

CASE TWO

Short case number: 3_8_2

Category: Gastrointestinal & Hepatobiliary Systems

Discipline: Surgery

Setting: General Practice

Topic: Colorectal polyps and colorectal cancer

Case

Martin Angus, aged 56 years, presents following an episode of rectal bleeding. He feels bad because he has a family history of rectal cancer but was too busy to follow-up on his free colon cancer screen when he received a letter from the Government to have screening done. Now he is really worried he has cancer.

Questions

1. What further history and examination would you undertake?
2. What are the risk factors for cancer of the colon and rectum?
3. What are the screening recommendations in Australia and what is the letter for "poo testing" that Martin is describing?
4. How do right colon, left colon and rectal cancers differ in presentation in respect to weight loss, feeling a mass, rectal bleeding, Virchow's node, Blumer's shelf, Anaemia and Obstruction.
5. Using diagrams summarise the operative resection for colon cancer located at: caecum, superior aspect of ascending colon, transverse colon, superior aspect of descending colon, descending colon, and rectum.
6. Summarise the staging system for colorectal cancer

Suggested reading:

1. Henry MM, Thompson JN, editors. Clinical Surgery. 3rd edition. Edinburgh: Saunders; 2012. Chapter 23.
2. Garden OJ, Bradbury AW, Forsythe JLR, Parks RW, editors. Davidson's Principles and Practice of Surgery. 6th edition. Philadelphia: Churchill Livingstone Elsevier; 2012. Chapter 16.

ANSWERS

1. What further history and examination would you undertake?

- complete GIT history with particular attention to systemic symptoms (unexplained weight loss, night sweats, change bowel habits) and more specific details of the bleeding
- more family history details regarding colon cancer
- thorough GIT examination including PR and inguinal/femoral LN's, hepatomegaly, ascites
- colonoscopy (previous results and reason for investigation)

2. What are the risk factors for cancer of the colon and rectum?

3. (Adenoma-Carcinoma sequence (Fearon/Vogelstein))

- intraluminal chemical carcinogenesis – unclear whether from direct ingestion &/or biochemical processes of existing substances normally found in the faecal stream
- low fibre & high fat?
- certain types of polyps (villous, tubular)
- past history of colon cancer
- family history of colon cancer - familial polyposis syndrome, Gardner's syndrome, cancer family syndrome
- smoking
- obesity

4. What are the screening recommendations in Australia for faecal testing that Mr. Angus is describing?

What is a faecal occult blood test (FOBT)?

A FOBT is a non-invasive test which detects microscopic amounts of blood in the bowel motion. Blood is released into the bowel motion in a number of bowel conditions, including bowel cancers and their precursors (polyps or adenomas).

As blood may only be released into the bowel motions intermittently, samples from at least two separate bowel motions are required to increase the chance of detecting this blood.

FOBTs are not a diagnostic test but are used to identify people who require further investigation.

What types of FOBT are available?

Two main types of FOBT are available:

guaiac tests, which are based on the pseudoperoxidase activity of haem; and immunochemical tests, which utilise antibodies against human haemoglobin.

To increase their specificity 1, traditional guaiac tests have required relatively complex dietary restrictions to be maintained prior to and during faecal sampling, including:

elimination of red meat;

elimination of certain fruits and vegetables (raw turnips, radishes, rock and other melons); and reduction of Vitamin C, aspirin and other anti-inflammatory drugs.

Immunochemical tests (sometimes called FIT) have both a higher sensitivity and specificity than earlier guaiac tests and do not require dietary restrictions.

What kind of FOBT is being used in the National Bowel Cancer Screening Program (NBCSP)?

The Australian Government has decided to use an immunochemical FIT for the following reasons:

higher sensitivity than guaiac tests make the test suitable to use with a biennial screening interval;
no dietary or medication restrictions are required so the test is likely to be more acceptable to the public;
the test can be easily used at home; and
the test has the potential for automated analysis.

How accurate are immunochemical FITs?

Immunochemical FITs can detect 60-90% of cancers and many advanced adenomas under ideal conditions (NHMRC, 2005). In population screening programs, a person with a positive FIT has a 30-45% chance of having an adenoma and a 3-10% chance of colorectal cancer (NHMRC, 2005). This was confirmed in Ballarat community when NBCSP was introduced.

Which test is being used in the Program?

The Bayer DETECT TM test kit has been selected for use in the Program. This was one of two kits used in the Pilot Program which ran from November 2002 to June 2004.

How accurate is the Bayer DETECT TM test?

The test sensitivity is:

- (i) 65.8% to 98.9% for colorectal cancer;
- (ii) 27.1% to 75.6% for advanced adenomas; and
- (iii) 85% to 95.6% for colorectal cancer and advanced adenomas combined.

The specificity of the test is 87.4% to 97.9% in asymptomatic people.

During the Pilot Program (Department of Health and Ageing, 2005) the positive predictive value (PPV) of the DETECT TM FOBT kit for suspected cancer was 5.1% and for suspected cancer or advanced adenomas was 20.1%. For all cancers and adenomas, including small and diminutive adenomas, the PPV was 25.2%.

What proportion of tests will be positive?

It is anticipated that between 6-8% of people tested in the Program will have a positive test result.

How will FOBT samples be collected?

People eligible to participate in the Program will be sent a test kit in the mail and will collect the samples in the privacy of their own home. Samples are required from two different bowel motions. Participants will post the samples to a central laboratory.

Who will analyse the FOBT samples?

