Colon Cancer Screening Continues as Pivotal to Cancer Prevention

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Colon cancer screening has been one of the great successes of cancer prevention. The decrease in colon cancer incidence and mortality in recent years is thought to be at least partly from the application and acceptance of screening. Colon cancer screening is somewhat unique compared with currently recommended cancer screening programs, because it is to a large extent prevention, although early detection is also provided. Several studies have shown it to be as or even more cost-effective than other screenings. Finally, colon cancer screening can include several approaches, including fecal occult blood testing through several methods, screening using one of several imaging techniques, and colonoscopy.

Colonoscopy seems to be the most effective and most widely recommended screening approach for colon cancer. It has the ability to detect early-stage, predominantly curable colon cancers, but, more importantly, it precisely detects and allows removal of colonic adenomatous polyps, which are premalignant growths. In fact, colon cancer screening via colonoscopy is, for the most part, colon polyp screening, because the primary finding on the vast majority of “positive” screening colonoscopies is polyps.

Polyps are detected many times more often than cancer. Because cancer arises from adenomatous polyps, their removal prevents the cancer from ever occurring. Although well recognized, this point is often not noted in efforts to increase rates of colon cancer screening.

Despite its virtues, colonoscopy is not the perfect screening test. Although it is cost-effective, it is nonetheless quite expensive and somewhat invasive. Therefore, efforts are ongoing to develop other methods—both blood and stool testing—to detect the presence of colonic polyps or cancer, and thus direct colonoscopy examination to people who would most benefit.

One of the most important aspects of directing a colon cancer screening program is the recognition that family history is an important risk factor for both colon cancer and precancerous polyps. Any family history of colon cancer, or even adenomatous polyps, increases the risk of this malignancy. Additionally, the earlier age at which the neoplasm is detected in relatives and the more relatives that have cancer or precancerous polyps, the more the familial risk is increased. Recommendations for more frequent colonoscopies and examinations starting at younger ages depends on these familial risks and are now incorporated into colon cancer screening guidelines from most health policy organizations.

At the far end of familial risk are the inherited syndromes of colon cancer and polyps. There are several of these syndromes, and all confer an increased risk of colon cancer, which is often extreme. These syndromes include Lynch syndrome, familial adenomatous polyposis, Peutz-Jeghers syndrome, juvenile polyposis, Cowden syndrome, and serrated polyposis.

In individuals with these syndromes, screening should always be performed using colonoscopy, usually starting at very young ages. Although the risks of developing cancer are highest in individuals with these syndromes, colon cancer mortality can be almost eliminated with proper recognition and diagnosis of the syndrome and syndrome-appropriate screening.

These syndromes are now defined genetically, and this genetic definition has allowed the elucidation of precise phenotypes for each of the conditions and...
the development of precise screening and surveillance guidelines based on both investigation and expert opinion. However, a current challenge for the physician is to determine who should undergo genetic testing to diagnose an inherited colon cancer condition.

Information obtained in the past 15 years has shed light on this issue, and a genetic diagnosis can be made in most cases. An individual likely to show symptoms of the condition on clinical grounds is first tested to genetically verify the diagnosis (index case). Family members can then undergo mutation-specific testing, which is virtually 100% accurate. Mutation-specific testing examines for the presence of the disease mutation found in the index case. Special surveillance, usually beginning at much younger ages and with a higher frequency than in the average-risk population, can then be directed to appropriate family members. Family members without the mutation only need average-risk screening.

Screening specifics vary by syndrome. The approach to genetic testing for the 2 main inherited syndromes, familial adenomatous polyposis and Lynch syndrome, are detailed in the article by Lynch in this volume. Lynch syndrome is sufficiently common that universal tumor testing of all colon cancers for evidence of this disease is now recommended by many health policy organizations.

Another important issue with colonoscopy screening is the decreased efficacy of cancer prevention in the proximal colon. Although several reasons have been suggested for this observation, the sessile serrated polyp is likely a major factor. In fact, now that these lesions have been well defined, colon cancer prevention in the proximal colon by colonoscopy is improving substantially. Sessile serrated polyps mostly occur in the proximal colon and are somewhat difficult to detect because of their sessile nature. Complete removal is also difficult because of indistinct borders. Sessile serrated polyps were previously thought to be simple hyperplastic polyps, which are not precancerous. They are now thought to give rise to as many as 20% to 30% of colon cancers. Fortunately, advances in recognizing this premalignant lesion are allowing even better outcomes with colonoscopy screening. Kalady, in this issue, provides an update on the clinical, histologic, and molecular understand of this lesion.

In summary, colon cancer screening is already a great success both medically and in terms of cost-effectiveness. The addition of genetic- and familial risk–based screening guidelines and the recognition of a common and important premalignant lesion, the sessile serrated polyp, should continue to improve colon cancer prevention.

Erratum

On page 919, under “Assessment and Management,” the first sentence under “Nutrition” should have read: “Close monitoring of nutritional status is recommended in patients who have: 1) significant weight loss (> 10% of body weight); and/or 2) difficulty swallowing because of pain or tumor involvement prior to treatment.”

On page 920, the first sentence of the second paragraph in the left-hand column should have read: “Patients with head and neck cancers who have had significant weight loss (>10% body weight) clearly need nutritional evaluation and close monitoring of their weight to prevent further loss.”

The editorial office apologizes for this error. A corrected copy of the article is available online at JNCCN.org.