

age. All cases were histologically confirmed. The overall crude rate was 14.89 and the age-standardized incidence rate (world standard) was 14.61 per 100 000. The incidence rates varied by ICCO group and age group. Age-standardized incidence rate for Leukemia was 3.87, for thyroid cancer -2.66, for CNS group was 2.59. In the structure of childhood cancer the leading places belong to the Leukemia - 23.71%, Thyroid cancer - 22.61%, CNS tumors - 17.69%, Lymphomas - 13.37%, Soft-tissue sarcomas group - 5.29%, renal tumors - 4.98%, Bone tumors - 3.04%.

The highest incidence rate of childhood cancer we observed in Gomel region (20.17).

904

POSTER

Geographical clustering of adenocarcinoma of the lung and possible determinants

H. Nakadaira¹, H. Kajihara², Y. Takahashi³, M. Yamamoto¹. ¹ Niigata Univ., Social and environmental medicine, Niigata, Japan; ² Niigata Univ., Natural sciences, Niigata, Japan; ³ Niigata Univ., Engineering, Niigata, Japan

The annual mortality rates of lung cancer in Japan in 1999 were 49.8 per 100,000 for men and 13.4 for women, which had been increasing for the last few decades. Among the causes of death from cancer, lung cancer is currently the highest for men and the third for women. The discrepancy between mortality and incidence rates of lung cancer are still small in Japan. We analyzed most recent data of mortality and incidence from lung cancer.

In our prefecture, cancer registry started in 1992. Using the incidence data, we analyzed geographical distribution of cancers. As the result, we detected geographical clustering of lung cancer. The standardized incidence ratios (SIRs) of lung cancer for both genders in areas along two main rivers running through the prefecture were significantly higher than those in the rest of the prefecture (the standard population).

On the other hand, when we analyzed mortality data, the standardized mortality ratios (SMRs) of lung cancer were also significantly higher in the same areas along the rivers for both men and women. In addition, the SMR of adenocarcinoma of the lung for males in areas along one of the two rivers was significantly high. For females, the SMR of adenocarcinoma was significantly high in areas near the outlet of the same river.

What are then the determinants of the observed geographical clustering of lung cancer, particularly adenocarcinoma?

Genetic background of the population in the prefecture is homogenous. No geographical difference has been reported in social status and life styles in the prefecture. Tobacco smoking has been recognized to be as the strongest risk factor of all. In the prefecture we examined, smoking rates are very similar from area to area. Adenocarcinoma, of which mortality showed geographical clustering, is known to relate to smoking least of all the histological types of lung cancer. We hence suspect that environmental determinants specific to the areas of interest are the most plausible candidates.

We previously reported geographical distribution of heavy metals in the prefecture and its relation to mortality of some types of cancer. In the case of lung cancer, we also suspect the roles of heavy metals, because there are old mines along the river. In addition to metals, we have to take into consideration chemicals that possess endocrine disrupting effects, especially dioxins. Lung cancer is listed as one of adverse health effects of dioxins on humans. We have recently measured concentration of dioxins in sediment in the areas dating back to circa 1960. It was revealed that pollution by dioxins began in early 1950s and that the peak of concentration lasted during 1970 -1990. This fact satisfies temporal sequence of the relationship between lung cancer and exposure to dioxins. The source of dioxins was mostly agricultural agents for rice production as the results of principle component analyses of isomers. Rice-producing districts mostly belong to the areas along the rivers. However, it is known that dioxins play a role in carcinogenicity as not initiators but promoters. We have to thus consider determinants of adenocarcinoma of the lung in light of combination of initiators and promoters. Further studies are needed for clarifying the determinants of clustering of lung cancer, particularly adenocarcinoma.

905

POSTER

Cohort analysis of colorectal cancer mortality in the Republic of Serbia, during the period 1971-1996

O. Gajic-Veljanoski¹, M. Jarebinski², A. Jovicevic-Bekic¹, T. Pekmezovic². ¹ Institute for Oncology and Radiology of Serbia, Dept. for Epidemiology and Prevention, Belgrade, Yugoslavia; ² School of Medicine, Institute of Epidemiology, Belgrade, Yugoslavia

In Serbia, the colorectal cancer mortality in 1971 ranged 5th in females, and 4th in males; it became the second leading malignancy in 1982 in females (after breast cancer), and in 1992 in males (after lung cancer).

