Gastrointestinal cancer screening and surveillance programmes: a worldwide perspective – Part I

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Abstract

Cancer is a leading cause of death worldwide and such deaths are projected to continue to rise, creating significant morbidity and mortality. Devising programmes to detect early cancer, aiming to achieve complete cure, has been high on the agenda of various professional bodies. This paper focuses on the various screening and surveillance programmes around the world, aiming at detecting early gastrointestinal malignancies. Starting with Barretts' oesophagus, we shall see the different surveillance programmes across countries to detect premalignant stages of oesophageal cancer, while at the same time reviewing the only country in the world, China, which has an oesophageal cancer mass screening programme. Moving to gastric cancer, we shall review Japan's screening programme, followed by other countries' measures in surveilling premalignant gastric conditions. Colorectal cancer is the only gastrointestinal cancer where mass screening has been employed in various countries. This will be discussed in detail, with particular emphasis on the British and American systems. We shall also be discussing the surveillance programmes for moderate and high risk patients of colorectal cancer. Finally, we shall also review the different recommendations with regards to screening for hepatocellular carcinoma.

Keywords

Screening programmes, gastrointestinal cancer, surveillance programmes

Introduction

Cancer is a leading cause of death worldwide and such deaths are projected to continue to rise. WHO is estimating cancer-related deaths worldwide to increase to 12 million in 2030[1]. Such figures create significant concerns among policy makers, as such conditions result in significant morbidity and mortality, causing huge financial burden on national health care systems. It is a well documented fact that when a cancer is detected in its early stages, complete cure is possible. For this reason, devising methods and programmes to detect early cancer were always high on the agenda of professional bodies in the past century and will continue to be in the years to come. Various countries have now a 5-10 year experience with various screening programmes such as breast, cervical and bowel, all proving to be successful. In the following text, we will be looking at various screening programmes involving diseases of the gastrointestinal tract and how these vary across different countries. While screening is the terminology used to describe testing healthy asymptomatic large population groups, surveillance is the terminology used to describe periodic testing of individual patients known to suffer from conditions which are premalignant[2]. Such surveillance programmes will be discussed as well.

Oesophagus

Barrett's oesophagus is a premalignant precursor for oesophageal adenocarcinoma. This type of cancer is rising alarmingly[3] and a surveillance programme is recommended by all professional bodies in patients with Barrett's oesophagus, aiming at detecting dysplasia and treating premalignant lesions. On the other hand, the only place where mass screening for oesophageal cancer is carried out is in China.

Although surveillance in Barrett's oesophagus is widely practiced worldwide, as indirect evidence suggests benefit, this remains controversial because of lack of randomized trials supporting its value. The appropriate surveillance interval in patients with Barrett's oesophagus depends on the grade of dysplasia. The American guidelines, issued in 2008, suggest that patients with no evidence of dysplasia should have 2 OGDs within the first year, and every 3 years thereafter. Patients with evidence of LGD should have a repeat OGD within 6 months of diagnosis and if no signs of HGD are present, yearly OGD should be carried out until no dysplasia is found on 2 consecutive annual endoscopies. Lastly, since patients with HGD progress to adenocarcinoma in more than 30% of cases within 5 years, such patients require a repeat OGD after 3 months from diagnosis, confirming HGD on both set of biopsies by an expert gastrointestinal pathologist. They should be counseled regarding their therapeutic options including intensive monitoring, local ablative therapies by endoscopic means or oesophagectomy. Four quadrant biopsies at 2cm intervals of Barrett's mucosa are recommended at every OGD, however using histological evidence of dysplasia as a marker for the frequency of surveillance remains problematic as there are issues with sampling, interpretation and concomitant presence of oesophagitis from reflux disease precluding accurate identification and confusing the reading of dysplasia [3].

The above guidelines differ slightly from the British. In 2005, BSG stated that Barrett's oesophagus without evidence of dysplasia should be surveilled every 2 years, using the same biopsy protocol as the Americans. Patients with low grade dysplasia should be screened every 6 months for as long as it remains stable and the interval can be increased to 2-3 yearly if regression on 2 consecutive

examinations is apparent. Moreover, patients with high grade dysplasia, despite acid suppression, should be considered for oesophagectomy if the patient is fit for surgery, or endoscopic ablation if surgery is contraindicated[4].

In China, oesophageal cancer is ranked second after gastric cancer as the leading cause of cancer death, with the predominant factor being related probably to diet, mainly micronutrient deficiencies, low levels of protective factors that occur in fresh fruit and vegetables, and consumption of food containing high levels of initiating carcinogens such as nitrosamines. Being highly prevalent, public mass screening in adults over 35 years, using balloon cytology or gastric occult blood bead tests, was initiated in 1974. Those with dysplasia or cancer went on to have an upper endoscopy and treatment. Those with normal mucosa were screened every 1-2 years. Having screened over 160 million participants between 1973 and 1999, this cohort's 5 year survival rate has increased from 10% to 90%, thereby reducing mortality in this high-risk population using inexpensive, simple and effective methods[5]. *(to be continued)*

Abbreviations

AASLD: American Association for the Study of Liver Diseases
ACG: American College of Gastroenterology
AFP: Alphafetoprotein
ASGE: American Society for Gastrointestinal Endoscopy
BSG: British Society of Gastroenterology
CRC: Colorectal cancer
DCBE: Double contrast barium enema
FAP: Familial Adenomatous Polyposis
FH: Family history
FOBT: Faecal occult blood test
HCC: Hepatocellular carcinoma
HGD: High grade dysplasia
HNPCC: Hereditary non-polyposis colorectal cancer
LGD: Low grade dysplasia
OGD: Oesophagogastroduodenoscopy
PSC: Primary sclerosing cholangitis
WGO: World Gastroenterology Organization
WHO: World Health Organisation

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