Screening for colorectal carcinoma[1]

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Summary: Since the introduction in the Federal Republic of Germany of free routine screening for colorectal carcinoma (digital examination of the rectum in 1971; test for occult blood in the faeces in 1977), the number of Dukes' stage A cases diagnosed at one hospital has increased by 30%. The average interval between onset of symptoms and diagnosis has shortened from 5 to 3.8 months, and the proportion of inoperable carcinomas has decreased by 10%.

Introduction

According to the Federal Office of Statistics, 22376 people died as a result of colorectal cancer in the Federal Republic of Germany in 1981 (Statistisches Bundesamt 1982). It has been suggested that the high mortality rate may be reduced by early diagnosis and treatment (Blum *et al.* 1982, 1983, Cappel *et al.* 1983). The five-year survival is related to the extent of spread at the time of surgery, and in patients with rectal carcinoma has been reported at 90% for Dukes' stage A lesions compared with only 30% in those with metastases in the lymph nodes, i.e. Dukes' stage C (Deyhle 1978).

Free routine screening for colorectal cancer was introduced in the Federal Republic of Germany in 1971. This initially comprised digital examination of the rectum, but since 1977 examination of the faeces for occult blood has been included. The present study compares the pathological staging of tumours resected before and after the introduction of screening.

Methods

A retrospective analysis was undertaken of 1849 cases of rectal carcinoma and 1754 cases of colonic carcinoma treated surgically between 1963 and 1981 in the Department of Surgery, Nordwest Hospital, Frankfurt (M). The cases were staged according to the Dukes' classification (Dukes 1932), and clinical and intraoperative findings recorded. A comparison was then made between cases diagnosed during certain periods before and after the introduction of screening with respect to histological staging, the interval between onset of symptoms and diagnosis, and the proportion with inoperable carcinomas.

Results

The pathological staging of cases of rectal carcinoma treated in 1968–69 and 1977–78 is shown in Figure 1. An increase in the number of Dukes' stage A tumours from 4% to 35% contrasts with a reduction in the number of Dukes' stage B tumours in the latter period. A similar change is noted for colonic tumours (Figure 2).

Eighty-five percent of patients were symptomatic, presenting mainly with rectal bleeding or a change in bowel habit. However, 80% of all Dukes' stage A tumours were detected in asymptomatic patients undergoing screening.

The average delay in diagnosis before 1971 was 5 months. Since 1977 this has reduced to 3.8 months, and for 72% of patients has been less than 3 months.

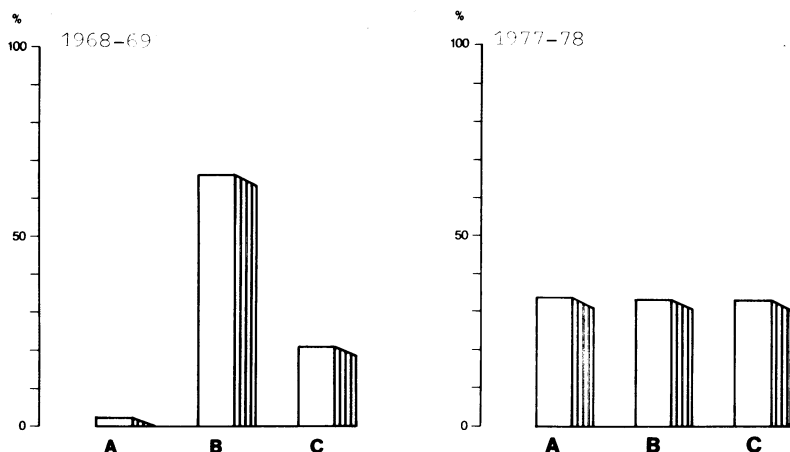The number of patients with carcinoma of the rectum in whom curative surgery was not

Figure 1. Dukes' classification and percentage distribution of a total of 363 surgically-treated rectal carcinomas from two periods before (left) and after (right) introduction of routine screening for cancer

possible fell from 26% to 16% after 1971 when digital examination became easily available (Figure 3). Since the introduction of the Haemoccult test in 1977, the number of cases of inoperable carcinoma of the colon has fallen from 25% to 13% (Figure 4).