The objective of this descriptive-epidemiological study was to investigate the colorectal cancer mortality in Serbian population, particularly the effect of cohort variations on death rates in defined age groups, during the period 1971-1996.

In the study period (1971-1996), a share of all digestive tumours in the cancer mortality has decreased, from 42.0% to 32.3%. However, the mortality risk of colorectal cancer and its share in cancer mortality have increased.

The average colorectal cancer age-adjusted death rates (1971-1996) were 11.2 per 100,000 men (95%CI: 10.1-12.3), and 8.3 per 100,000 women (95%CI: 7.7-8.9). The secular linear mortality trends showed significant increase both in males ($y=11.2+0.2x$; $p=0.000$), and females ($y=8.3+0.1x$; $p=0.000$).

The highest rise in age-specific death rates, according to the linear mortality trends, was observed in males over 65 years (7.6% annually), and females between 60 and 69 years (5.9% annually).

In the cohort analysis of age-specific rates in males, younger birth cohorts were compared with older ones. The increasing colorectal cancer mortality risk has been observed for the ages over 40, with statistical significance in the age groups over 45. In the age between 45 and 59, and over 60, the youngest birth cohorts were at 2 and 2.5-fold higher cancer mortality risk than birth cohorts of the oldest generations. In the cohort analysis of age-specific rates in females, changes in the age under 50 were not so expressive. In all age groups over 50, women of younger generations were at 2-fold higher cancer mortality risk than the oldest ones. According to the present mortality trends, the further increase in colorectal cancer death rates, especially in the ages over 40, should be expected in future generations. Consistent increase in mortality risk in all younger birth cohorts of older ages, as well as in successive five-year age groups of the observed generations, could reflect the continuous increase in colorectal cancer incidence attributed to predominantly environmental exposures.

906

POSTER

Human papillomavirus and cervical cancer in Taiwan: an overlooked area of IARC

T.Y. Chu^{1,4}, C.A. Sun², C.Y. Hsieh³. ¹ National Defense Medical Center, Graduate Institute, Taipei, Taiwan; ² National Defense Medical Center, School of Public Health, Taipei, Taiwan; ³ National Taiwan University Hospital, Obstetrics and Gynecology, Taipei, Taiwan; ⁴ Tri-Service General Hospital, Department of Obstetrics and Gynecology, Taipei, Taiwan

Purpose: The overwhelming etiological role of HPV in pre-invasive and invasive cervical neoplasia has lead a way to the complete, primary prevention of cervical cancer. Before a preventive and therapeutic strategy targeting HPV can be realized, a comprehensive understanding of the prevalence and natural history of different HPV genotypes in a geographically specific way is of fundamental importance.

Methods: This report summarized three nationwide, cross-section studies of general population and patients with abnormal Pap smear, one hospital-based study of cervical cancer and one multi-center longitudinal follow-up studies of LSIL in Taiwan. The prevalence, genotypes and viral load of HPV were studied by Hybrid Capture II, degenerative PCR/reverse blot (Strip test) and/or PCR-RFLP, and quantitative PCR.

Results: The following results were observed: (1) The prevalence of HPV was 13% in general population with a higher prevalence as well as viral load in the old age. (2) The prevalence of HPV infection in patients with LSIL, HSIL and invasive cervical cancer was 82%, 91% and 100%, respectively. (3) Remission of HPV in LSIL cases typically took place within one year of follow up. (4) The natural history of LSIL related significantly with both the presence and load of HPV in cervical swabs on enrollment. (5) HPV 52 is the most prevalent HPV type in general population and women with mild abnormal Pap smear, followed by HPV 16 and HPV 58. (6) In patients with invasive cervical cancer, HPV 16 is the most prevalent type, followed by HPV 58, whereas HPV 52 is rarely found in this patient group.