**WHAT IS COLORECTAL CANCER?**

Colorectal cancer is presently the most common cancer found in the West. It is also the most common solid-organ cancer in Singapore, with its incidence rate only second to that of breast cancer in females and lung cancer in males. The current trend is still on the rise and as it stands, the risk ratio for an average Singaporean to contract this cancer is about 1 in 50.

Singapore, along with Japan, Taiwan and Australia, has one of the highest incidences of cancer in Asia and the world. Indeed, our rates are comparable with those found in Western countries like the U.S and those in Europe.

The incidence of colorectal cancer rises rapidly from around the age of 50 years and screening is therefore usually targeted at this group of the population.

However, the situation is changing. At the Department of Colorectal Surgery of Singapore General Hospital, there has been an increase in the number of younger patients (less than 50 years old) being treated for the disease in the last three years.

Like all cancers, colorectal cancer has arisen as a result of a single or group of cells that have broken off from their usual regulatory growth, maturity and death control mechanisms — leading to fatal unbridled growth and an overwhelming spread in the host.

**WHAT ARE THE SYMPTOMS OF COLORECTAL CANCER?**

These can include bleeding in the stool (that is often painless), change in bowel habits, persistent diarrhoea, mucous in the stool, reduction of stool calibre, a recurrent need to defaecate (tenesmus), anaemia, an incidental abdominal mass. Intestinal obstruction also occurs when the tumour is large with associated abdominal distension, lack of bowel opening, abdominal colic and vomiting. It is also important to note that, contrary to popular belief, pain is a rare symptom of this cancer.

**CAN COLORECTAL CANCER BE TREATED?**

By the time an individual becomes symptomatic and seeks treatment for colorectal cancer, more than 60% would already have suffered spread of the disease either to the regional lymph nodes (Dukes’ C or Stage III) or to distant organs (Dukes’ D or Stage IV), making cure by surgery ineffective. Compared to cancer that is still confined to the bowel wall (i.e. Dukes’ B or Stage II), the incidence of disease recurrence for Stage III over a period of 5 years increases from about 30% to 60%.
Stage I disease, in which the cancer is still confined to the mucosa or the inner layer of the intestinal wall, has the best prognosis with a 5-year survival rate of greater than 95%. In fact, many patients that have been diagnosed with Stage I disease can be adequately treated by endoscopic removal or polypectomy, provided a clear margin is achieved and there is an absence of high risk factors in the histopathology of the removed tumour.

It is therefore imperative that the precursor lesions (i.e. polyps), or rather cancer in the earliest stage, be detected to offer the best chance of disease-free survival.

**WHAT IS COLORECTAL CANCER SCREENING?**

Cancer screening aims to detect the cancer or its precursors (i.e. colonic polyps) before the onset of symptoms. We believe that early detection of the cancer, combined with timely surgery, can provide a cure.

In fact, statistics of colorectal cancer screening has shown:

(1) a greater number of cancers (i.e. Stage I or II) detected earlier and this translates to better survival and cure rates;

(2) a greater number of “high risk” colonic polyps detected and removed through the colonoscope before malignant change (this is ideal);

(3) an identification of a relatively higher risk subgroup of individuals who hitherto exhibit no risk factors but have been found to harbour asymptomatic polyps. They will subsequently enter a surveillance programme with 2-3 yearly scopes that will effectively keep the risk of developing any advanced cancers very low.

**WHAT CAN WE DO FOR COLORECTAL CANCER SCREENING?**

Risk stratification is very important. High risk individuals are those who have:

(1) a personal history of resected colorectal cancer;

(2) a personal history of colonic polyps;

(3) a family history of genetic cancers like Hereditary Non-Polyposis Colorectal Cancers (HNPCC) or genetic polyposis like Familial Adenomatous Polyposis Coli (FAP);

(4) a family history of colorectal cancer or colonic polyps in a first-degree relative. A history of second-degree relatives with colorectal cancer may also be considered as the same risk of the average population. High-risk individuals should consult with a doctor, who can then recommend regular surveillance.
In Singapore, our lifetime risk is probably higher than individuals in the surrounding countries. Reliance on the onset of symptoms has proven to be an ineffective screening method and it often does not result in detection of early lesions. Bedside clinical examination is also ineffective.

Currently, the more potent screening tests that are available include:

1. faecal immunochemical test (FIT),
2. double contrast barium enema examinations (DCBE),
3. flexible sigmoidoscopy (FS),
4. colonoscopy, and
5. a combination approach (e.g. FIT and FS).

Effectiveness, cost, acceptability and risk involved in each modality are the main differentiating factors for the different choices available.

**WHAT IS Fecal Immunochemical Test (FIT)?**

All cancers and large polyps do intermittently bleed into the stool that is passed out. As the blood may be in minute quantities that may not be visible to the naked eye, a special test kit is required to detect this. This is the FIT kit. Most kits work on one of the two principles:

1. through a chemical reaction making use of the reducing ability of haem (i.e. Fe 2+). This is the guaiac test. A thin sample of stool is smeared onto a card with subsequent addition of a developing solution and a chromogen to the paper for a chemical reaction with colour change for a positive test.

2. through an immunochemical test using animal antibodies developed to detect either human haemoglobin or human albumin in blood. A reducing chemical is coupled to the antibody that can result in a change in either colour or pattern that gives a positive test result. These kits usually come with a small plastic “rod” attached to the cap that can be plunged into the stool for a sample and reinserted back into a buffer solution in the container before development using a filter paper strip.

As the guaiac-based test is a chemical test, false positivity may result from certain food substances that can react with the chromogen, e.g. raw meat, radish, broccoli, beet-root and drugs like vitamin C supplements. Thus, dietary restriction 2 days prior to sampling is essential if the guaiac-based test is used to reduce false positivity rates. Hydrating the card before development will also increase the positivity rate. On the other hand, the immunochemical test does not require any dietary restriction since they utilize the antibody reaction. As a result, these tests are also more sensitive than the guaiac test in picking up smaller quantities of blood and as a consequence are more specific. The only haemoglobin they cross-react to is chimpanzee blood!
Only three cards for the guaiac test and two kits for the immunochemical test should be used annually. Any more frequent tests will result in a higher, false positive rate. Any one positive test requires further evaluation with colonoscopy. As the FIT is a screening test, a positive test may not only be a false positive, but may also be due to other pathology like haemorrhoids (which is common in Singapore), diverticular disease, infective or ischaemic colitis, to name a few. In addition, a negative result may have been derived from a problem with sampling. These tests have a definite “miss-rate” that varies between 30% to 60%, when used in the population screening setting.

**WHAT ARE MY CONCLUSIONS?**

Colorectal cancer is common in Singapore and this is a preventable and treatable condition if detected early enough. However, as with many diseases in its early state, there are no obvious symptoms. Thus screening is necessary to pick up these lesions. At the moment, except for high risk groups, there is no formal programme for screening and follow-up. Individuals will have to discuss this with their family physician and have to voluntarily avail themselves for the various tests.

**WHERE TO GO FOR FIT SCREENING?**

Since 2001, the Singapore Cancer Society (SCS) has been offering free FIT kits to Singaporeans and permanent residents aged 50 and above, annually for screening. You may collect the kits from SCS' premises at either Bishan Place or at Enggor Street during working hours. The kits are also distributed annually during the month-long Colorectal Cancer Awareness Month in March every year.

If a positive result is obtained on any one of the tests performed using the two FIT kits, a referral will be made to a doctor for further evaluation with a colonoscopy or other appropriate imaging tests. Subsidies are available from the Society for those who have passed a means test.