

preventable by lifestyle change but environmental and genetic factors may also play a role. For example, protective mechanisms that may fail and predispose to cancer include genes for enzymes (xenobiotic metabolizing enzymes; XME) that metabolize carcinogens (eg Glutathione S-Transferases GSTs); genes that repair DNA mutations (DNA repair genes); genes that repair damaged growth control or kill cancerous cells by a process known as apoptosis (tumour suppressor genes; TSGs); and genes for immune protection as well as immortalization (telomerase). Some other genes (oncogenes) predispose to cancer.

How does cancer develop?

The progression from a normal cell to a potentially malignant cell – and finally a cancer cell (oncogenesis – carcinogenesis) – is characterized by an ability of cells to escape normal growth control mechanisms, and to proliferate autonomously. A series of steps lead to the aberrant expression and function of molecules regulating cell signalling, growth, survival, motility, angiogenesis (blood vessel proliferation), and cell cycle control.

Cell cycle control is disturbed particularly by oncogene over-expression or over-activity (amplification) which drives cell proliferation. Oncogenes, such as the epidermal growth factor receptor (EGFR) gene, may thus be potential targets for cancer therapy.

Working more towards cell protection are tumour suppressor genes (TSGs) which, if defective, impair protection. An important TSG is P16; this acts as a growth control checkpoint. Another is P53, which will either repair a malignant cell or kill it (by apoptosis) (Figure 1). Single nucleotide polymorphisms (SNPs) are gene areas with

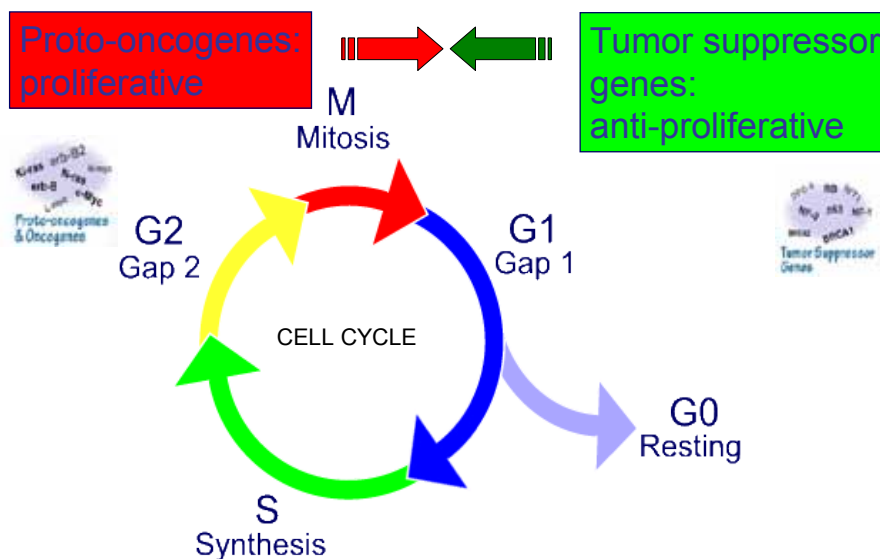


Figure 1. Cell growth cycle and influences of oncogenes and tumour suppressor genes.

altered DNA sequences which may not lead to an amino acid alteration. SNPs in various genes (TSGs, xenometabolizing enzymes, and DNA repair) may sometimes play a role in cancer.

Microarray technology has shown changes in many hundreds of genes that can be involved in oncogenesis.

What is the importance of health promotion?

Prevention of cancer involves lifestyle changes (quitting tobacco and betel quid use and moderating alcohol consumption). A diet rich in fruits and vegetables may reduce cancer incidence. A healthy lifestyle protects not only against many cancers, but also against

many other conditions, many of which are also life-threatening (Table 3).

Health promotion for oral cancer prevention is the remit of the whole dental team, media and voluntary agencies. We propose that the dentist should take inter-professional leadership in dental-medical collaborations to reduce delays in diagnosis of oral cancer. A number of national initiatives have been brought together under the umbrella of the International Consortium on Head and Neck Cancer Awareness (ICOHANCA) whose object is to increase cancer awareness, and hopefully lead to prevention or earlier diagnosis. <http://www.ncbi.nlm.nih.gov/pubmed/17720612>

Mouth Cancer Action Month

Early diagnosis of mouth cancer improves survival chances massively from 50% to 90%. Unfortunately, early diagnosis is rare, with over two-thirds of cases diagnosed at a late stage. This is due to a lack of awareness among the public of the early warning signs of the disease and the common risk factors. The Mouth Cancer Action Month campaign, organized by the British Dental Health Foundation, aims to change this.

Taking place annually throughout the whole of November, the campaign focuses on increasing awareness of mouth cancer, as well as promoting self-examination.

Health professionals are vital to the campaign, as their public facing roles create perfect opportunities to educate and inform the public. The Foundation encourages all health professionals to get involved in any way they can, whether it be offering free mouth cancer examinations to patients, creating an informative display or holding a sponsored event to raise money.

The facts speak for themselves – more people die from mouth cancer than from cervical and testicular cancer combined. Even more concerning, the number of annual mouth cancer cases has increased by

41% in the last decade. Action needs to be taken.

Tobacco is considered to be the main risk factor, and those who both smoke and drink in excess are up to 30 times more likely to develop the condition. A poor diet and the Human Papilloma Virus (HPV) are also risk factors.

Early warning signs include a non-healing mouth ulcer, red or white patches and any unusual swelling or lumps in the mouth.

An important part of the campaign is the Blue Ribbon Badge Appeal. Boxes of blue ribbon badges are available through the Foundation on 01788 539 793, and can be sold to members of the public to raise funds and awareness. Other Mouth Cancer Action Month resources, including the campaign's guide, can be ordered through the Foundation, and a free poster is available from Denplan (01962 827997).



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