Preface

Colon Cancer: The Road Traveled

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Editor

Each Wednesday at 5 PM, a group of 15 to 20 physicians, nurse practitioners, residents, and medical students, representing medical oncology, radiation oncology, interventional radiology, pathology, surgical oncology, and colorectal surgery, meets on the second floor conference room of the Arthur G. James Cancer Hospital for the Colon and Rectal Cancer Tumor Board. Patient care plans are made and revised so that each patient with cancer has the best opportunity for cure, palliation, and long-term survival. In addition, complicated patients, interesting cases, clinical trials, and new studies are presented. This multidisciplinary approach to colon cancer has made a huge difference in the lives of these patients and in the effectiveness of the therapies offered. It was not always this way.

When I first started as a young colorectal surgeon 30 years ago, a patient diagnosed with colon cancer was typically referred to a surgeon, regardless of the presence of metastatic disease, and was almost always offered resection of the primary tumor first. Then, after recovery, if the patient was unfortunate enough to have lymph nodal or distant metastatic disease, there was a referral to a medical oncologist. Chemotherapeutic treatments were primarily fluorouracil based with limited effectiveness. Even so, overall survival was good, because early-stage colon cancers were often cured by surgery alone. Successful outcomes, however, had not significantly changed since Dukes and Bussey[1] published their landmark article, "The Spread of Rectal Cancer and Its Effect on Prognosis" 60 years ago.

That study was validation of the A, B, and C staging system, first described by the same authors in 1932 and designed at the St Marks Hospital. It was an extensive single-hospital retrospective study, spanning 25 years and 3596 patients with rectal cancer, of which 2447 were treated by extirpation of the primary tumor. The crude overall five-year survival was 48.3%. Survival stage by stage was A, 81.2%; B, 64%; and C, 27.4%. These were excellent results for the state of medical care development at that time. It was also the first advanced staging system for colon and rectal cancer

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and made it possible to accurately judge the effectiveness, success and failure, of changes in therapy by stage. This work was the beginning of the modern era for colon cancer treatment.

There have been other important milestones that have advanced our understanding of colon cancer, a few of which are especially noteworthy in that they have changed the treatment of the disease and are routinely incorporated into our practices today. Carcinoembryonic antigen (CEA) is an excellent example.

In 1965, Gold and Freedman[2] published their landmark article, "Demonstration of Tumor-Specific Antigens in Human Colonic Carcinomata by Immunological Tolerance and Absorption Techniques." Using specimens of human colon cancer, with normal colonic mucosa as controls, they were able to identify the presence of the tumor marker, CEA, using sera with tumor-specific antibodies obtained from animals immunized with human colon cancer cells.

CEA is expressed primarily on human colon and rectal adenocarcinomas; therefore, measurement of its level became a practical way to longitudinally follow patients with colon cancer and identify those developing metastatic disease. A rise in CEA is often apparent prior to a recurrence being detectable with imaging. This led Martin and colleagues[3] to begin a program of CEA-directed second-look surgery in patients being monitored for recurrence. In 139 of their initial 146 patients, reoperation for a rising CEA resulted in finding metastatic disease. Eighty-one of those patients were re-resected for potential cure. This change in the surgical treatment of colon cancer made it possible for patients with locally recurrent cancer or isolated metastatic disease to have a second chance at cure.

CEA is still routinely used to follow patients with colon cancer, to check for recurrence, and to gauge the effectiveness of therapeutic chemotherapy. It is often more sensitive than the imaging studies and can detect a response earlier to that seen on PET or CT. Other advances in technology have also played an important role in diagnosis and treatment. The introduction of the flexible colonoscope and its widespread use proved that that adenomatous colon polyps were the precursor to colon cancer.[4] Today, surveillance protocols by colonoscopy are standard and are both diagnostic and preventive. Through education and outreach, it is now a basic part of the public's understanding of health care that everyone should have a colonoscopy at age 50.

Improvements in surgical technique over the last 25 years have changed the surgical practice of colon cancer for the better. In 1991, Jacobs and colleagues[5] published a series of 20 patients who successfully underwent laparoscopic colectomy. Laparoscopy surgery was controversial at the time, having only recently been introduced as an option for cholecystectomy. Many surgeons were reluctant to adapt it and considered the technique inappropriate for cancer surgery. In their series, 12 of the 20 patients had either a large villous adenoma or colon cancer. This article, demonstrating the feasibility of minimally invasive surgery for colectomy, was rapidly followed by others. Two subsequent large trials, the Clinical Outcomes of Surgical Therapy Study Group and the Colon Cancer Laparoscopic or Open Resection trial, with 872 and 1248, respectively, randomized patients, showed that laparoscopy was as safe and as effective as open surgery with shorter recovery and hospital stays, leading to decreased cost.[6,7] There were no significant changes in either long-term survival or complications. Minimally invasive surgery, laparoscopy and robotics, combined with specific Colon-Enhanced Recovery after Surgery Protocols, has become the default choice for most colon and rectal cancer surgeons, resulting in less complications, better results, and quicker recoveries.[8]

Advances in chemotherapy are also making a significant impact on survival. Publication of the MOSAIC trial, Oxaliplatin, Fluororuracil, and Leucovorin as Adjuvant