Time Trend Study of Rectal Cancer Patients Presented to National Cancer Institute- Cairo University (1990-1995) & (2000-2005)

Thesis

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Presented by

Ahmad Mohamed Mohamed Sharaf

Under supervision of

Prof.Dr. Yasser Salah El Din Abd el Kadar

Professor of Clinical Oncology- Faculty of Medicine

Cairo University

Prof. Dr. Somaya Ezzat

Professor of Radiation Oncology National Cancer Institute- Cairo University

Dr Mohamed Nazmy

Lecturer of Radiation Oncology National Cancer Institute- Cairo University

Faculty of Medicine

Cairo University

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REVIEW OF LITERATURE

INTRODUCTION

Although the incidence of distal (rectal and lower sigmoid) cancers has declined, with a concurrent increase in more proximal colon cancers, approximately one quarter of colorectal cancers are located in the rectum. For many years, almost all patients with rectal cancer underwent abdominoperineal resection with a permanent colostomy. Today, this approach is rarely required. The successful treatment of patients with rectal cancer involves optimal surgical technique and frequently adjuvant chemoradiotherapy. This combined modality approach will maximize cure, minimize the risk of a subsequent symptomatic local or pelvic recurrence, and maintain quality of life. Such multimodality approaches are applicable to patients with rectal cancers at or below the peritoneal reflection. This designation generally represents cancers below 12 cm from the anal verge. Tumors in the upper rectum or rectosigmoid are treated by surgical resection, and adjuvant therapy is based on the colon cancer paradigm.

EPIDEMIOLOGY

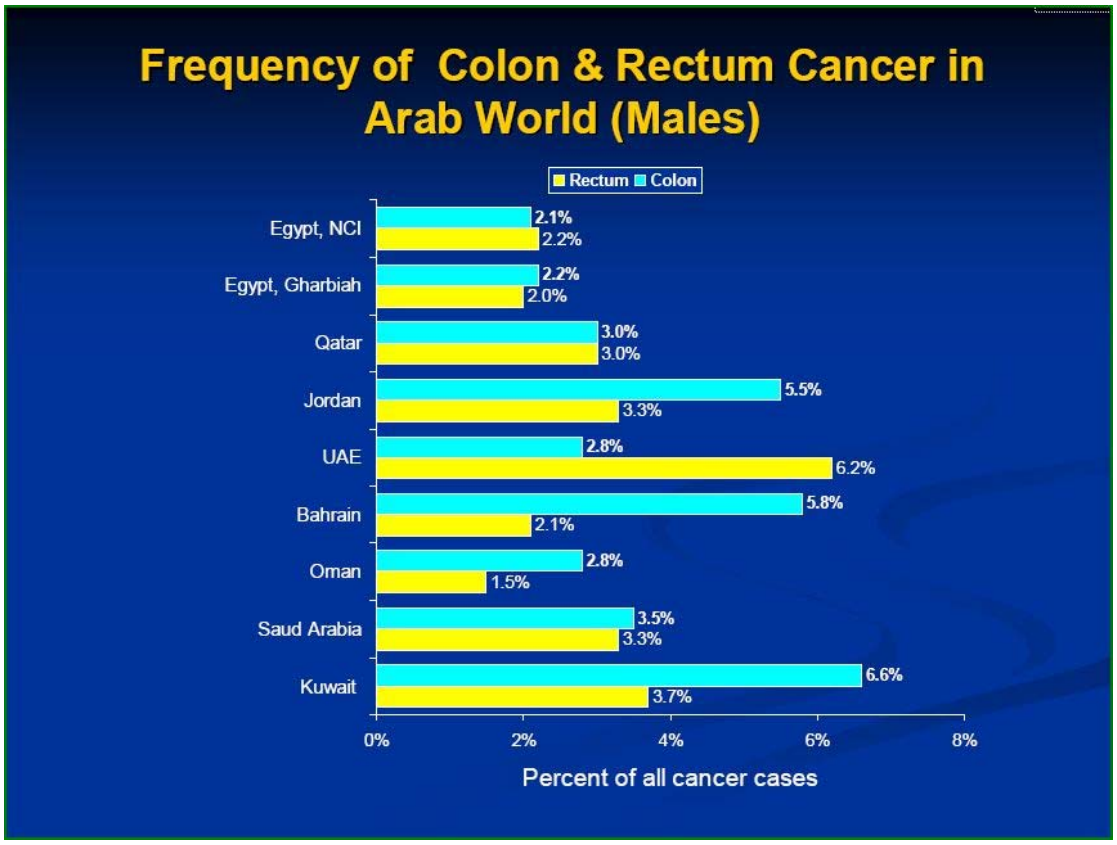
The incidence of rectal cancer in the United States is 44 cases per 100,000 population for a total number of new cases annually of approximately 34, 000. Since 1985, the incidence rate decreased by 1.6% per year through 1997. A decrease in colon and rectal cancer incidence rates has been observed in males and females and in all racial and ethnic groups. The incidence rate rises dramatically during the fifth decade of life. A study of 75,000 Medicare enrollees observed that proximal colon cancers appear to be disproportionately high among elderly patients. Blacks have a higher mortality rate than whites for colorectal cancer, which holds true for both rectal and colon cancers. In a 25-year period, 1974 to 1999, the gap between the survival rates of blacks and whites increased from a difference of 5% to 11% for colon cancer and from 7% to 10% for rectal cancer ***(Cooper et al 2001)***.

