1214 POSTER

On the avoidability of breast cancer in western societies: older age at first birth as a an indicator of excess of breast cancer cases

I. Soerjomataram[1], E. Pukkala[2], H. Brenner[3], J.W.W. Coebergh[1]. *[1]Erasmus M.C., Public Health, Rotterdam, The Netherlands; [2]Statistical and Epidemiological Cancer Research, Finish Cancer Registry, Helsinki, Finland; [3]German Cancer Research Center, Division of Clinical Epidemiology and Aging Research, Heidelberg, Germany*

Objective: We examined the association between the proportional excess of breast cancer and previous age of mother at first birth, a major and consistent risk indicator for breast cancer at population level.
Method: Incidence of breast cancer in 34 industrialized countries with more than 1 million inhabitants was obtained from the GLOBOCAN 2002 and SEER databases. Data on age of mother at first birth was collected through national statistics offices. National relative excess risk (RER) was calculated by subtracting the lowest age-specific incidence rate from the rate in each population. Finally, we compared numbers of breast cases in 2002 calculated based on the observed correlation coefficient of RER in 2002 and mean age at first child in 1972 with the number of cases attributable to the average change in age at first child in the last 30 years.
Results: The national RER in 2002 correlated closely with the average age at first birth in 1972, 1982, 1992 and also 2002. A higher average age of mothers at first birth predicted a larger excess risk of breast cancer (Pearson correlation [r] 0.83, 0.79, 0.72 and 0.61 in 1972, 1982, 1992 and 2002, respectively; $p < 0.0001$). RER of breast cancer in 2002 for those aged 15−44 years correlated closely with the mean age at first birth in 1982 and 1992 (r: 0.81 and 0.75; $p < 0.0001$), whereas RER for those aged 45−54 years correlated strongly with age at first birth in 1972 and 1982 (r: 0.81 and 0.76; $p < 0.0001$), and for those aged 55−64 years with age at first birth in 1972 (r: 0.77; $p < 0.0001$). Based on the correlation coefficient between average age at first birth and RER in 2002, we estimated about 154,000 excess cases in 2002 that were explained by the variation of age at first child 30 years ago. In contrast only about 21,000 cases in 2002 were attributable to the delay of childbearing observed within the last 30 years.
Conclusions: The rising age at first childbirth of mothers has been followed by marked increases in breast cancer incidence. Later age at first birth seems to characterize secular diffusion of 'modern' lifestyles with a potentially large impact on increased breast cancer risk, and hence opens opportunities for prevention through other modifiable risk factors.

1215 POSTER

Thyroid cancer incidence in the Republic of Belarus: 1970–2006 population based study

I. Veyalkin, Y. Averkin, I. Zalutsky, H. Hilchenko, G. Bychkova, M. Trich, T. Averkina. *N.N. Alexandrov Research Institute of Oncology & Medical Radiology, Cancer Epidemiology, Minsk, Belarus*

The problem with thyroid cancer incidence in Belarus is very important as drastic growth of this disease was induced in the total Belorussian population after the accident in Chernobyl (in 1986), by huge radiation contamination with ^{131}I. The aim of this study was to describe some important particulatrities of thyroid cancer incidence rate dynamics in Belorussian population since 1970 to 2006th year.
Our study was based on the analysis of Belorussian Cancer registry data for 37 year span of time. For study period 15,916 new cases of thyroid cancer have been registered (12,877 in females and 3,039 in males). In the 1970s 65 cases of thyroid cancer were detected (16 in males and 49 in females). Intensive growth in incidence rates of thyroid cancer started since the end of the 1980s. In 2006, 1,067 (196 in males and 871 in females) new cases of thyroid cancer were registered. Age-standardized incidence rates (AsR) have grown from 0.45 in the 1970s and 0.77 in 1986 to 3.4 in 2006 (males) and from 0.81 in the 1970s and 1.71 in 1986 to 13.1 in 2006 (females). People from urban areas have higher risk to develop thyroid cancer than those from rural regions (1.5 times more by age-standardized rates in 2006). Some changes of age-specific rates have been observed for study period. Described above tendency of incidence rate growth is noted in adult people which are older than 20 years. In the younger groups some specific peaks can be observed at different time intervals for an according age group. Analysis by birth cohorts allowed to make a conclusion that these peaks of age-specific incidence rates are noted for children who were born from 1982 to 1986, those who were 0−5 years old at the moment of the disaster. In the total population in the 1970s the maximum of AsR was noted in 75−79 (females) and in 70−74 (males), but by 2006 the peak of AsR has been shifted to 50−59 (females) and 55−64 (males) years age groups. AsR peak has been getting sharper the more cases have been registered. Analysis by region has shown the highest level of thyroid cancer incidence (ASR) is noted in Gomel, Mogilev and Brest regions and Minsk-city. But while AsR have been going down for the last 6 years in Gomel and Mogilev regions, they are increasing in Minsk and Brest region in the same period. Finally for the last six years we are observing a tendency to stabilization of thyroid cancer incidence rates at the level of AsR = 13.1 per 100,000 females and ASR = 3.5 per 100,000 males.

