CANCER REHABILITATION

Pages 126 - 158

Co-morbidities

1

CANCER REHABILITATION

Page 157

Adiposity

- Reeves et al. (2007):
  - Strong evidence that overweight individuals have greater chance of developing cancer and reduced survival;
  - Direct correlation between BMI and endometrial, post-menopausal breast cancer, kidney, myeloma, pancreatic, ovarian and colorectal cancer.
- Many studies show increased survival with increased weight-loss following therapy.

2

CANCER REHABILITATION

Page 156

Body Mass

- Dignam et al. (2006):
  - 4,310 breast & bowel patients between 1989-94;
  - Those underweight (BMI< 19) and obese (BMI > 35);
  - Worse survival rates than healthy weight individuals;
  - More relapse and non-cancer related death.
- Gross et al. (2006):
  - 1069 prostate patients 1994-2002;
  - obese men had a higher risk of early disease recurrence.

3

CANCER REHABILITATION

Page 157

Men

- Obese men were shown to be 33% more likely to die of cancer compared to those of a normal weight and obese women had a staggering 55% increased risk of dying from cancer.

4

CANCER REHABILITATION

Page 157

Mechanisms of being overweight

- ↑Oestradiol promotes tumour growth in ovarian, endometrial and breast cancers;
- ↑Leptin promotes proliferation, reduces apoptosis and stickiness of cancer cells.;
- Correlation between Leptin and IGF-1 and the protein Cyclo-oxidase 2 (COX-2);
- ↓Progesterone has defensive effect on cancer cells;
- Dietary fat and fibre: low fat and high fibre = ↑ oestrogen excretion.

5

CANCER REHABILITATION

Page 158

Insulin and IGF-1

- Higher in overweight;
- Higher in sedentary;
- Promotes proliferation, impairs apoptosis, promotes metastasis.

6

CANCER REHABILITATION

Page 158

Weight gain with cancer, why?

- Chemotherapy encourages snacking;
- Steroids given with chemo…
- Fatigue promotes sedentary behaviour;
- Hormone therapies (tamoxifen, aromatase inhibitors) encourage fat storage and are taken for prolonged periods;
- Cancer-related attitude.

7

CANCER REHABILITATION

Diabetes mellitus

- Marble (1934):
  - Of 10000 diabetics 256 developed cancer;
  - Average age of diabetes at diagnosis was 55.8, average age on death 62.9 (7 years);
  - Average survival after cancer diagnosis 1.8 years.
- *More of the surviving subjects expected to contract malignant disease.*

8

CANCER REHABILITATION

Hyperinsulinemia and Diabetes mellitus

- Vigneri et al. (2009):
  - Hyperinsulinemia affects IGF-1 mechanisms promoting proliferation and metastasis;
  - Risk of several cancers increased (pancreas, liver, breast, colorectal, urinary tract, and female reproductive organs) in diabetic patients.
- Factors include:
  - diabetes duration, varying levels of metabolic control, different drugs used for therapy, the possible presence of chronic complications, obesity, hyperglycaemia, and increased oxidative stress

9

CANCER REHABILITATION

Diabetes medication

- Bowker et al. (2011):
  - Cancer mortality over 5.4 years: 4.9%, Sulphonylureas; 3.5% Metformin; 5.8% insulin.
- "*Patients with type 2 diabetes exposed to sulphonylureas and exogenous insulin had a significantly increased risk of cancer-related mortality compared with patients exposed to metformin".*

10

CANCER REHABILITATION

Cardiovascular disease

- "*Elderly breast cancer patients with a history of cardiac disease and/or diabetes treated with trastuzumab (Herceptin) have an increased incidence of cardiotoxicity. Continuous cardiac monitoring is especially advised in this population*" (Serrano et al, 2011).
- 33%↑ CV disease
- 33.3%↑ diabetes

11

CANCER REHABILITATION

CV disease

- Yeh et al. (2004):
  - Cardiotoxicity during or following anthracycline therapy (chemo) had many drug-related risk factors, but also presence of CV disease and ischaemia.

12

CANCER REHABILITATION

CV disease continued…

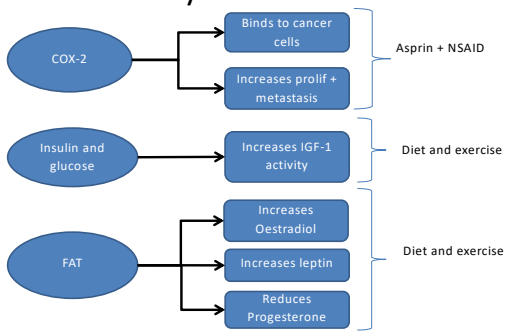
- Berthe et al. (2006):
  - "We showed that classical risk factors for cardiovascular diseases, except hypertension, increased the incidence of CVDs"….
  - "Patients with newly diagnosed H-Lymphoma and survivors of HL, especially when treated at young ages, should strongly be advised to refrain from smoking, to maintain a healthy body weight, and to exercise regularly".

13

CANCER REHABILITATION

Page 126

Summary of mechanisms

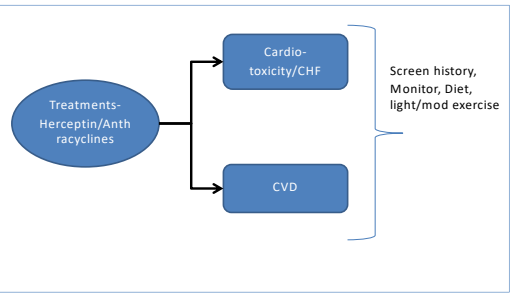


14

CANCER REHABILITATION

Page 127

Summary of mechanisms



15