

using or seeking contraception and were to have no more than 4 lifetime sexual partners. The baseline prevalence of Pap smear abnormalities was evaluated.

Results: 17926 women, ages 15 to 26 years (median 20 years), were randomized to participate in the trials. 69.5% (n = 12463) were white, 13% (n = 2538) Hispanic, 3.9% (n = 706) black, and 3.5% (n = 629) Asian. 4825 (26.9%) were current smokers and 1347 (7.5%) were former smokers. Six percent (803) were virgins; among non-virgins the median number of previous partners was 2 and most (n = 11779, 69.9%) had no new partners in the 6 months prior to study baseline. Chlamydia trachomatis infection was found at baseline examination in 746 women (4.2%); Neisseria gonorrhoeae infection in 58 (0.3%). Only 74 (0.4%) reported a prior HPV infection. A total of 17404 satisfactory Pap smears were obtained at baseline, the results of which are shown in the table. All Pap smears were read at a central laboratory.

Day 1 Pap smear results

	N (%)
Negative for SIL	15433 (88.7)
SIL present	1971 (11.3)
LSIL	1012 (5.8)
HSIL	108 (0.6)
ASC-US	789 (4.5)
ASC-H	54 (0.3)
Atypical glandular cells	8 (0.04)

Conclusions: In this multi-ethnic, geographically diverse population of young adult women, abnormalities were identified in more than one in ten Pap smears. These findings underscore the potential value of an effective HPV vaccine, given the established association of HPV with cervical lesions, especially of higher grade.

552

ORAL

Cervical cancer in sub-Saharan Africa: a pattern of care study by the international atomic energy agency

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Introduction: Cervical cancer and HIV/AIDS are both very common in sub-Saharan African countries. In order to assess the prevalence of HIV infection in cervical cancer patients treated with radiotherapy and its impact on treatment outcome, the IAEA conducted a study (CRP E 3-30-20) in Uganda, Namibia, Tanzania and Zimbabwe. The main objectives of the study were: 1) to examine the prevalence of HIV infection among patients with invasive cervical cancer and 2) to assess the effects of pelvic irradiation on their survival.

Patients and methods: Between 3/2000 and 12/2001, one hundred and forty-seven unselected patients with biopsy-proven squamous-cell carcinoma of the uterine cervix that were referred for radiotherapy were tested for HIV using the ELISA test. Haemoglobin levels and CD4 counts were also determined. Teletherapy and brachytherapy were delivered according to the local protocols. No concomitant chemotherapy or anti-retroviral therapy were administered. There were 43 patients from Uganda, 40 from Zimbabwe, 40 from Tanzania and 24 from Namibia. The distribution by FIGO stages was: IB/IIA 2%, IIB 27%, IIIA 7%, IIIB 64%. Survival analysis was performed by log-rank test. Multivariate analysis was performed by Cox proportional hazards regression model considering age, dose of radiation and ELISA test results, stratified by country.

Results: Twenty seven of the 147 patients (18.4%) tested positive for HIV. The median age of the HIV negative patients was 50 years (range 28-80) and it was 39 years (range 25-57) for the HIV positive patients. The mean pre-treatment haemoglobin level was 10.8 g/dL (range: 2.6-16.1), 10.9 g/dL for HIV negative and 10.4 g/dL for HIV positive patients (p = 0.23).

The mean baseline CD4 count for all 147 patients was 772 cells/mm3 (range: 48-2356). It was 884 (48-2356) for HIV negative and 280 (58-484) for HIV positive patients. A decrease in CD4 counts was noted 6 weeks after the start of radiotherapy ("mean decrease" for the HIV negative = -485, mean decrease for the HIV positive = -118).

Three months later, the CD4 counts had partially recovered ("mean decrease" for HIV negative = -317, "mean decrease" for the HIV positive = +6).

One-hundred and twenty of the 147 patients (82%) received radiotherapy as planned, while in the rest either the teletherapy or the brachytherapy component was not done. Seventeen patients (11.6%) did not receive a boost dose following EBRT to the whole pelvis. Among the 130 patients receiving a boost, it was delivered either by brachytherapy (75%) or a small volume external beam field (25%).

The total teletherapy dose was significantly different among the four countries, being the lowest in Zimbabwe (mean 22.4 Gy, range 0-50) and highest in Namibia and Uganda (mean 50 Gy, range 50-50) p = 0.0001. A machine breakdown in Zimbabwe resulted in 10 registered patients not receiving any radiotherapy whatsoever (4 HIV positive and 6 HIV negative) while 11 received only brachytherapy. Thus, 21/40 Zimbabwean patients had major protocol violations.

