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ARE WE HELPING CANCER PATIENTS QUIT SMOKING USING SMOKING CESSATION PROGRAMS? A SYSTEMATIC REVIEW AND META-SYNTHESIS OF THE LITERATURE

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Purpose: Although cigarette smoking contributes to approximately one third of cancer diagnoses, the effects of smoking on patient outcomes after a diagnosis of cancer are less clear. The purpose of this study was to evaluate the impact of the Smoking Cessation Program at our institution over a 12-month period, and to perform a meta-synthesis of the literature on the effects of smoking on cancer patient outcomes.
Methods and Materials: The Smoking Cessation Program at our institution was launched in March 2014. All new cancer patients are screened for tobacco usage. Smokers are counselled regarding cessation benefits and offered referral to the program. A Smoking Cessation Champion contacts the patient to provide information and counselling. Further follow up is via an interactive voice response telephone system. To assess the success of this program, accrual data at each step of the pathway were collected monthly during the year 2015 and evaluated. To supplement our institutional data, a qualitative review of the literature was performed in Medline by a clinical librarian to assess the impact of smoking on cancer patient outcomes and to review the most effective smoking cessation interventions.
Results: Data collected from the Smoking Cessation Program indicate that in 2015, 18% of new patients were current/recent tobacco users. While 93% of smokers were advised of cessation benefits and offered referral, only 16% accepted and only 4% of those enrolled in the automated follow up system. In our review of the literature, 160 studies were identified. After abstract screening and review, several detrimental effects of smoking on cancer patient outcomes were described, including: decreased overall survival, increased risk of disease recurrence/progression, increased side effects, reduced performance status, increased rate of second primary cancers, impaired quality of life, and reduced efficacy of treatment. Proposed mechanisms by which these effects occur include decreased immune response and fibroblast proliferation, genomic instability, resistance to apoptosis, increased angiogenesis, and tissue hypoxia. A meta-analysis of smoking cessation interventions reported that abstinence rates were highest (37% at six months) in patients using a nicotine patch for > 14 weeks with supplementary nicotine replacement therapy (NRT) agents as needed. The addition of behavioural intervention to pharmacological agents doubles abstinence rates.
Conclusions: Continued cigarette smoking is detrimental to cancer patient outcomes. The Smoking Cessation Program at our institution has been less successful than those described in the literature. Limitations of the program include challenges in patient access to NRT and minimal follow up. The program is currently undergoing modifications, including initiation of education sessions to engage clinicians in promoting smoking cessation and prescribing NRT.

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MEETING THE INTERNATIONAL LYMPHOMA RADIATION ONCOLOGY GROUP CRITERIA TO DELIVER RADIOTHERAPY FOR LYMPHOMAS - A QUALITY IMPROVEMENT STUDY AT THE TOM BAKER CANCER CENTRE

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Purpose: Recent guidelines published by the International Lymphoma Radiation Oncology Group (ILROG) have described best practices for design and delivery of radiation in Hodgkin (HL) and non-Hodgkin lymphoma (NHL). Involved site radiation treatment (ISRT) is the goal of treatment, and requires that treatment planning incorporate pre-treatment PET and/or CT findings. Ideally, imaging studies should be obtained in the treatment position and using planned immobilization devices.
Methods and Materials: At our institution, PET imaging is obtained for almost all new HL and NHL diagnoses, with patient supine and arms up being the standard image acquisition position. To meet the new ideal criteria of imaging studies being obtained in the treatment position and using planned immobilization devices, the nuclear medicine department at Foothills Medical Centre (single site performing all PET scans in the Calgary zone) was requested to scan all new HL and NHL patients on a flat couch, and to acquire images with arms up (for optimal interpretation of body images) and arms down (for potential finding of head and neck involvement of HL or NHL). While a deep inspiration breath hold technique would be ideal for the body scan (as this technique has been shown to reduce lung toxicity when RT is used to treat the mediastinum), this is not feasible due to the length of time of PET image acquisition.
Results: The new PET scan technique was applied from April 1 - November 30, 2015. Three hundred and seventy-three patients were scanned. Use of the flat RT couch was discontinued after one month, due to weight of the couch creating a back injury risk for the technologists. Of the 373 patients scanned, 55 (14.7%) received curative intent radiation therapy, either as sole treatment or consolidation treatment. In 37 (9.9% of scanned patients), PET fusion was done to aid in target definition of ISRT.
Conclusions: Due to resource constraints, and audit of utilization of PET information for RT planning, there was a mutual decision to resume standard PET image acquisition procedures for new HL and NHL patients as of December 1, 2015. While the criteria of obtaining PET images in the treatment position and using planned immobilization devices is the ideal as per the ILROG guidelines, the low number of patients who receive RT as part of treatment for HL/NHL, and the even lower number for whom PET fusion was done to aid in target definition of ISRT, make this approach impractical and costly in our institution. Work is ongoing to identify the 15% of patients for whom curative intent RT is planned as sole or combined modality therapy, after staging is completed, to determine how ILROG best practice guidelines for RT delivery could be implemented.

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A RETROSPECTIVE STUDY COMPARING RADIOTHERAPY PLANS FOR NON-SMALL CELL LUNG CANCER WITH GROSS TUMOUR DELINEATED ON FREE BREATHING CT SCAN VERSUS 4D CT SCAN

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Purpose: Modern radiotherapy with 4D CT image acquisition for lung cancer radiation planning is precise and captures tumour motion, reducing the risk of missing gross disease during treatment. We undertook this study to compare gross tumour volume (GTV), planning tumour volume (PTV) and dose volume histograms (DVH) for organs at risk (OAR) with traditional 3D conformal radiotherapy (3DCRT) and plans generated on Internal Target Volume (ITV) with 4DCT.
Methods and Materials: Fifteen patients with non-small cell lung cancer (Stage III, IV) were enrolled in the study. 3D and 4D CT simulation data sets were acquired at the same setting. GTV for primary and/or nodal disease was contoured on free breathing CT scan and 3DCRT plans were obtained. ITV was contoured on 4D for primary and nodal disease on all 10 respiratory phases and radiation plans were generated with same beam geometry as in 3DCRT plans. GTV, ITV, PTV and DVH on both plans were analyzed and compared. Overlap between the two PTVs was analyzed with Dice Coefficient.
Results: Mean GTV was 115 cm^3 for 3D and 139 cm3 for 4D (p = 0.0091). Mean PTV_3D was 505cm^3 and mean PTV_4D was 463cm^3 (p = 0.33). Ninety-five percent of the prescribed dose covered 97.8% of PTV_3D and 89.0% of PTV_4D (p = 0.0036). Mean V20 to the lungs was 24.6 cGy for 3D and 23.4 cGy for 4D plans (p = 0.055). Mean V40 to the heart was similar in both plans. Mean max dose to the cord was 2609 cGy for 3D and 2560 cGy for 4D