Results: There were a total of 5909 childhood cancer cases; 2959 aged 0–14 years (1659 males, 1300 females) and 2950 aged 15–24 years (1590 males, 1358 females). For 0–14-year-old boys, there was statistically significant sinusoidal variation in month of birth for acute non-lymphocytic leukaemia (p = 0.04; peak in September) and astrocytoma (p = 0.03; peak in October). Based on month of diagnosis, there was statistically significant sinusoidal variation in girls for all lymphomas (p = 0.05; peak in March) and Hodgkin lymphoma (p = 0.005; peak in January), and in boys for osteosarcoma (p = 0.05; peak in October). For 15–24-year-olds, there was significant heterogeneity for germ cell tumours (p = 0.04), cervical (p = 0.03) and female breast carcinoma (p = 0.05), based on month of birth, and PNETs (p = 0.05) and skin carcinoma (p = 0.05), based on month of diagnosis. Significant sinusoidal variation in month of birth for malignant melanoma in females (p = 0.03; peak in March) and cervical carcinoma (p = 0.03; peak in October) was observed.

Conclusions: These findings suggest that seasonal environmental factors around the time of birth or time of diagnosis may be involved in the aetiology of specific diagnostic groups. Further research is needed to study possible aetiological mechanisms and factors. Putative agents include sunlight, pesticides, diet and infections.

022 THE EPIDEMIOLOGY OF BONE CANCER DIAGNOSED IN 0–49-YEAR-OLDS IN NORTHERN ENGLAND, 1981–2002

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Aims: We aimed to describe incidence and survival patterns for bone cancers diagnosed during 1981–2002 in northern England among 0–39-year-olds.

Methods: 509 cases with a malignant bone tumour were included the analysis and classified using the International Classification of Diseases for Oncology, second edition. Incidence trends were analysed using Poisson regression. Survival rates were calculated using Kaplan–Meier estimation and differences in survival between diagnostic groups assessed using log-rank tests. Cox regression analysis was used to model the probability of survival in relation to age, gender and year of diagnosis.

Results: Overall incidence (per million person years) rates were 3.0 (95% CI 2.6 to 3.4) for osteosarcoma, 2.1 (1.8 to 2.5) for Ewing sarcoma and 0.8 (0.6 to 1.0) for chondrosarcoma. Incidence of osteosarcoma increased significantly by an average annual rate of 2.6% (p = 0.02) although there was no change in incidence for Ewing sarcoma or chondrosarcoma. Survival improved for Ewing sarcoma (hazard ratio (HR) per annum 0.97, 95% CI 0.94 to 1.00), although patients aged 15–39 years (n = 93) had worse overall survival than those aged 0–14 (n = 73) (HR 1.46, 95% CI 0.98 to 2.17). There was no improvement in osteosarcoma survival (HR per annum 0.98, 95% CI 0.95 to 1.01).

Conclusions: Our data suggested that incidence of osteosarcoma increased significantly in contrast to other bone tumours among 0–39-year-olds and previous findings from the UK and USA. Poorer survival in older Ewing sarcoma patients is consistent with previous studies and may be due to treatment, delays in diagnosis, metastatic disease, site and the stage of the tumour. The failure to improve survival for osteosarcoma patients needs further investigation.

023 INCIDENCE OF CENTRAL NERVOUS SYSTEM TUMOURS WITH THE USE OF HORMONE REPLACEMENT THERAPY

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Background: Approximately 4300 people are diagnosed with a brain or other central nervous system (CNS) tumour annually in the UK. They have poor prognosis, yet little is known about risk factors of the tumours.

Objectives: To investigate the role of hormone replacement therapy (HRT) and the risk of brain and CNS tumours, specifically gliomas, meningiomas, and acoustic neuromas in post-menopausal women.

Design: Prospective cohort study.

Participants and Setting: 1.1 million post-menopausal women were recruited from breast screening clinics from 1996–2001 in England and Scotland and followed for incident tumours through NHS cancer registration. All CNS tumours and each of the tumour types (glioma, meningioma, and acoustic neuroma) were separate end points in a Cox proportional hazards model for investigation of various measures of HRT use.

Main Outcome Measure: Relative risk (RR) of incident CNS tumours (classified as malignant or benign) relating to the use of HRT, adjusting for age, socioeconomic status, region of residence, height, and body mass index.

Preliminary Results: A total of 1163 post-menopausal women with HRT information were diagnosed with a tumour of the brain or CNS; 517 tumours were classified as glioma, 280 as meningioma, and 113 as acoustic neuroma. Preliminary findings show that current users of HRT were more likely to develop a CNS tumour when compared to never users (RR 1.18, 95% CI 1.03 to 1.35). Findings by type of HRT use and by the histological subtype of the tumours will be presented.

Conclusion: Current users of HRT are at a slightly increased risk of developing CNS tumours.

024 INTERNATIONAL TRENDS IN PROSTATE CANCER INCIDENCE AND MORTALITY IN 20 COUNTRIES FROM 1980 TO 2002

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Objective: Worldwide, since the 1980s, there have been major changes in prostate cancer detection and treatment with the availability of the prostate specific antigen (PSA) test and the introduction of hormone therapy and radical prostatectomy. To explore the effect of these advances on the burden of disease, we investigated time trends in prostate cancer incidence and mortality in 20 industrialised countries.

Data Source: Data on prostate cancer incidence during 1980 to 2002 was extracted from volumes 6 to 9 of Cancer Incidence in Five Continents. Mortality data from 1990 to 2002 were obtained from the WHO mortality database.

Methods: Age-standardised rates (ASR), based on the male population aged ⩾50, were calculated for each year in each country using the European Standard Population. Annual percentage change (APC) in incidence and mortality rates, and the points in time when trends changed, were estimated by fitting join point regression models using Join point software (3.1). Overall percentage change (OPC) during the study period was defined as $OPC = (1+APC)^{\text{number of years}} - 1$. Trends for men aged 50–74 and ⩾75 years were also analysed.

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