Thursday June 9, 14:00-15:15

Parallel session 2

Cancer

Chairs: Jos van Dijck & Marissa van Maaren

14:00 Occurrence of malignancies other than breast- and ovarian cancer in female BRCA1/2 mutation carriers (O6)
Anniek Stuursma

14:15 Longitudinal associations of adherence to the World Cancer Research Fund / American Institute for Cancer Research lifestyle recommendations with quality of life and symptoms in colorectal cancer survivors (O7)
Marlou Floor Kenkhuis

14:30 Suboptimal guideline adherence to recommended use of neoadjuvant chemotherapy in patients with non-metastatic muscle-invasive bladder cancer (O8)
Lisa van Hoogstraten

14:45 Prediction of histological grade of invasive breast cancer using radiomics-based features on screening mammograms (O9)
Jim Peters

15:00 Adherence to the WCRF/AICR cancer prevention recommendations and risk of recurrence in non-muscle invasive bladder cancer (O10)
Moniek van Zutphen

O6. Occurrence of malignancies other than breast- and ovarian cancer in female BRCA1/2 germline pathogenic variant carriers

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Background: Women with BRCA1/2 germline pathogenic variants (GPV) have an increased risk of developing breast and ovarian cancer. Family-based studies have suggested an increased risk for other types of malignancies in BRCA1/2 families. To the best of our knowledge, no prospective cohort studies have been published that focused on the development of all malignancies in carriers only.

Methods: Since 1994, women in our hospital with BRCA1/2 GPV are prospectively included in a biobank. Data from the Dutch nationwide registry of histo- and cytopathologie (PALGA) were linked to our biobank. The primary outcome was defined as the incidence of malignancies other than breast- and ovarian cancer under the age of 60 years, categorized into groups based on the International Classification of Diseases for Oncology. This incidence was compared to the European Standardized Rates for the Netherlands. Relative risks with 95% confidence intervals were calculated by dividing the observed cancer rates by the expected cancer rates, corrected for age in 15-year intervals.

Results: From 1347 women 68,403 person-years were available, during which 143 malignancies were detected. An increased risk of any cancer (RR:9.2, 95%CI:6.2-13.7), head and neck- (RR:3.8, 95%CI:1.2-11.6), gastrointestinal- (RR:1.9, 95%CI:1.2-3.1), skin-(RR:2.0, 95%CI:1.3-3.1) and female genital cancer (RR:1.8, 95%CI:1.0-3.4) was found.

Conclusion: This singe-institution study observed more cases of any cancer, gastrointestinal-, skin-, famle genital tract- and head and neck cancer than expected in female BRCA1/2 GPV under the age of 60 years. Further research should include a larger study population with more years of follow-up, to investigate the different types of malignancies separately and to be able to investigate the possible role of bias, previous cancer treatments and lifestyle factors.

O7. Longitudinal associations of adherence to the World Cancer Research Fund/American Institute for Cancer Research lifestyle recommendations with quality of life and symptoms in colorectal cancer survivors.

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Background: Unhealthy lifestyle habits can contribute to the development of colorectal cancer (CRC). Such habits may also be associated with post-treatment symptoms experienced by CRC survivors, such as fatigue and chemotherapy-induced peripheral neuropathy (CIPN), consequently affecting health-related quality of life (HRQoL). Therefore, we aimed to assess longitudinal associations of adherence to the World Cancer Research Fund/ American Institute for Cancer Research (WCRF/AICR) lifestyle recommendations with HRQoL, fatigue, and CIPN in CRC survivors from 6 weeks up to 24 months post-treatment.

Methods: In a prospective cohort among CRC survivors (n=459), repeated home-visits were performed at 6 weeks, 6, 12, and 24 months post-treatment. Dietary intake, body composition, sedentary behaviour, and physical activity were assessed to construct a lifestyle score (range: 0-7) based on adherence to seven 2018 WCRF/AICR recommendations. Longitudinal associations of the lifestyle score with HRQoL, fatigue, and CIPN were analysed by confounder-adjusted linear mixed models.

Results: A higher lifestyle score was associated with better physical functioning (β per 1 point: 1.2; 95%CI:0.1,2.3) and less activity-related fatigue (-0.5;-0.9,-0.2), but not with CIPN. Additional analyses exploring the effect of the individual WCRF/AICR recommendations within the lifestyle adherence score showed that adjustment for physical activity substantially attenuated observed associations, indicating its importance in the lifestyle score with regards to HRQoL. In contrast, adjustment for body composition and alcohol inflated observed associations, indicating that both recommendations had a counteractive influence within the lifestyle score.

Conclusion: Our findings suggest that CRC survivors benefit from overall adherence to the WCRF/AICR lifestyle recommendations in terms of HRQoL and fatigue, but not CIPN. Specific recommendations have a varying influence on these associations, complicating the interpretation and requiring further study.

O8. Suboptimal guideline adherence to recommended use of neoadjuvant chemotherapy in patients with non-metastatic muscle-invasive bladder cancer.

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Background: International guidelines recommend neoadjuvant chemotherapy (NAC) before radical cystectomy (RC) in cisplatin-fit patients with muscle-invasive bladder cancer (MIBC). As the survival benefit of NAC remains controversial, this might result in practice variation. We aimed to evaluate guideline adherence and variation in NAC use, and its effects on survival.