1216 POSTER

Cigarette smoking, alcohol drinking and the risk of gallbladder cancer death: a prospective cohort study in Japan

K. Yagyu[1], S. Kikuchi[1], Y. Lin[1], Y. Obata[2], T. Ishibashi[3], M. Kurosawa[4], Y. Inaba[4], A. Tamakoshi[5]. *[1]Aichi Medical University School of Medicine, Public Health, Aichi, Japan; [2]Kinjo Gakuin University, Pharmacy, Nagoya, Japan; [3]Ai no Sato (Nursing Care Institute for the Elderly), Chief, Saku, Japan; [4]Juntendo University School of Medicine, Epidemiology and Environmental Health, Tokyo, Japan; [5]National Center for Geriatrics and Gerontology, Division of Clinical Trials, Ohbu, Japan*

Background: Gallbladder cancer is a rare cancer with a poor prognosis and few risk factors that have been identified with sufficient statistical reliability. This study was conducted to evaluate the association of cigarette smoking and alcohol consumption with the risk of gallbladder cancer death using the data set from a prospective study.
Materials and Methods: A baseline survey of 45 areas throughout Japan was conducted from 1988 to 1990, and a total of 113,496 participants (65,740 women) aged 40 to 89 years at entry were followed for 15 years. During the follow-up period, 165 gallbladder cancer deaths (95 women) were documented. Information on smoking and drinking habits and lifestyle factors at baseline were collected through a self-administered questionnaire. A proportional hazard model was used to estimate hazard ratios (HR).
Results: Among women, the HR of current smokers at risk of gallbladder cancer death posed two-fold elevated risk after adjusting for age and drinking, but the numbers of cigarettes per day or 'cigarette-years' among current smokers did not show clear association with the risk. Association between alcohol consumption and the risk was not clear. Among men, HR (95 percent confidence interval: 95% CI) of current smoker was 2.27 (1.05, 4.90) after adjusting for age and drinking. HRs (95% CIs) of those who smoked 21 cigarettes or more per day and those with 801–1000 cigarette-years were 3.18 (1.18, 8.53) and 3.44 (1.40, 8.45), respectively, and linear positive associations were observed between that risk and the number of cigarettes per day (P for trend = 0.007) or 'cigarette-years' (P for trend = 0.012). After adjusting for age and smoking, the alcohol dose was linearly associated with risk (P for trend = 0.004), where the HR (95% CI) among those who consumed 72.0 g or more of pure alcohol per day was 3.60 (1.29, 9.85).
Conclusions: Among both men and women, smoking may elevate the risk of death from gallbladder cancer. Drinking may pose an elevated risk among men, but it is less clear among women.

1217 POSTER

Estimation of an optimal chemotherapy utilisation rate for lung cancer

S. Jacob[1], E. Hovey[2], S. Vinod[1], G. Delaney[1], M. Barton[1]. *[1]Liverpool Hospital, Collaboration for Cancer Outcomes Research and Evaluation, Sydney NSW, Australia; [2]Liverpool Hospital, Medical Oncology, Sydney NSW, Australia*

Background: Chemotherapy utilisation rates for lung cancer show wide variation, but there is no benchmark against which these rates can be compared. This study aims to estimate a benchmark of optimal chemotherapy utilisation for lung cancer.
Material and Methods: Indications for chemotherapy in lung cancer were identified from treatment guidelines. Epidemiological data on lung cancer histology, staging, performance status and recurrence rates after treatment were identified. A chemotherapy utilisation tree was constructed to calculate the optimal proportion of lung cancer patients who should receive chemotherapy at least once during the course of their disease according to the best available evidence. Sensitivity analysis was performed where there was uncertainty regarding indications for chemotherapy. The estimated optimal chemotherapy utilisation rate was compared to reported actual first treatment rates of chemotherapy from the American College of Surgeons National Cancer Database (NCDB) and from the Thames Cancer Registry (TCR) in South East England.
Results: Chemotherapy is recommended at least once in 73% of all lung cancer patients (69% of patients with non-small cell lung cancer [NSCLC] and 93% of small cell lung cancer [SCLC] patients). The issue of whether adjuvant chemotherapy is indicated for Stage IB NSCLC is controversial; it is not recommended in this model of optimal utilisation. If adjuvant chemotherapy is recommended for patients with Stage IB NSCLC,