A seven-year review (retrospective in first six years, prospective in the seventh) of all colorectal adenocarcinoma patients (N = 177; 104 males; mean age, 46; range, 19–74 years) presented to the Department of Surgery, Ain Shams University, was performed. Data from three other major hospitals throughout the country were retrieved and compared with Ain Shams data. Retrospective data were retrieved from patients' files and surgery and pathology records. Family history of colorectal cancer and other characteristic hereditary nonpolyposis colorectal cancer tumors was obtained prospectively in all patients.

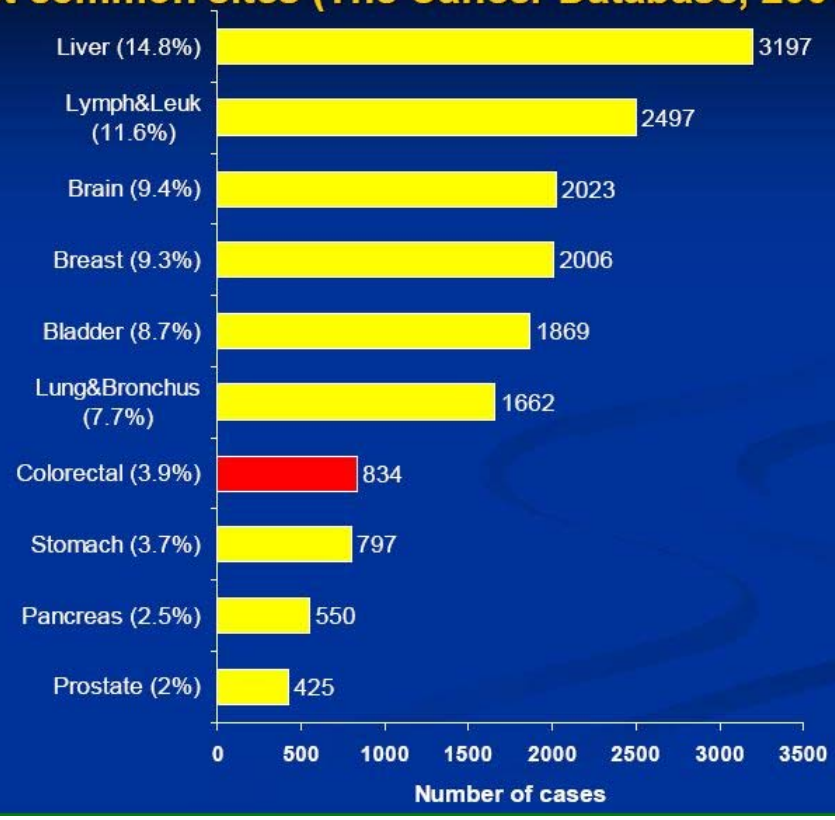
According to Ain Shams data, the disease had no predilection to a specific age group. Thirty-eight percent of the tumors occurred in patients aged less than 40 years, and only 15 percent of patients were aged above 60 years.

Colorectal cancer in Egypt has no age predilection and more than one-third of tumors affects a young population. The high prevalence in

young people can neither be explained on a hereditary basis nor can it be attributed to bilharziasis. The disease usually presents at an advanced stage, and predisposing adenomas are rare. Similarity of the data from different centers suggests that this is the picture of colorectal cancer typical of Egypt ***(A.abd el Aziz et al, 2002)***.



Egypt Mortality Statistics, 2001
Most common sites (The Cancer Database, 2001)



Median Age of Colorectal Cancer Cases in Selected Arab Countries

Country	Males	Females
Egypt (NCI)	48.0	48.0
Egypt (Gharbiah)	48.1	49.5

The anatomic sub sites of colorectal cancer also changed in the same 25-year period. The cancer incidence by anatomic subtype has shown that the incidence of rectal cancer has decreased from 9.6 cases per 100,000 populations to 7.6 cases per 100,000 populations. This same finding has been reported in Japanin a report that shows an increasing percentage of right-sided colon cancers and a continuous decline in percentage of rectal cancers in both sexes and at all ages***(Takada et al 2002)***.An observational study showed a positive association between cigar smoking and cancer of the rectum. It also noted a weak positive association between cigarette smoking and cancer of the proximal colon. Several large cohort studies have shown that cigarette smoking is an independent risk factor for colorectal cancer ***(Sharpe et al 2002)***.

