

OHSU RADIATION MEDICIN PRESENTATIONS @ 2015 RESEARCH WEEK

TUESDAY

Oral Presentations Session 2 · 05/May/2015: 1:30pm-3:00pm · Location: Old Library 211

HIV Positivity and Anal Cancer Outcomes: A Single-Center Experience

Nicole Elizabeth Kiefer Wieghard, Charles Thomas, Liana Tsikitis

Purpose:

Anal squamous cell cancer remains common in HIV-infected patients. In this population, chemoradiation (CRT) regimens have been contradictory, and outcomes have mixed results. This study aimed to evaluate the impact of HIV on the treatment and outcomes of anal cancer at our institution.

Methods:

Retrospective data analysis of patients with anal cancer treated from 2000 to 2013 was performed. Main outcomes measures were treatment type, CRT tolerance, recurrence, colostomy-free and overall survival rates. Standard chemotherapy was defined as 5FU/MMC and non-standard as non-MMC based.

Results:

A total of 129 patients (26 HIV positive, 103 HIV negative) were treated for anal cancer.

HIV-positive patients were more likely to be younger (50 vs 59 yrs., $P=0.004$), and male (100% vs 43%, $P<0.001$). HIV-positive patients were diagnosed at earlier stages (Stage I & II 81% vs 57%, $P=0.04$). The HIV-positive cohort was less likely to receive standard chemotherapy (36% vs 82%, $P <0.001$). For those receiving definitive CRT, there was no difference between the cohorts in recurrence ($P=0.633$) or survival time ($P=0.371$) nor was there a difference in CRT tolerance issues in the HIV-positive vs HIV-negative patients (64% vs 41%, $P=0.144$). Time to APR was significantly shorter for the HIV-positive cohort (15.8 vs 25.3 months, $P=0.0267$).

Conclusions:

HIV-positive patients were diagnosed at earlier stages, suggesting an earlier diagnosis of disease in high-risk populations. Despite efforts to standardize treatment, patients who are HIV-positive receive more non-standard CRT and have lower colostomy-free survival rates. HIV status did not worsen recurrence or overall survival rates.

WEDNESDAY

Poster Session 2 · 06/May/2015: 12:00pm-2:00pm · Location: Old Library Great Hall

Oncology acupuncture program assessment: a retrospective review of patient population, cancer diagnosis and use of acupuncture over a 12-month period at an NCI-Designated Cancer Center.

Angie Rademacher, Shushan Rana, Yiyi Chen, Sostin Oleg, Charles R. Thomas. Jr

BACKGROUND:

Oncology patients (pts) treated with acupuncture (acup) may hold similarities in pt demographics, cancer diagnosis, treatment and symptom management. Elucidating these relationships will guide use of acupuncture as a supportive care service.

METHODS:

We conducted an IRB-approved retrospective chart review of pts who received acup between May 2013 and April 2014 at OHSU. Variables measured included gender, age, payment method, cancer diagnosis, treatment modalities received (including systemic, radiation and/or hormone deprivation therapy, and surgery), primary symptom prompting acup referral and number of acup treatments received.

RESULTS:

Among 50 pts, 15 men (mean age = 61.6 yrs) and 35 women (mean age 57.3 yrs), 42 (84%) treated were diagnosed with a solid tumor and 8 (16%) with hematologic malignancies. Overall, neuropathy (n=21; 42%) was the most common complaint prompting acup treatment followed by arthralgia (n=12; 24%) and nausea (n=12; 24%). Of the solid tumor pts, 19 women were diagnosed with breast cancer, all of whom had a primary symptom of neuropathy. The most common treatment administered for the aforementioned cohort were taxanes (n=16; 84%) and alkylating agents (n=10; 53%). Using a logistic regression model, radiation therapy was strongly correlated with neuropathy (p=0.0063).

CONCLUSION:

The clinical programs at OHSU, recently initiated ambulatory oncology acup services. Initially, breast cancer was the most common tumor type seen for acupuncture with neuropathy being the chief complaint treated. Data collection and analysis is ongoing. Future insight is actively being pursued to detail patient outcomes and to clarify the temporal nature of acup preferences.

Oral Presentations Session 6 · 06/May/2015: 10:00am-11:30am · Location: Old Library 221

Outcomes of Hypofractionation for Early Stage and Locally Recurrent Non-Small Cell Lung Cancer: Experience from a Multidisciplinary Thoracic Oncology Program at a NCI Designated Cancer Center

Joshua Walker, John Holland, Mark Deffebach, Solange Mongoue-Tchkote, James Tanyi, Charles R. Thomas Jr., Charlotte Dai Kubicky

Purpose/Objective: Stereotactic ablative radiotherapy (SABR) is the standard of care for medically inoperable early stage non-small cell lung cancer (NSCLC) patients. However, not all patients can undergo SABR. At OHSU, we have treated these patients with a hypofractionated radiotherapy regimen. Here we show clinical outcomes of treated NSCLC patients.