The median follow-up for all patients was 71 days (range: 2-609). Median survival was 407 days for HIV positive patients and exceeds this for the HIV negative. The 20 HIV positive patients receiving full course radiotherapy had a median survival of 489 days while the 7 HIV positive patients who did not receive a full course had a median survival of 92 days. On univariate analysis there was a significant survival advantage for patients receiving higher teletherapy doses (0-22 Gy versus 22-48 Gy versus 50 Gy, p < 0.001). The FIGO stage did not influence survival (p = 0.40). On univariate analysis, HIV negative patients survived longer than HIV positive (p = 0.011) but multivariate analysis showed that only the total teletherapy dose was significant for survival (p < 0.001).

Conclusions: The data from these four countries with limited resources showed that adequate radiotherapy was more significant for the patient's survival during the first year than her HIV status. No detrimental effect was observed from administering radiotherapy to HIV positive patients, notwithstanding the temporary depression of CD4 counts that recovered after a few months.

Poster presentations (Wed, 2 Nov)

Epidemiology, prevention and public health

553

POSTER

Increasing incidence trends of cervical cancer in young women in Tianjin, China 1981-2000

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Background: To describe trends in the incidence rates of primary cervical cancer in a geographically defined Chinese population. To compare incidence trends of cervical cancer in young with older women.

Methods: Primary cervical cancer cases (N = 2,2224) were diagnosed between 1981 and 2000 and identified by the Tianjin Cancer Registry. Age-adjusted and age-specific incidence rates were examined. Poisson regression was employed to assess the incidence rate trends. All statistical analyses were conducted using SAS 8.0.

Results: Crude and age-adjusted incidence rates in the study period were: 6.4/100,000 and 3.8/100,000, respectively. There were remarkable declining trends in incidence rates. The crude and age-adjusted incidence rates declined from 13.8/100,00 and 10.3/100,000 in 1981 to 3.3/100,000 and 2.0/100,000 in 2000. However, the changes in incidence rates were not consistent across age groups. In general, those aged 40 and older had contributed the most observed incidence decline. Contrary to the incidence patterns in people aged 40 and older, incidence rates in those aged 20-39 years and younger increased during the study period. While the results from Poisson regression analyses suggest overall significant trends of declining incidence rates in cervical cancer, there seemed to be a small upward tail toward the end of the study period.

Conclusion: The findings also indicated two worrisome aspects. First, the incidence rates seemed to increase in younger women; second, there seemed to be a rebound in incidence rates toward the end of the study period. The findings highlight the importance of targeted education toward high-risk population and shed light toward setting up more efficient screening strategies.

554

POSTER

Low levels of radiation as the factor of cancer risk at the liquidators of the Chernobyl accident consequences

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Introduction: Increase of the frequency of malignant diseases which could be radiation-induced in group of liquidators of the Chernobyl accident

consequences has been registered last years. High level of chromosome aberrations in somatic cells can be considered as biomarker of cancer risk and therefore cytogenetical studies of radiation-induced chromosomal damages are actual today.

Materials and methods: Radiation epidemiology methods and metaphase analysis of radiation-induced aberrations in chromosomes of peripheral blood lymphocytes (PBL) of liquidators were used.

Results: It was established that in the group of liquidators (17000 persons) with documented doses of irradiation cancer takes the fourth place in the structure of case rates. Tumors of digestion system (33.7%) occupy the first place among cancer cases, lung cancer (25.3%) takes the second place and genitourinary cancer (13.1%) – the third. Analysis of the information significance of the character of work fulfilled by the liquidators has shown that sarcophagus treating, transport driving, deactivation of territories and evacuation of the population were the most dangerous factors in the origin of cancer. All dates of the entrance in accident zone since April 26, 1986 are the factors of cancer risk and the tendency of the risk increasing (in time) was observed. The inverse dependence of the frequency of cancer formation and level of irradiation was shown: the highest values are registered at low doses (1–5 cGy). Cancer frequency decreases with the increase of the irradiation dose (up to 85 cGy).

Cytogenetical study showed that correlation coefficients of radiation markers (dicentric and centric rings) and dose of exposure were 0.59 and 0.56 respectively. They essentially exceeded relevant coefficients in groups with other pathologies. This fact testifies to the conservation of the dependence (dose-effect) for radiation cytogenetical markers in the remote periods (10–15 years) among the liquidators with cancer. Results obtained show that low levels of absorbed radiation represent statistically significant factors of cancer risk. It is shown that frequency of chromosome fragments and chromatid aberrations in PBL are the most informative parameters in the formation of groups of high cancer risk.

Conclusions: The correlation between degree of radiation effects, cytogenetical data and case rates at the liquidators of the Chornobyl accident is established.

555

POSTER

Half of the treatment costs for fatal breast cancer accrue during the last year of life: results from the Turku screening programme

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Background: The aim of the study was to assess the treatment costs due to fatal breast cancer spent in the course of the last year of life during population based mammography screening.