then the overall optimal chemotherapy utilisation rate for lung cancer increases to 77% (73% for NSCLC). Another controversial issue is whether chemotherapy is indicated in patients with advanced (Stages IIIB and IV) NSCLC who have performance status level of ECOG 2; chemotherapy is indicated for these patients in this model but if they do not receive chemotherapy then the overall utilisation rate falls to 63%. The optimal rate of chemotherapy utilisation for the initial management of lung cancer is 68% (63% NSCLC and 93% SCLC).

Optimal vs actual chemotherapy utilisation rates for lung cancer (First treatment)

	Chemotherapy utilisation		
	Optimal rate (%)	Actual rate (%)	
		USA 2004 (NCDB)	UK 2003 (TCR)
All lung cancer	68	41	21
NSCLC	63	36	23
SCLC	93	67	58

Conclusions: A readily adaptable benchmark model of optimal chemotherapy utilisation in lung cancer was constructed. Comparison of recent actual rates of chemotherapy utilisation with the optimal model shows that chemotherapy is under-utilised in the initial management of lung cancer.

1218 POSTER

Do offsprings of fathers with testicular malignancies have disadvantages?

J. Müller[1], A. Botyánszki[2], M. Baki[3], D. Schuler[1], Z. Karádi[1], Z. Gács[1], T. Constantin[1], V. Kemény[1], M. Dobos[1], M. Garami[1]. *[1]Semmelweis University, 2nd Dept. of Pediatrics, Budapest, Hungary; [2]Semmelweis University, Faculty of Medicine, Budapest, Hungary; [3]National Institute of Oncology, Oncology, Budapest, Hungary*

Background: The aim of the present study was to investigate whether children, whose father was treated with chemotherapy and/or irradiation, have any disadvantage (prematurity, pathological perinatal event, congenital malformation, malignancy) compared to the healthy population.
Material and Methods: Thirty families were involved in the study, where the father was treated due to testicular malignancy. A detailed history of the family was taken, physical examination, laboratory- and immunology tests were done, determination of the bone age, abdominal sonography, electrocardiography and cytogenetical investigation were performed.
Results: In these 30 families there were 52 pregnancies. Ten of them were ended by abortion or still-birth. Forty-two pregnancies resulted in delivery, there were three twin-pairs. We examined 45 children in 30 families. The male:female ratio was 1.5:1, the mean age was 5.8 years. Two newborn infants were born with less than 2500 grams. Mild perinatal events were detected in two cases (infection, transitory respiratory problem). There were no major malformations. From 45 children 3 had any minor anomalies. Two other mild malformations were detected by the abdominal ultrasound (pyelon duplex, pyelectasy). With cytogenetic examination no spontaneous chromosome fragility was detected. In six cases the fragility was increased after induction with mytomycin C, but in each case this increase was not significant. One child is treated with retinoblastoma. A 2.3 year-old boy is followed up with benign conjunctival tumor.
Conclusion: From 52 pregnancies where the conception occurred after the therapy of the father because of malignant testicular tumor, the intrauterine loss is higher than expected, but not significantly.
Among the 45 offsprings of 30 men, treated because of testicular malignancy, a higher incidence of major malformations, pathological somato-mental development, increased chromosome fragility or malignant disease did not occur, however to confirm it more families should be studied with longer follow-up.

1219 POSTER

Cancer mortality in 13 to 29 year olds in England and Wales, 1981–2005

M. Geraci[1], J.M. Birch[1], O.B. Eden[2], A. Moran[3], R.D. Alston[1]. *[1]University of Manchester, Cancer Research UK Paediatric and Familial Cancer Research Group, Manchester, United Kingdom; [2]Christie Hospital NHS Trust, Teenage Cancer Trust Young Oncology Unit, Manchester, United Kingdom; [3]Christie Hospital NHS Trust, North West Cancer Intelligence Service, Manchester, United Kingdom*

