PO-064 EARLY BIRTH ORDER AND INCREASED RISK OF LYMPHOID CANCERS AND ALLERGIES IN LYMPHOID CANCER FAMILIES
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Introduction Lymphoid cancers are a heterogeneous group of neoplasms that arise from immune cells. Familial clustering of lymphoid cancers support a genetic contribution to cancer predisposition. Infectious diseases and some immune disorders have been associated with lymphoid cancers. The hygiene hypothesis proposes that a lower infectious burden during early life inhibits the immune system from maturing optimally, and may lead to disorders of the immune system.

Material and methods We characterised atopic conditions in lymphoid affected sibships of 182 families with a history of lymphoid cancers. Early life data was collected from telephone interviews and questionnaires from multiple family members. When available, medical records, pathology slides and tissue blocks were used to confirm the lymphoid cancer diagnosis. Lymphoid cancers were classified according to the InterLymph hierarchical classification (Turner, 2010). A chi-squared test for a linear trend in proportions was performed on birth order data for lymphoid affected sibships. This test was also performed on birth order and allergies in lymphoid affected sibships.

Results and discussions Within 182 families, 301 sibships had 392 lymphoid affected and 927 unaffected siblings. We observed an inverse relationship between birth order and risk of cancer for all lymphoid cancers collectively (p<0.0001), and separately for multiple myeloma (p=0.0015), non-Hodgkin lymphoma (p=0.0001) and individual B-cell subtypes including chronic lymphocytic leukaemia (p=0.0124), follicular (p=0.0217) and marginal zone lymphoma (p=0.0169). We also observed an inverse relationship between birth order and risk of allergies (p=0.0284), for both environmental allergies (p=0.0465) and multiple allergies (p=0.0114) in lymphoid affected individuals.

Conclusion Early life exposures that are dependent on birth order may play a role in immune dysregulation and subsequent risk of multiple types of lymphoid cancers, as well as allergies. The familial nature of the cancers implies shared genetic and/or environmental factors. There is a need for further evaluation of lifestyle factors that may protect against lymphoid cancers even in the familial context.

PO-065 ASSESSMENT OF PROGNOSTIC MODELS FOR STAGE III/III COLON CANCER: A HOSPITAL-BASED PROSPECTIVE COHORT STUDY
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Introduction Multiple predictors of colon cancer prognosis to aid treatment decisions have been proposed. However, it is unclear whether calculators trained on one population yield accurate predictions for another population with different demographics and healthcare. We evaluated five colon cancer prognosis calculators trained on data from American patients in a community-based cohort of 1401 Australian patients with stage II-III colon cancer.

Material and methods Data from prospectively recruited (Australian patients were submitted) to online predictors from the Memorial Sloan Kettering Cancer Centre (MSKCC), MD Anderson Cancer Centre (MDA), Mayo Clinic (MC) and Adjuvant! Online. Predicted outcomes were compared to observed outcomes to assess calculator calibration and discrimination.

Results and discussions Overall, we observed pessimism in the predictions of survival across the prognosis calculators, with the exception of the MC calculator. However, this calculator is limited to stage III patients receiving chemotherapy. Calculator discrimination tended to be similar to that observed from AJCC7 staging for relapse-free survival, but was superior for cancer-specific and overall survival. Comparison of the calculators’ performance against each other did not identify a consistently superior predictor, although the MDA cancer-specific survival (CSS) predictors exhibited worse calibration than CSS predictions from Adjuvant! Online.

Conclusion Differences in predicted versus observed overall, recurrence-free and cancer-specific survival were observed in our cohort of Australian colon cancer patients. Our findings suggest that colon cancer calculators are not readily transferable but require recalibration for different populations.

PO-066 RISK OF MALIGNANT NEOPLASMS OF BLOOD AND LYMPHATIC SYSTEM OF LIQUIDATORS OF THE CHERNOBYL ACCIDENT IN THE REPUBLIC OF BELARUS
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Introduction The accident at the Chernobyl nuclear power plant was the most huge radiation and ecological catastrophe. About 100,000 Belarusian citizens took part in the liquidation of the Chernobyl accident. During the first years after the accident, the growth of incidence of malignant neoplasms of blood of the affected population was predicted. But till now, there is no clear conclusion about the contribution of the radiation factor to the incidence of leucosis and lymphomas. The purpose of the study was to analyse the features of forming the incidence of malignant neoplasms of the blood and lymphatic system of the liquidators of the Chernobyl accident in the Republic of Belarus.