In a large cohort study of more than 22,000 healthy male physicians aged 40 to 84 years who were followed for more than 12 years, cigarette smoking was an independent risk factor for colorectal cancer incidence, the strongest risk being observed in current smokers of 20 cigarettes or more per day (relative risk: 2.14), Cumulative lifetime exposure and exposure during various periods of life also increased the risk of colorectal cancer ***(Sturmer et al 2000)***.

A recent study showed that the increased risk of colorectal cancer associated with cigarette smoking is dependent on the molecular characteristics of the tumor as defined by *APC* mutation and *hMLH1* expression status. The association between frequency of cigarette smoking (for a five-cigarette/day increment) and colorectal cancer was most apparent and stronger in tumors without a truncating APC mutation, while duration of smoking was associated with increased risk in *hMLH1*-deficient tumors***(Kampman et al 2005)***.

CLINICAL PRESENTATION, EVALUATION, AND STAGING

Patients with rectal cancer can have a broad range of clinical presentations. Early symptoms that suggest rectal carcinoma include rectal bleeding and subtle changes in bowel habits. Rectal bleeding is often mixed with stools or may coat the surface of the stool. It can be bright red and separate from the stools and therefore is often mistakenly attributed to hemorrhoids. Bright red blood only on the tissue paper may be evaluated in a young person with proctosigmoidoscopy. All other types of bleeding, including the presence of occult blood in the stools during a routine physical examination or presence of iron deficiency anemia, warrant a more complete endoscopic evaluation. Increased frequency of defecation, decreased caliber of the stools, mucus with stools, or mucous diarrhea (particularly associated with large villous adenomas) is quite common. Advanced tumors induce a permanent sense of fullness and tenesmus and increased straining during defecation. Sacral or deep pelvic pain, sometimes radiating down the perineum and thighs, occurs when the tumor invades the sacrum and the sacral plexus of nerves. Anal pain, initially on defecation and later continuous, may occur when low rectal cancer invades the anal canal. Incontinence supervenes when the anal sphincter is involved.

The importance of a detailed history and a thorough physical examination cannot be overstressed. Co morbid conditions and the patient's physical habits may preclude major surgery and influence the decision of adjuvant therapy. Physical examination should always include a digital rectal examination to feel for a mass, assess its location and mobility, and feel for enlarged extra rectal lymph nodes (50% accuracy). Depth of invasion and whether the tumor is tethered or fixed can also be assessed during rectal examination with 67% to 84% accuracy. ***(Taylor RH et al 1998)***

A careful pelvic examination in women and a prostate assessment in men are essential. A rigid proctosigmoidoscopy examination of the

rectum and the anus should follow. The distance of the tumor from the anal verge, anterior/posterior/lateral position, size, morphologic configuration, and extent of circumferential involvement are determined. Tumor mobility and tethering to surrounding structures are ascertained. If not obstructed, patients with rectal cancer should have a preoperative double-contrast barium enema or preferably a colonoscopy to assess for synchronous colon cancer (2% to 9%). Subjective and objective assessment of the patient's anal sphincter function is desirable. A weak or incompetent sphincter may favor a colostomy.

Endorectal ultrasound provides valuable preoperative staging, including depth of tumor invasion into the rectal wall (89% to 92% accuracy, 96% sensitivity, 90% specificity, 96% negative predictive value) and nodal enlargement (79% sensitivity, 74% positive predictive value, 84% negative predictive value), but confirmation of nodal metastasis with ultrasound-guided needle biopsy is less reliable (77% accuracy, 71% sensitivity, 89% specificity, 92% positive predictive value, and 62% negative predictive value.***(Solomon MJ et al 1993)(Milsom JW et al 1994)***

Malignant nodes are differentiated from reactive nodes by being hypoechoic, hyper vascular, and irregular. Endorectal ultrasonography and magnetic resonance imaging (MRI) with endorectal coil exhibited similar accuracy and were superior to conventional computed tomographic (CT) scans in preoperative assessment of depth of invasion and adjacent organ invasion. This improved diagnostic staging information is essential in considering local treatment for rectal cancer, deciding selective use of preoperative chemoradiotherapy in locally advanced tumors, and choosing between an abdominoperineal and low anterior resection***(Kim NK et al 1999)***.