Material and methods: Population based mammography screening for women aged 40–74 years in the city of Turku, Finland was launched in 1987. The current study included 556 invasive breast cancers diagnosed among women aged 40–74 years between 1987 and 1993: 427 in the screening group (which included screen-detected and interval breast cancers) and 129 in the non-screening group (which included breast cancers detected before initial screening and those detected in patients who chose not to undergo screening). The numbers of inpatient days and outpatient visits due to breast cancer for each patient were followed up until the end of the year 2001, or until death, whichever occurred first. Treatment costs were based on the average costs calculated for inpatient days and outpatient visits at the different hospitals, in a hospice and at a cancer clinic of the Cancer Society.

Results: During a median follow-up of 10 years, 96/556 women died of breast cancer, 58/427 (13%) in the screening group and 38/129 (29%) in the non-screening group, while 50/427 (12%) versus 23/129 (18%) died of other causes, respectively. Median survival from diagnosis to death was 3.9 years for those who died from breast cancer. Hospital was the most common place of death: 28 (29%) patients died at the University Hospital, 29 (30%) at the City Hospital, 32 (33%) in a hospice and 7 (7%) at home. In the 96 patients who died of breast cancer, 52% (Euros 1,383,000/2,646,000) of the treatment costs were spent during the last year of life. The mean treatment costs during the last year of life were Euros 14,405 (95%CI: 12,271–16,540) per patient: 15,915 (CI: 12,855–18,976) in the screening group versus 12,101 (CI: 9,405–14,796) in the non-screening group ($p = 0.063$). Inpatient care accounted for 81% of the total costs during

the final year, 65% of these costs being incurred at the University Hospital, 18% at the City Hospital and 17% at the hospice. Costs were highest during the last three months before death (Figure 1).

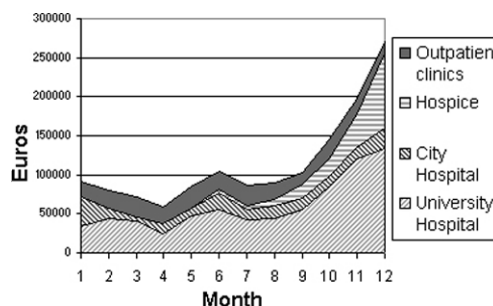


Fig. 1

Conclusions: For those who died of breast cancer half of the treatment costs accrued during the last year of life and the costs were highest during the last three months. The costs were substantial and of the same order of magnitude irrespective of the screening status.

556

POSTER

Long-term risk of cardiovascular disease in 5-year survivors of testicular cancer

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Background: To assess long-term risk of cardiovascular disease (CVD) in 5-year survivors of testicular cancer (TC).

Patients and methods: We conducted a nation-wide cohort study comprising 2,512 men who were treated for seminomatous or nonseminomatous TC between 1965 and 1995 and had survived for at least 5 years. Information on CVD was available for 93% (N = 2339) of the survivors. We evaluated CVD risk by calculating standardized incidence ratios (SIRs) and absolute excess risks (AERs) based on comparison with general population rates. Multivariate Cox regression analysis was used to quantify treatment effects on CVD risk.

Results: After a median follow-up of 18.4 years, 694 cardiovascular events were observed, including 141 acute myocardial infarctions (MIs). The SIR for MI and angina pectoris combined was 1.17 (95%CI: 1.04–1.31), with an AER of 14 excess cases per 10,000 person-years. The SIR of MI following treatment with chemotherapy and radiotherapy was elevated 2.06 (95%CI: 1.17–3.35). The SIR of MI was 1.00 (95%CI: 0.80–1.23) following RT alone and 1.46 (95%CI: 0.91–2.21) following chemotherapy alone. In nonseminoma patients the risk of MI was increased in survivors with attained ages ≤ 45 and 45–54 years, with SIRs of 2.06 (95%CI: 1.15–3.41) and 1.86 (95%CI: 1.20–2.74), respectively, while the SIR decreased to 0.53 (95%CI: 0.25–0.98) for survivors aged 55 years or older. Cox models showed that mediastinal irradiation was associated with 3.7-fold (95%CI: 2.2–6.2) increased risk of MI, while infradiaphragmatic irradiation only was not associated with increased risk of MI, compared with surgery alone. PVB chemotherapy was associated with 1.9-fold (95%CI: 1.7–2.0) increased risk, while BEP chemotherapy was not associated with increased risk of MI, compared with surgery alone. Recent smoking was associated with 2.6-fold (95%CI: 1.8–3.9) increased risk of MI.

Conclusion: Survivors of nonseminomatous TC have a moderately increased MI risk at young ages. So far, no increased risks of CVD were observed after BEP chemotherapy. Mediastinal radiotherapy, PVB treatment, and recent smoking are important risk factors for CVD in TC survivors. Especially in young TC survivors with these risk factors, physicians should consider appropriate risk reducing strategies such as treatment of hypertension and hypercholesterolemia, and lifestyle advice to refrain from smoking, to maintain a healthy body weight and to exercise regularly.