Discussion
The importance of digital examination of the rectum, by which means 75% of all rectal carcinomas may be diagnosed (Probst & Ungeheuer 1982, Ungeheuer 1980), and of the Haemoccult test for detection of occult blood from colonic polyps and carcinomas, has been documented in numerous studies (Frühmorgen & Demling 1978, Gilbertsen *et al.* 1980, Gnauck 1982). As yet, no clinical 'balance sheet' has been drawn up despite the application for ten and five years respectively of these screening methods, and the present study was designed to review their clinical efficacy. The results have revealed a significant trend towards early detection of carcinomas of both the rectum and colon. The positive influence of the screening methods on early diagnosis is confirmed by the finding that 80% of Dukes' A cases were detected among asymptomatic patients. However, it must be borne in mind that
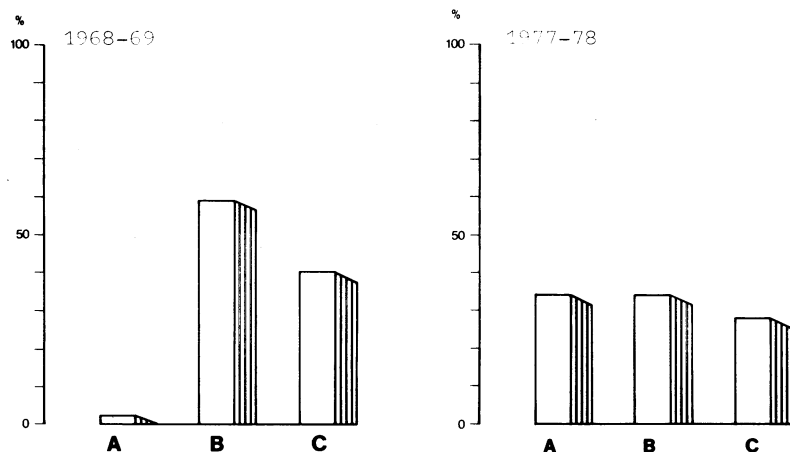

Figure 2. Dukes' classification and percentage distribution of a total of 408 surgically treated colonic carcinomas from two periods before (left) and after (right) introduction of routine screening for cancer
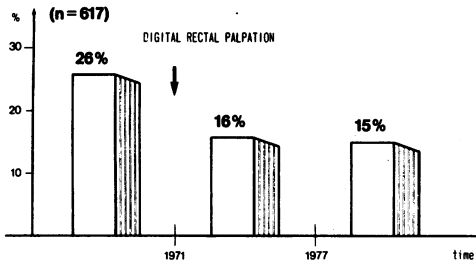
Figure 3. Incidence of inoperable rectal carcinomas in the periods before and after introduction of routine screening for cancer (1971 digital examination of the rectum, 1977 Haemoccult test)
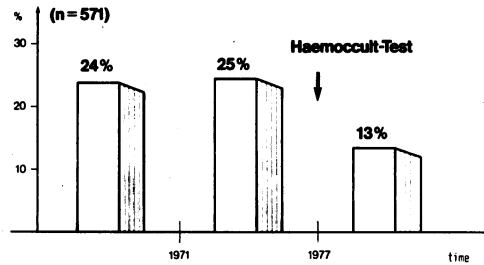

Figure 4. Incidence of inoperable colonic carcinomas in the periods before and after introduction of routine screening for cancer (1971 digital examination of the rectum, 1977 Haemoccult test)

during the period of this study the increasing use of the flexible endoscope has also made a contribution to early diagnosis of colonic pathology. Further, the increase in routine screening has created a climate of greater awareness of the main symptoms of colorectal carcinoma.

The increase in the proportion of colorectal carcinomas diagnosed before the inoperable stage is reflected by the finding that there has been a reduction by more than 10% in the number of inoperable carcinomas of both the colon and rectum since screening was introduced.

The proportion of the population of the Federal Republic of Germany who are taking advantage of routine screening is still very low at 20% (Kassenärztliche Bundesvereinigung 1983). It is to be hoped that the results of the present study will lead to increased participation in routine screening, thus lowering the mortality rate from colorectal carcinoma.

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