



EARLY DETECTION OF COLORECTAL CANCER- is it realistic in developing countries?

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COLORECTAL CANCER

Why is early detection important?

- Early cancers are asymptomatic
- Adenomas precede most carcinomas
- Weight loss and obstructive symptoms are late signs



Early detection of colorectal cancer

- CRC are a major cause of death in developed countries
- CRC are second only to lung cancer regarding cancer related deaths in the USA



- Because CRC arise over a long period of time as the result of interaction between genetic predisposition and environmental conditions,
- it is possible to demonstrate preneoplastic and early neoplastic lesions, therefore making it possible to improve survival rate.



- SCREENING TESTS CAN DETECT PRENEOPLASTIC LESIONS AND EARLY CANCER



- CRC are curable diseases if preneoplastic or neoplastic lesions are removed endoscopically or surgically
- FOBT and sigmoidoscopy will no doubt increase the acceptance of screening of persons who are over 50 years of age.



- It is well accepted that removal of preneoplastic lesions and early CRC improve survival rate
- Hence, screening methods to date have focused on eliminating preexisting lesions.
- The ideal goal would be to prevent the development of CRC by dietary manipulation, use of aspirin and NSAIDs



How it is possible to detect preneoplastic lesions ?

- Screening procedures in asymptomatic individuals:
 1. Fecal occult blood testing
 2. Sigmoidoscopy
 3. Colonoscopy
 4. Air contrast barium enema
 5. Virtual colonoscopy(computed tomography col.)
 6. Detection of fecal cancer – associated antigen biochemically and immunologically
 7. Detection of mutated protooncogenes (K-ras)



Screening procedures

- CRCs are curable when detected at an early stage
- Screening pertains to detection in a large asymptomatic population.



Screening procedures

- A majority of USA adults are not receiving regular age- and risk- appropriate screening or have never been screened at all, although it is the third most common cancer in men and women.
- The situation in the developing countries ?



Screening

Stool tests that primarily detect cancer
occult blood (gFOBT and FIT)
exfoliated DNA (sDNA)

Structural examinations for adenomatous polyps
and cancer

- flexible sigmoidoscopy
- Colonoscopy
- CTcolonography
- Double-contrast barium enema.



SCREENING

- Digital rectal examination is necessary.
- FOBT: Hemoccult, although it facilitates the detection of blood in the stool, it is negative in 50% of proven cancer cases.
- When it is positive, a further procedure is required.



SCREENING

- Annual FOBT and sigmoidoscopy every 5 years at 50 years for asymptomatic individuals with no CRC risk factors.
- Total colonoscopy: every 10 years is better than other examinations according to the American Cancer Society



guaiacFOBT (gFOBT)

- Collection of all 3 samples
- It detects blood in the stool through the pseudoperoxidase activity of hem or hemoglobin
- Indivi. should avoid aspirin, the other NSAIDs, Vit. C, red meat, some raw vegetables



FIT

- IMMUNOCHEMICAL-BASED TESTS REACT TO HUMAN GLOBIN THAT ALONG WITH HEME CONSTITUTES HUMAN Hb.
- Because globin is degraded by digestive enzymes in upper GIT, FIT is more specific for lower GIT bleeding
- FIT is requiring fewer samples



CRC : a genetic etiology is uncommon

- 1% FAP
- 3% HNPCC
- 2% other

- Around 90 % of cases sporadic



Screening colonoscopy is inadequately used

- In Germany, in 2002, a screening program was established for individuals 55 years of age and older
- Participation was far from satisfactory:
When asked, people often cite as reasons lack of information or “no time”, though there is a degree of anxiety regarding procedure and its positive findings.



Tests For Asymptomatic Adults Aged 50 years and Older

- Test that detect adenomatous polyps and cancer
 - FSIG every 5 years, or
 - CSPY every 10 years or
 - DCBE every 5 years , or
 - CTC every 5 years



Tests For Asymptomatic Adults Aged 50 years and Older

- Tests that primarily detect cancer
 - Annual FOBT with high test sensitivity for cancer, or
 - Annual FIT (fecal immunochemical test) with high test sensitivity for cancer, or
 - sDNA with high test sensitivity for cancer; interval uncertain



SDNA

- Human DNA is stable in stool
- It can be differentiated and isolated from bacterial DNA
- Available test includes 21 separate point mutation in the K-ras, APC, P53 genes....



SDNA

- Stool DNA test requires entire stool specimen (30 g min)
- The test sensitivity for CRC ranges from 54-91%, with specificity ranging from 93-97%



Conclusion

- Screening of average risk group can reduce CRC mortality by detecting cancer at an early curable stage and by detecting and removing adenomas.
- NO CRC screening test is perfect
- Each has limitation and risks



RISK GROUP

- Individuals with:
 - a history of adenomatous polyp
 - a history of curative – intent resection of CRC
 - a familial history of either adenoma or CRC
 - IBD



Early detection of CRC - is it realistic in developing countries?

- It is not realistic in developing countries in individuals with average risk
- Even Germany participation was far from satisfactory:

When asked, people often cite as reasons lack of information or “no time”, though there is a degree of anxiety regarding procedure and its positive findings.

Additionally facilities and financial difficulties



- It is realistic to screen the following group:
 1. Patients with familial history of colorectal cancer: at age 40 45 ,every 5-10 yrs
 - Hereditary non polyposisCRC :three relative with the colon cancer (one of whom is a first degree relative of the other two) CRC involving at least two generation and one of case of Ca occurring before 50 years. Colonoscopy ,every 2 yrs,beginning at age 21
 - Familial adenomatous polyposis:
 - Colonoscopy should be performed at puberty
 - APC gene product abnormalities



2. Patients with a history of adenoma:

A repeat colonoscopy need not to be at interval less than 3 years in patients whose index polyp demonstrate no evidence of high grade dysplasia or cancer.

Patients with multiple adenomas, large adenomas and adenomas occurring before 60 years age are more likely to develop recurrent adenomas



3. Patients with a history of colorectal cancer
to detect recurrence and to screen for
new metachronous cancer : within one
year colonoscopy after surgery and at 3
years to rule out local recurrences .
Screening colonoscopy every 5 years



4. Patients with inflammatory bowel disease

- Ulcerative colitis: long standing > 7 years , 1 to 3 years intervals : biopsy every 10 cm
- Crohn's disease ?? Looks like UC ?



CONCLUSION

- It is possible to detect CRC at early stage and cure it.
- We hope that all individuals might have the screening opportunity