Material and methods The data of the Chernobyl State Register of persons exposed to radiation following the Chernobyl catastrophe for the period from 1987 to 2015 were used (99 498 liquidators). The epidemiological analysis of the incidence of leukaemias, lymphomas and multiple myeloma was made using the standardised incidence ratio (SIR). Liquidators were analysed by sex, age at time of the disaster, year of work, duration of staying in contaminated area, density of radiation contamination and individualised dose in bone marrow.

Results and discussions The excess of incidence of leukaemias in the cohort of liquidators of the Chernobyl accident was noted. The excess fraction of leukaemias was about 20%-40%
Conclusion
The conducted research allowed to characterise the
more than 40 Ku/km² (SIR=1.8 (1.16–2.03)) was found in the liquidators who performed their
work in the territory with the Cs137 pollution density of
more than 40 Ku/km² (SIR=(1.16–2.8)).

Risk Factors

PO-068 ATLAS OF CAUSAL RISK FACTORS FOR EPITHELIAL
OVARIAN CANCER RISK: A MENDELIAN
RANDOMIZATION ANALYSIS IN UP TO 66 450
WOMEN

Introduction Though observational epidemiological studies have
suggested associations between various modifiable risk factors
and epithelial ovarian cancer (EOC) incidence, there is a need to
establish whether these associations reflect true causal effects of
risk factors on EOC or merely reflect residual confounding,
reverse causation, or other forms of bias inherent to conven-
tional epidemiological designs. Mendelian randomization (MR)
is an analytical approach that uses randomly assigned genetic
variation to proxy phenotypes to obtain more reliable estimates
of causal effects in observational studies.

Material and methods We used MR to test the causal effects
of 23 traits hypothesised to influence ovarian cancer (3
anthropometric traits, 4 metabolic markers, 4 reproductive
factors, 3 medical conditions, 4 dietary or behavioural traits, and
7 hormones) on risk of total and histosubtype-specific EOC in
up to 25 509 cases and 40 941 controls from the Ovarian
Cancer Association Consortium. We employed inverse-variance
weighted models as primary analyses and MR-Egger, a
weighted median estimate, and mode estimators as sensitivity
analyses to examine violations of MR assumptions.

Results and discussions Body mass index (BMI) was the stron-
gest risk factor for total EOC (1-SD increase: OR 1.23 [95%
CI:1.07–1.23]; p=0.003). For high-grade serous ovarian cancer,
the strongest associations were for circulating leptin (1 unit
increase in log10 leptin: OR 2.90 [95% CI:1.45–5.76];
p=0.002) and BMI (OR 1.26 [95% CI:1.06–1.50]; p=0.01).
Endometrioid ovarian cancer was most strongly associated
with age at menopause (per year increase in onset: OR 1.09
[95% CI:1.02–1.16]; p=0.007), circulating estradiol (10%
increase in log10 estradiol: OR 1.07 [95% CI:1.01–1.14];
p=0.02), BMI (OR 1.48 [95% CI:1.07–2.06]; p=0.02), and
genetic liability to polycystic ovary syndrome (OR 0.90 [95%
CI:0.82–0.99]; p=0.03). Earlier age at menarche increased risk
of mucinous ovarian carcinoma (per year earlier onset: OR 1.31
[95% CI:1.02–1.67]; p=0.03). Height increased risk of clear cell carcinoma (1-SD increase: OR 1.35 [95%
CI:1.15–1.61]; p=0.0003). We also found evidence that ZKSCAN5
and FSHB loci influenced risk of endometrioid and mucinous sub-
types, implicating sex hormone pathways.

Conclusion Our comprehensive examination of possible etio-
logical drivers of ovarian carcinogenesis provides support for a
causal role of various modifiable factors in risk of ovarian