4023</td>
<td>4056</td>
<td>4281</td>
</tr>
<tr>
<td>Resections : palliations</td>
<td>5.96</td>
<td>5.97</td>
<td>6.33</td>
<td>7.35</td>
</tr>
</tbody>
</table>

Table 2. Comparison of resection and palliative procedures performed in patients with rectal cancer

<table>
<thead>
<tr>
<th>Year</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resections (%)</td>
<td>2335 (76.4)</td>
<td>2470 (75.3)</td>
<td>2518 (77.2)</td>
<td>2712 (81.4)</td>
</tr>
<tr>
<td>Palliations (%)</td>
<td>723 (23.6)</td>
<td>812 (24.7)</td>
<td>744 (22.8)</td>
<td>619 (18.6)</td>
</tr>
<tr>
<td>Together</td>
<td>3058</td>
<td>3282</td>
<td>3262</td>
<td>3331</td>
</tr>
<tr>
<td>Resections : palliations</td>
<td>3.23</td>
<td>3.04</td>
<td>3.38</td>
<td>4.38</td>
</tr>
</tbody>
</table>

Resections and palliative procedures in patients operated on for colorectal cancer

ment of patients with adenocarcinoma of the colon and rectum. Performing resections in many patients can lead to cure the patient. It seems important to assess the number of resections performed over several years. In our study, patients with colon cancer the rate of resection procedures increased from 85.6% in 2005 to 88% in 2008. However, for patients with rectal cancer was 76.4% and 81.4%, respectively. In a paper published by Carsin et al., the authors analyze the period 1994-2002 (a total of 15,249 patients) resection rate was 78% (6). In studies of Ciccolallo et al. in a cohort of patients operated on in U.S. in the years 1985-1991, it was even higher and amounted to 90-92% (7). Gatta et al., analyzed the population of European patients in the years 1988-1991 and found that this percentage was 85% in the best countries such as Switzerland and the Netherlands (8). In the same period in Poland it was lower than 60% (9).

Based on our data it can be concluded that in Poland the ratio resection to palliation procedures is similar to that in Western Europe several years ago. But the permanent increase testifies to the continuing improvement of the situation in our country. The increase in the number of surgical procedures may be associated with an increased incidence but also the improvement of public awareness. Increasing the number of resectional surgery may be the result of improved detection of early stages of colon cancer. Accurate assessment of the im-
impact of these factors on the total number of operations performed will certainly require further detailed analysis.

Another problem is the number of sphincter-sparing operations in patients with rectal cancer. This procedure avoids a permanent colostomy. The increase of the percentage of these operations is a result of introduction of stapling anastomosis. In our material, the percentage of these operations ranged from 64.3 to 70.6%. Morris et al., presented the group of patients operated on in England in 1998-2004, described it at the from 69.5 to 77%, higher than in our data (10). In another study, Tilney et al. the rate of sphincter-sparing operations was 75.1% (11). In Poland the permanent increase of the number of these operations may be due to better training of surgeons and the wider availability of mechanical sutures.

Looking for risk factors of abdominal-perineal excision Tilney et al. found that low social status of patients could be one of them. They studied a group of 12 128 patients underwent surgery for rectal cancer in the UK in 2000-2005. Low social status increased the risk of abdominal-perineal excision. Other factors were: male gender, neoadjuvant treatment (12). In Poland such an analyzes for a large population of patients with rectal cancer were not performed.

In Engel et al. study ratio of abdominal-perineal excisions vs anterior resections in patients with rectal cancer was controlled. They studied two periods of time: 1994-1996 before the Dutch TME trial started and between 1997-1999. The authors revealed a reduction of that ratio of 0.19 for the first period to 0.13 for the second period. They related this to improved quality of operations, as a result of training program and controlling of surgical procedures. They did not reveal any increase of postoperative mortality in patients operated on in the second studied period. (13). In our analysis we also found the reduction of the ratio. An important element of the analysis would be assessment the influence of increased number of sphincter preserving procedures early and late results of treatment. On the bases of available data it is not possible to assess the impact of increased number of treatment on five-year survival.

It is difficult to directly relate it to better training of surgeons, because in Poland a national program was not carried out. For several years, however, increasingly becoming available training and workshops surgical reference in Polish centers involved in the surgery of the colon. While training surgical technique is improved. This is one of the key elements influencing the quality of procedures performed and the number of sphincter-sparing procedures performed.

On the bases of analyzed data it can be concluded that in Poland during the period from 2005 to 2008 the number of resections in patients with colorectal cancer increased. We

<table>
<thead>
<tr>
<th>Year</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sphincter-sparing procedures (%)</td>
<td>1502 (64.3)</td>
<td>1605 (65)</td>
<td>1693 (67.2)</td>
<td>1916 (70.6)</td>
</tr>
<tr>
<td>Abdominal-perineal extirpations (%)</td>
<td>833 (35.7)</td>
<td>865 (35)</td>
<td>825 (32.8)</td>
<td>796 (29.4)</td>
</tr>
<tr>
<td>Together</td>
<td>2335</td>
<td>2470</td>
<td>2518</td>
<td>2712</td>
</tr>
<tr>
<td>Resections : palliations</td>
<td>1.8</td>
<td>1.85</td>
<td>2.05</td>
<td>2.4</td>
</tr>
<tr>
<td>Sparing : amputation</td>
<td>2.2</td>
<td>2.15</td>
<td>2.95</td>
<td>3.6</td>
</tr>
</tbody>
</table>

Fig. 3. Comparison of sphincter-sparing operations and abdominal-perineal extirpations in patients with rectal cancer.
also observed a higher percentage of sphincter-sparing procedures in relation to the abdomino-perineal amputations in patients with rectal cancer.

CONCLUSIONS

1. The increase in the percentage of resections and sphincter-sparing surgery may indicate the progress in the earlier detection of colorectal cancer.
2. Another reason for this increase may be improving the level of education of surgeons due to the better availability of workshops and training.
3. However, our analysis is based on too short period of time and these conclusions cannot be regarded as final.

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