Cancer is the most common natural cause of death in teenagers and young adults (TYAs) in England. The aim of this study is to present an overview of the mortality in persons aged 13 to 29 years in England and Wales between 1981 and 2005.
Data on the resident population and registrations of death from neoplasms were provided by the Office for National Statistics (London). More than 20,000 cases were extracted for approximately 303 million person-years (mpy) at risk, stratified by time period (five quinquennia) and by age group (13 to 14, 15 to 19, 20 to 24, and 25 to 29 years). The variability of the rates by sex, age group and time period was assessed with chi-squared test statistics, log-linear models and, to account for non-linear temporal trends, generalized additive models under Poisson distribution assumptions.
Overall, the mortality rate was 65.6 mpy. Malignant neoplasms of the central nervous system showed the highest mortality rate (8.5), followed by myeloid and monocytic leukaemia (6.6), lymphoid leukaemia (6.4), bone tumours (5.4) and non-Hodgkin lymphoma (5.2). These groups together accounted for almost 50% of all registered deaths under study. The mortality rate for males (72.4) was 23% significantly higher than for females (58.6). Males showed significant higher mortality rates than females in almost all diagnostic groups. In general, mortality increases with age. There were significant decreases in mortality over time. Overall the annual percentage change in mortality rates between 1981 and 2005 was minus 1.86 (95% confidence interval −2.09 to −1.62).
In conclusion, mortality rates are higher in males and in older TYAs. Diagnostic groups with the highest mortality differ from those with the highest incidence. Mortality has decreased over time.

1220 POSTER

MTHFR polymorphisms and lung cancer risk in a Japanese population

C. Kiyohara[1], K. Takayama[2], Y. Nakanishi[2]. *[1]Kyushu University Graduate School of Medical Sciences, Department of Preventive medicine, Fukuoka City, Japan; [2]Kyushu University Graduate School of Medical Sciences, Research Institute for Diseases of the Chest, Fukuoka City, Japan*

Background: Methylenetetrahydrofolate reductase (MTHFR) activity correlates with the balance of DNA precursors, which can lead to excess accumulation of deoxyuridine triphospahate in the nuclear pool leading to uracil misincorporation into DNA instead of thymine. Because a 5,10-methylenetetrahydrofolate reductase (MTHFR) polymorphisms may reduce the MTHFR activity, we hypothesized that the MTHFR polymorphisms are associated with risk of lung cancer.
Materials and Methods: The studied groups consisted of 190 patients with histologically confirmed primary lung cancer and 108 cancer-free patients. The C677T and A1298C polymorphisms were detected using PCR-RFLP technique. Unconditional logistic regression was used to compute the odds ratios (ORs) and their 95% confidence intervals (CIs), with adjustment for several covariates found to be associated with lung cancer risk. All the statistical analyses were performed with the computer program STATA Version 8.2 (STATA Corporation, College Station, TX).
Results: As for the C677T polymorphism, the genotypic frequencies for CC, CT, TT in the lung cancer cases were 31.6%, 48.0% and 17.8% and 39.0%, 47.2%, 13.9% in controls, respectively. We did not observe a departure from Hardy-Weinberg equilibrium in the control group (P = 0.94). The TT genotype was nonsignificantly higher among the lung cancer cases than among controls (OR = 2.40, 95% CI = 0.78−7.37). The significant excess risk of the TT genotype was only observed among the lung cancer patients with squamous cell carcinoma (OR = 5.80, 95% CI = 1.24−26.9). As for the A1298C polymorphism, the genotypic frequencies for AA, AC, CC in lung cancer cases were 61.6%, 34.2% and 4.2% and 63.9%, 31.5%, 4.6% in controls, respectively. The genotypic frequencies for this polymorphism in controls were also consistent with Hardy-Weinberg equilibrium (P = 0.76). The A1298C polymorphism was not associated with lung cancer risk. The two polymorphisms were in linkage disequilibrium (D' = 0.514).
Conclusions: The 677TT genotype was associated with an increased risk of lung cancer. Theoretically, a reduction in the MTHFR activity may increase lung cancer risk due to altered DNA methylation resulting from lower levels of 5-methyltetrahydrofolate. The A1298C polymorphism was not associated with lung cancer risk in our study population. The biochemical association of the A1298C polymorphism is controversial. This polymorphism may not influence the specific activity of the enzyme.

1221 POSTER

Does methadone maintenance therapy increase the risk of new cancers?

R.J. Tait[1], G.K. Hulse[1], J. Moss[2]. *[1]The University of Western Australia, School of Psychiatry and Clinical Neurosciences, Perth, Australia; [2]The University of Chicago, Anesthesia and Critical Care, Chicago, USA*

Recent in vitro data suggest that opiates facilitate endothelial cell migration and proliferation by transactivation of the VEGF receptor, while opiate