Methods: We identified 1,025 patients in the Netherlands Cancer Registry newly diagnosed with non-metastatic MIBC between November 2017 and November 2019 who underwent RC. Patients with ECOG performance status 0-1 and renal function ≥50 mL/min/1.73m2 were considered NAC-eligible. Factors associated with NAC use were evaluated in eligible patients using logistic regression analysis. Interhospital variation was assessed using case-mix adjusted multilevel analysis. The association between hospital-specific probability of using NAC and survival was evaluated using Kaplan Meier analysis. All analyses were stratified by disease stage (cT2 versus cT3-4a).

Results: Of the 1,025 included patients, 809 patients were NAC-eligible and of these patients, 277 received NAC, corresponding with 34% guideline adherence. Adherence was better in cT3-4a (55%) compared to cT2 (26%). Factors positively associated with NAC were younger age at diagnosis, lower Charlson Comorbidity Index score (0 versus ≥2) and more advanced disease stage (cT3-4a versus cT2). Considering only patients with cT2-disease, higher BMI was also positively associated with better guideline adherence. Multilevel analyses showed considerable more interhospital variation in patients with cT2-disease compared to cT3-4a (7-57% versus 31-62%). Two-year overall survival of eligible patients treated in hospitals with a high versus low case-mix adjusted probability of administering NAC was 75% versus 66% (p=0.09) for cT2-disease, and 71% versus 70% (p=0.96) for cT3-4a disease.

Conclusion: Guideline adherence regarding NAC use is suboptimal, especially for cT2-disease. After case-mix adjustment, substantial interhospital variation remained and appeared to impact two-year overall survival, although not statistically significant. The underlying mechanism remains unknown. Guideline adherence should be improved.

O9. Prediction of histological grade of invasive breast cancer using radiomics-based features on screening mammograms.

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On behalf of the IMAGINE consortium

Background: In breast cancer screening, predicting whether a suspected malignancy is indolent or aggressive, may help to optimize recall strategies. For aggressive tumours urgent recall is necessary while for indolent tumours a watchful waiting policy might be an option. Histological grade is widely used in breast cancer prognostication. Radiomics features related to histological grade may increase insight into the aggressiveness of suspicious lesions observed in screening. Here, we evaluate if radiomics features can predict histological grade using the screening mammograms of women diagnosed with invasive breast cancer.

Methods: In this consecutive cohort study, screening mammograms of 521 women who were diagnosed with screen-detected invasive breast cancer were used. Information on histological grade was obtained from pathology reports. Tumours were manually segmented in both mammographic views. Using pyradiomics, 2584 radiomics features, relating to shape, pixel intensity distribution and texture, were calculated from intra- and peritumoral regions. Using 25 features selected by the maximum relevance minimum redundancy algorithm, an extreme gradient boosting classifier was trained to predict whether a tumour was high grade or not. The model's performance was internally validated by the mean area under the curve (AUC), using a 100x repeated nested cross-validation scheme. Features that frequently contributed to final predictions during repeats are reported.

Results: The prediction model achieved a mean cross-validated AUC of 0.73 (SD ±0.06) to predict high grade. Overall, 14 features were selected more than 50% of the time, of which nine were related to pixel intensity distributions of the intra- or peritumoral region, one to tumour shape and four to the texture of the intratumoral region.

Conclusion: Mammographic radiomics features show a moderate performance in distinguishing high grade from other breast cancers. To be valuable as a prognostic biomarker, external validation and the study of different endpoints (e.g. molecular subtypes, recurrence-free or breast cancer-specific survival) is required.

O10. Adherence to the WCRF/AICR cancer prevention recommendations and risk of recurrence in non-muscle invasive bladder cancer.

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Background: Patients with cancer are recommended to follow cancer prevention guidelines due to insufficient evidence for specific recommendations for cancer survivors. It is unclear if adherence to these recommendations lowers risk of recurrence among patients with non-muscle invasive bladder cancer (NMIBC). We examined whether the lifestyle score measuring adherence to the 2018 World Cancer Research Fund/American Institute for Cancer Research (WCRF/AICR) cancer prevention recommendations was associated with risk of recurrence among NMIBC patients.

Methods: The study population included 979 patients newly diagnosed with NMIBC between 2014 and 2017 from the prospective cohort UroLife. Lifestyle was assessed shortly after diagnosis (reflecting the prediagnosis period) and 3 months postdiagnosis. The standardized 2018 WCRF/AICR score was constructed based on recommendations for BMI, physical activity, diet, and alcohol intake. We computed multivariable-adjusted hazard ratios (HRs) and 95% confidence intervals (CIs) using Cox proportional hazard regression models.

Results: Median follow-up time was 3.7 years and 315 first recurrences were observed. Patients with the highest versus lowest postdiagnosis WCRF/AICR scores had a statistically non-significant 23% lower risk of recurrence (HR 0.77, 95%CI: 0.53, 1.11). The same tendency was observed for the diet and alcohol sub-scores. No inverse associations were observed for the BMI or physical activity sub-scores and for the WCRF/AICR score at diagnosis. Each 1-point improvement in the WCRF/AICR score after diagnosis seemed to be associated with a lower recurrence risk (HR 0.86; 95% CI: 0.72, 1.01).

Conclusion: Greater adherence to the WCRF/AICR cancer prevention recommendations and improvements therein after NMIBC diagnosis might be associated with a decreased recurrence risk. As a next step, we will extend our Cox models to include multiple recurrences which will improve the statistical power of our analyses.