Materials/Methods: We performed a retrospective review of 45 consecutive NSCLC patients treated with 60 Gy in 4 Gy from 2007 to 2014. Treatment was delivered using a stereotactic immobilization system and daily image guidance. CT or PET-CT scans were obtained in 3-6 months intervals following treatment.

Results: The median follow-up was 11 months (range 2 to 55). The median age was 73 yrs (range 57-90). The median tumor diameter and PTV were 3.5 cm and 83.3 cc. Four (9%) patients

received treatment for locally recurrent disease after definitive radiation. 17 (38%) patients received subsequent radiation for disease outside of the initial fields.

The median survival was 23 months. The 2 yr actuarial local control and survival rates were 87% and 49%. Only 2 patients developed local recurrence (1 central and 1 peripheral). None of the 4 patients receiving treatment for locally recurrent disease failed locally. Patients with central and peripheral tumors had similar overall survival ($p = 0.35$) and local recurrence free survival ($p = 0.82$).

Conclusions: This regimen was well tolerated with minimal toxicities. This hypofractionation regimen resulted in favorable local control and overall survival rates in medically inoperable patients who are not candidates for SABR.

THURSDAY

Oral Presentations Session 13 · 07/May/2015: 10:00am-11:30am · Location: OHSU Auditorium

Temporal Assessment of Regional and Remote Non-tumor Microvascular Response to High-Dose Radiation Therapy Using Contrast-enhanced Ultrasound

Nima Nabavizadeh, Melinda Wu, Yue Qi, Aaron Martin, James Tanyi, Charles Thomas, Jonathan Lindner

Background

High-dose radiation therapy (RT) produces multifactorial microvascular injury in both tumor targets and normal tissue within the RT field. We hypothesized that contrast-enhanced ultrasound (CEU) could characterize alterations in microvascular blood flow (MBF) that occur in normal tissue after RT.

Methods

Hindlimb skeletal muscle of mice were irradiated in a single fraction. CEU during infusion of microbubble contrast was performed at day 1 and 8 after RT in muscle exposed to high-dose (HD) RT (15Gy), an adjacent area of lower-dose (LD) RT (12Gy), and a region on the contralateral limb. Control mice not undergoing any RT were also studied. CEU data were analyzed to quantify MBF.

Results

On day 1, there was a significant reduction in MBF in the RT versus unirradiated limbs, the degree of which was dose-dependent (0.51 ± 0.24 , 0.66 ± 0.30 , and 0.78 ± 0.39 ml/min/g in the HDRT, LDRT, and unirradiated limbs, respectively; HDRT vs. LDRT, $p=0.017$; HDRT vs. unirradiated limbs, $p=0.007$). On day 8, MBF in the RT limbs remained reduced to a similar degree (0.42 ± 0.18 , and 0.47 ± 0.26 ml/min/g for HDRT and LDRT). In the unirradiated limb, there was a decrease in MBF between day 1 and 8 (0.78 ± 0.39 to 0.48 ± 0.40 ml/min/g) which at day 8 was significantly lower than that seen in untreated mice (0.99 ± 0.69 ml/min/g, $p=0.04$).

Conclusions

CEU imaging can spatially and temporally quantify dose-dependent radiation-induced microvascular alterations. CEU also has identified a delayed reduction in perfusion at sites

distant from local RT suggesting a systemic microvascular response to high-dose RT that warrants further investigation.

Poster Session 3 · 07/May/2015: 1:30pm-3:30pm · Location: Old Library Great Hall

Effects of combined immune and radiation cancer therapy on measures of anxiety in murine model

Gwendolyn J McGinnis, David Friedman, Kristina H Young, Charles R Thomas, Michael Gough, Jacob Raber

Behavioral changes in patients with cancer are multi-factorial and may include difficulty concentrating, memory impairment, and increased anxiety (Bower 2011). Though behavioral changes are often associated with cytotoxic chemotherapy and/or cranial irradiation, extracranial radiation and a pro-inflammatory environment in the brain may also have a role. Novel combinations of systemic immunotherapy (IMT) and hypofractionated radiotherapy (RT) may enhance therapeutic efficacy with regard to the tumor, but how they may modulate behavioral effects is not known. We hypothesize that IMT will enhance the detrimental effects of RT on behavioral performance due to an enhanced pro-inflammatory environment in the CNS. New mouse tumor models represent a unique opportunity to test our hypotheses. Our project utilizes IMT (anti-CTLA4) preceding precision CT-guided RT delivered via Small Animal Radiation Research Platform (SARRP) to most closely model clinical treatment plans. BALB/c mice with or without CT26 colorectal carcinoma or C57BL/6J mice with or without 3LL lung carcinoma were used. Mice received combined treatment or sham RT. In both strains of mice, combined treatment induced emotional changes. In the open field, tumor mice entered the center of the arena less frequently ($p < 0.01$), indicating higher levels of anxiety. This effect was more pronounced in tumor mice receiving treatment ($p < 0.05$). Anxiety levels are increased in mice following cancer treatment involving IMT. Similar effects need to be considered in cancer patients receiving similar treatments. Currently, we are assessing immune- and synapse-related molecular markers in the brains of these mice that may be associated with these behavioral changes.