Dorevitch Pathology has been selected as the Program's pathology laboratory to complete the testing and report the results to the patient, their GP (if nominated) and the National Bowel Cancer Screening Register (the Register).

How will the FOBT sample be analysed?

The FOBT sample will be analysed with the Magstream HemSp system. This is a magnetic particle agglutination test utilising a human haemoglobin-detecting reagent.

How will FOBT results be reported?

FOBT results will be reported for two individual samples (sample 1 and sample 2) as well as an overall sample result. The results will be reported as positive or negative.

Results will not be reported in the small proportion of cases where the test result is inconclusive and the participant will be asked to repeat the test.

Table 1: FOBT result mapped to laboratory ranges

FOBT Result Laboratory Ranges

Positive 20 – 100 SU

(standard unit)

Negative > 100 SU

Inconclusive < 20 SU

Who will the FOBT results be sent to?

Dorevitch Pathology will send the result of the FOBT to the participant, their GP (if nominated), and the Register within two weeks of Dorevitch Pathology receiving the sample.

What will participants with a positive FOBT result be advised to do?

Participants with a positive FOBT result will be advised to contact their GP or primary care provider within two weeks to discuss the result and be referred for further tests, if required. The Register will send a reminder letter to the participant and to their GP (if nominated) if it does not receive information within 8 weeks of the participant being advised of a positive FOBT result, that the participant has seen their GP.

What about participants with a negative FOBT result?

Participants with a negative FOBT result will be advised:

that the NHMRC recommends that they should participate in screening every two years with a FOBT; and

to contact their doctor immediately should they:

have or develop any of the symptoms described in the information booklet provided to them; or discover a significant family history of bowel cancer.

What happens if a FOBT is incomplete or inconclusive?

Participants with an inconclusive or incomplete FOBT result will be invited to repeat the test.

Dorevitch Pathology will notify the Register. The participant will be sent a replacement kit and explanatory information by the Register and asked to complete a FOBT kit again.

The GP (if nominated) will not receive advice about an incomplete or inconclusive test result.

When should a colonoscopy be undertaken?

The NHMRC (2005, Section 3.5) advises that a person with a positive FOBT is 12 to 40 times more likely to have colorectal cancer than somebody with a negative test. The probability that a person with a positive FOBT has some type of neoplastic lesion is 35-50%.

It is essential that any positive FOBT (even if just one of the samples is positive) is appropriately investigated. Colonoscopy is preferred as it allows for biopsy and removal of adenomas.

If a medical practitioner considers that a colonoscopy is inappropriate, they are asked to advise the Register using the Assessment Form – Referred for colonoscopy/not referred for colonoscopy

following a positive FOBT result (provided in the GP Information Kit sent to each practice). A read-only version of this form can be accessed on the Program's website at www.cancerscreening.gov.au. Further copies of the form are available from the Information line on 1800 118 868.

If a GP refers a participant for colonoscopy and the Register does not receive information that the participant has had a colonoscopy within four months of their positive FOBT result, the Register will send a reminder letter to the participant and their GP (if nominated).

References

NHMRC (2005) Clinical Practice Guidelines for the prevention, early detection and management of colorectal cancer, National Health and Medical Research Council, Sydney, December 2005.

Department of Health and Ageing (2005) unpubl - Bowel Cancer Screening Pilot – Final Evaluation Report "Australia's Bowel Cancer Screening Pilot and Beyond" p68, www.cancerscreening.gov.au

- Specificity is the probability that a person without the disease will have a negative result.
- Sensitivity is the probability that a person with the disease will have a positive result.
- The positive predictive value (PPV) is defined as the percentage of people with a positive test who have the disease. In relation to FOBT, the PPV is the proportion of patients with a positive FOBT who have cancer and advanced adenomas detected at follow-up colonoscopy.

5. How do right colon, left colon and rectal cancers differ in presentation in respect to weight loss, feeling a mass, rectal bleeding, tympany, Virchow's node, Blumer's shelf, anaemia and obstruction.

symptom	site of cancer		
	right colon	left colon	rectum
weight loss	+	+/-0	0
mass	+	0	0
rectal bleeding	0	+	+
tympany	0	0	+
anaemia	+	0	0
Obstruction	0	+	+
L supraclavicular fossa lymphadenopathy (Virchow's node)	indicates gastric cancer		
Palpable metastatic deposit felt on PR examination in pouch of douglas or retrovesical space (Blumer's shelf)	associated with metastatic disease from pancreas/stomach/lung		

6. Using diagrams summarise the operative resection for colon cancer located at: caecum, superior aspect of ascending colon, transverse colon, superior aspect of descending colon, descending colon, and rectum.

TNM staging system

Primary Tumour (T)

TX Primary tumour cannot be assessed

TO No evidence of primary tumour

Tis Carcinoma in situ: intraepithelial tumour or invasion of the lamina propria

T1 Tumour invading the submucosa

T2 Tumour invading the muscularis propria

T3 tumour invading through the muscularis propria into pericorectal tissues T4 tumour directly invading other organs or structures or penetrating the visceral peritoneum

Regional Lymph nodes (N)

NX regional Ln's cannot be assessed

NO no regional LN mets

N1 mets in 1-3 pericolic or perirectal LN's

N2 mets in 4 or more regional nodes

Distant Mets (M)

MX presence of distant mets cannot be assessed

M0 no distant mets

M1 distant mets (M1a- 1 site; M1b- more than one organ/site/peritoneum)