336

Environmental epidemiology of childhood cancer

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Environmental and life-style factors affecting parents are associated with increased risk of childhood cancer. Maternal smoking during pregnancy with index child increases risk of childhood leukemia as well as of all childhood cancers combined. Heavy alcohol consumption by mother during pregnancy excerts carcinogenic effect on the fetus. Maternal use of marijuana was associated with a significant increase of childhood leukemia. Children of mothers using hair dye have been found to be at high risk of Wilms' tumour. Identified as possible risk factors were oral contraceptives taken during the first trimester of pregnancy. Parental occupation including exposure to pesticides, benzyne, gasoline, hydrocarbons, metals, inorganic compounds and radiation have been found to be associated with increased risk of childhood cancer.

Prenatal and postnatal exposures to ionizing radiation and insecticides have been associated with elevated risk of childhood cancer. There is also some evidence suggesting causal association between electromagnetic field exposure and childhood leukemia.

337

Cellular and molecular mechanisms of cancer invasion

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Cancer is a chronic and progressive disease characterized by disturbances of growth, cellular differentiation and maintenance of tissue integrity. The latter phenomenon leads to invasion. The transition from the noninvasive towards the invasive stade of the disease is crucial because it transforms a benign and easily curable lesion into a malignant and therapy-resistant disease. Tumor progression is the result of a number of genetic alterations, initiated by a single mutation without immediate clinical manifestations and ending with a metastatic cascade. Activation of tumor-promoter genes (oncogenes), by mutation or overexpression, and inactivation of tumor-suppressor genes, by mutation or deletion, favour oncogenesis. Separate genes are implicated in distinct steps of the tumor progression. Defects in DNA-repair genes influence all steps. Metastasis is a multistep process of invasion. At each step invasion occurs within a microecosystem in which a continuous molecular crosstalk takes place between the cancer cells and the host cells that participate at the establishment of the tumor. The cancer cells carry the genetic alterations and act as the founders of the microecosystem. We shall discuss the invasion-suppressor function of the E-cadherin/catenin complex. Inactivation of one element of this complex may initiate invasion in an appropriate genetic background. Such inactivation may take place at various levels: mutation in coding sequences; hypermethylation of the promoter; mRNA instability; tyrosine phosphorylation; proteolysis; extracellular interactions.

338

Radiotherapy in cancer of corpus uteri – indications, technique and results

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Cancers of corpus uteri are now in developed countries more frequent than cancer of cervix uteri, mainly due to the decrease of cancer of cervix uteri. Age-adjusted european standardised incidence of cancer of corpus uteri is about 15/100 000 persons per year. 93% are carcinoma, 7% sarcoma. 96% of the cases are older than 50. 70% of patients are diagnosed at stage I and II (FIGO) but stage increases with age, specially over 75. Adenocarcinoma is often associated with obesity, hypertension and diabete.

Pronostic factors for local failure are histologic grade, peritoneal cytology, uterine serosal involvement. Prognostic factors for distant metastasis are histologic grade, peritoneal cytology, age and extra-uterine disease.

Surgery, total abdominal hysterectomy with bilateral salpingo-oophorectomy ± lymphadenectomy, is the standard for local treatment. Radiation therapy is used to reduce pelvic failure: external pelvic irradiation ± brachytherapy in patients with poor prognostic factors.

The best mode and sequence of radiotherapy remain controversial. All the aspects of radiation technique and association with surgery will be presented. For patients with a definitive contrindication to surgery, exclusive radiotherapy can give interesting results by combining external radiotherapy and brachytherapy.

For sarcomas, external radiotherapy followed by surgery seems to be the recommended strategy.