The Human Face of Cancer for HAEM200

Understanding the molecular mechanisms which underlie cancer is an exciting frontier which ultimately yields real world benefits for patient in terms of improved understanding of tumour biology, which in turn may lead to novel diagnostic tests, staging systems and therapeutic modalities. To the students studying these often complex mechanisms, this may not be immediately apparent. The purpose of the lecture is to demonstrate the clinical impact of underlying biology in an effort to make the course more relevant.

In the years to come, you will be required to learn about the clinical features of many cancers in great detail. These notes are merely an introduction and may provide some interesting and hopefully useful facts. The notes are designed as a #Tweenote, which is a novel information sharing technique invented by Arthur Goldstuk (@art2gee) – a South African journalist and Tech-guru. Follow him! A #Tweenote consists of the Top 10 facts about a topic with each fact being 140 characters or less, making them easily sharable on Twitter. Each #Tweenote can be read in less than a minute!

Marshall Murdoch
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#Tweenote1: The Top 10 Cultural Disparities relating to Cancer

#1 Cancer health disparities are adverse differences in cancer incidence, prevalence & mortality that exist among specific population groups

#2 Groups may be characterized by age, disability, education, ethnicity, gender, geographic location, income or race

#3 Complex factors contribute to the disparities: income, education, occupation & location & together these form socioeconomic status (SES)

#4 Low SES groups are more often diagnosed with late-stage diseases & suffer a greater burden of cancer morbidity & mortality

#5 SES predicts access to education, medical cover & living conditions as well as prevalence of behavioural risk factors & cultural beliefs

#6 Low SES and poor education play a role in seeking screening, as well as compliance with treatment, medical advice & follow up

#7 Low SES groups are medically underserved. Limitations in transport, time & hard cash limit access to appropriate health care

#8 Low SES increases behavioural risk factors for cancer such as tobacco, alcohol, inactivity, obesity & infective risks

#9 Low SES is associated with exposure to toxins, from living conditions, consumable choices, work environment & leisure options

#10 Inappropriate cultural beliefs which raise barriers to obtaining effective health care are more prevalent in low SES groups

#Tweenote2: The Top 10 Facts about Screening for Cancer

#1 Screening tests (which differ from diagnostic tests) are done prior to symptoms & may improve outcomes if cancer is diagnosed earlier

#2 Screening tests have risks, such as morbidity & mortality, false positive & negative results and may not always result in life improvement

#3 A useful test is able to detect asymptomatic cancer, have few false-negative & false-positive test results & be safe

#4 Such a test must also be able to detect cancer, which if detected & treated early results in measureable morbidity & mortality improvement

#5 Screening tests include history & examination, laboratory investigations, imaging and genetic mutation identification

#6 Screening which is not generally useful may be applicable to certain high risk population groups

#7 Lead time bias and over-diagnosis may make a test seem useful without any real world benefits

#8 Mammography, PAP-smear, colonoscopy and low dose spiral CT scan (for lung cancer) have been shown to have benefit

#9 The PCLO screening trial has shown NO benefit to either PSA or digital rectal exam (DRE) for screening prostate cancer

#10 Screening tests for bladder, endometrial, gastro-esophageal, liver, oral, ovarian, skin & testicular cancer are under investigation

#Tweenote3: The Top 10 Facts about Diet and Cancer

#1 Excessive alcohol intake(>50g/d) is associated with 19 500 cancers every year & takes more than 10 years sober before the risk declines

#2 Alcohol consumption is a major risk factor for Head & Neck, esophageal and liver cancer as well as for breast and colorectal cancer

#3 Resveratrol found in red wine has not been shown to have any clinical impact. Moderate alcohol lowers the risk for renal carcinoma & NHL

#4 Obesity results in 85 000 cancers / year. Reducing BMI by 1 may prevent 100 000 cases. Breast, endometrial & colorectal are most affected

#5 Eating extra fruits & vegetables does not protect against breast cancer.

#6 Physical activity for 3-5 day/week reduces the risk of breast, colorectal, endometrial & lung cancer by 20-40%

#7 There is no clinical evidence for the role of any type of artificial sweetener in the development of any cancer in humans

#8 Some epidemiological data support the role of meat cooked at high temperature in developing prostrate, colorectal & pancreatic cancer

#9 Fluoridated water does not appear to have any clinical effect on the development of any cancer

#10 Cruciferous vegetables and tea consumption have inconclusive results on cancer prevention, but garlic does have good data

#Tweenote4: The Top 10 Facts about Supplements and Cancer

#1 Statins have been shown to lower the risk of colorectal and skin cancers, including melanoma

#2 The data to support the role of Vit D in reducing cancer are inconsistent & no recommendations can be made at present

#3 Vaccines that prevent human papilloma virus (HPV) and hepatitis B (HBV) are approved to lower the risks of cervix and liver cancer

#4 Sipuleucel-T (Provenge) is a vaccine that is useful in metastatic prostate cancer, but the melanoma GMK vaccine is of no benefit

#5 Calcium supplementation may be associated with lowered risk of colorectal cancer by up to 30% in some studies. Distal cancers are less frequent

#6 Early data suggest that metformin may have the potential to reduce the risk for breast, endometrial, colorectal and prostate cancers

#7 Ultraviolet radiation from sun tanning or sunbeds is a known carcinogen and co-carcinogen for skin cancers, including melanoma

#8 Antioxidants such as selenium, lutein, lycopene, beta-carotene, Vit A, Vit C & Vit E have laboratory evidence in preventing cancer

#9 Antioxidant use in clinical trial has not shown convincing benefits. Further studies are needed

#10 Beta-carotene, a naturally occurring anti-oxidant has been shown to have either no benefit or possibly even harm

#Tweenote5 : The Top 10 Cancers and their Mortality

#1 Prostate 238590 cases, 29720 deaths, 12.4% death risk

#2 Breast 232340 cases, 39620 deaths, 17% death risk

#3 Lung 228190 cases, 159480 deaths, 69.9% death risk

#4 Colorectal 142820 cases, 50830 deaths, 35.6% death risk

#5 Melanoma 76690 cases, 9480 deaths, 12.4% death risk

#6 Bladder 72570 cases, 15210 deaths, 21% death risk

#7 NHL 69740 cases, 19020 deaths, 27.3% death risk

#8 Thyroid 60220 cases, 1850 deaths, 3.1% death risk

#9 Renal 59938 cases, 12586 deaths, 21% death risk

#10 Endometrial 49560 cases, 8190 deaths, 16.5 % death risk