Surgery for Colorectal Cancer in a Low-Volume Unit

Assessment of Key Issues in the Achievement of Acceptable Clinical Results

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Abstract

Background. The maintenance of modern therapeutic principles requires a proper case load to achieve acceptable surgical results. This may obligate administrative reorganization to overcome these problems and to provide an adequate level of cancer surgery.

Aim. To assess the surgical results of patients coming for surgery for colorectal cancer in a low-volume non-academic unit during the past 15 yr.

Methods. 458 consecutive patients referred for surgery between 1988 and 2001 in Kanta-Häme Central Hospital in Finland were analyzed regarding their disease, mode of surgery, and the immediate and long-term result. The data were collected from patient journals and from the National Centre of Statistics and analyzed in two successive periods.

Results. The number of patients with a localized disease (Dukes A + Dukes B) decreased during the followup from 49% to 45%. A curative procedure was achieved in 68% in the first half and in 73% in the second half of the observation period. The immediate mortality was 5% and 2% in the two periods, respectively. The corrected 5-year survival according to the Dukes Classification was 92% (A), 69% (B), 41% (C), and 6% (D). In curative surgery for rectal cancer, the incidences of local recurrence decreased from 21% to 9% (NS) and the use of permanent colostomy from 59 to 42% (NS).

Conclusions. Acceptable immediate and long-term results in curative surgery for colorectal cancer can be achieved in a low-volume surgical unit. Nevertheless, owing to the low volume, the improvement of the results obligates team-based institutional specialization and careful consideration about the extensiveness of the primary procedure in case of cancer obstruction.

Key Words: Gastrointestinal cancer; mortality; surgical therapy.

Introduction

The increasing specialization in gastrointestinal surgery as well as in cancer therapy requires con-

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at diagnosis as well as the surgical performance including perioperative care \((4–8)\). The former is dependent on the effectiveness of primary diagnostics and the latter entirely on the teams taking care of the surgical procedure, perioperative care, as well as oncologic therapy.

In this study we assessed the trends in colorectal cancer surgery between 1986 and 2001 in a rural, non-academic secondary referral center in Finland, in Kanta-Häme Central Hospital. The aim was to perform a detailed assessment of the clinical results of patients operated on for colorectal cancer to recognize possible targets for improvements and rearrangements.

**Material and Methods**

Four hundred and fifty-eight consecutive patients referred for surgery for colorectal cancer in Kanta-Häme Central Hospital between 1988 and 2001 were retrospectively analyzed regarding the disease, mode of surgery, and the immediate and long-term results. The patients were recruited from a target population of 166 000 residents. The mean age of patients was 70 yr (range 32–94 years, median 72 yr). Female to male ratio was 1.2 (245 men/213 women). The mean age of women was 71 yr and of men 69 yr.

The data were collected from the hospital discharge records according to the ICD-codes (colon cancer: ICD-9: 1803–9; ICD-10 C18-19; rectal cancer: ICD-9: 1910–9; ICD-10: C 20), from patient journals and from the death attest obtained from the National Centre of Statistics.

In case of a synchronous cancer (11 patients), both cancers were included in the calculation of topographic distribution of cancer. In the other calculations only the more advanced cancer was included. In the assessment of trends the observation period was divided in two periods, 1988–1995 and 1996–2001.

In surgery for colon cancer (C18) conventional techniques were used as described by Goligher \((9)\). In surgery for rectosigmoid (C19) or rectal cancer (C20) the circumferential or total mesorectal excision-technique (TME-principle) was applied from 1996 as described by Heald et al. \((10,11)\). Preoperative X-ray therapy in the treatment of rectal cancer was applied from 1999 as described by Påhlman \((12)\). All patients with a Dukes C cancer received adjuvant therapy with 5-fluorouracil.

**Statistical Analysis**

In the statistical analysis, Student’s \(t\) test and chi-square test were used. In the life-table analysis of the survival data, Kaplan–Meier analysis was used. In the analysis of 5-yr survival, all deaths regardless of the primary reason were considered the main observation point. In the corrected 5-yr survival data, only a death due to primary cancer was considered as the main observation point and the other reasons for death were censored.

**Results**

**Clinical Symptoms of Colorectal Cancer**

In 446 patients (97%) the cancer caused clinical symptoms, which indicated an appointment to a primary care physician. The main symptoms, altered bowel habits, melena, abdominal pain, and anemia, remained the same during the study period (Table 1).

In 12 patients (3%) the cancer was diagnosed accidentally: at an adenoma control (five patients), at a control visit after a previous cancer operation 17 yr prior (one patient), at gynecologic examination (one patient), at cholecystectomy (one patient), and at clinical investigations for septic symptoms (one patient), at examinations for family history (one patient) and at a visit to a doctor for other reasons (two patients).

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Clinical Symptoms of Patients With Colorectal Cancer in Kanta-Häme</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n)</td>
</tr>
<tr>
<td>Altered bowel habits</td>
<td>125</td>
</tr>
<tr>
<td>Melaena</td>
<td>123</td>
</tr>
<tr>
<td>Abdominal pain</td>
<td>114</td>
</tr>
<tr>
<td>Anaemia</td>
<td>95</td>
</tr>
<tr>
<td>Weight loss</td>
<td>36</td>
</tr>
<tr>
<td>Obstruction</td>
<td>33</td>
</tr>
<tr>
<td>Other symptoms</td>
<td>42</td>
</tr>
</tbody>
</table>

\(^a\)Difference between the observation periods in various symptom groups was not significant.