34. **Park, Haeseong**, MD MPH, Internal Medicine

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**Poster Title**: A Pilot Phase II Trial of Magnesium Supplements to Reduce Menopausal Hot Flashes in Breast Cancer Patients

**Objective**: To test if oral magnesium would reduce hot flashes in breast cancer survivors.

**Background**: Hot flashes affect up to 40% of cancer survivors. Magnesium has anecdotal evidence of effect

**Method**: Breast cancer patients with at least 14 hot flashes a week were given magnesium oxide 400 mg for four weeks, escalating to 800 mg if needed. Hot flash score (frequency x severity) at baseline was compared to the score at the end of the 5 weeks using a one-sided paired t-test. Trial NCT01008904.

**Result**: Of 29 who enrolled, 25 women completed treatment. The average age was 53.5 years, 6 patients were African-American, the rest Caucasian. Of the 29, 8 were on tamoxifen, 9 were on aromatase inhibitors, and 14 were on anti-depressants. 17 patients escalated the magnesium dose after two weeks of treatment. Hot flash frequency was reduced from 52.2 (13.7) to 27.7 (5.7), a 41.4% reduction, p=0.009. Hot flash score was reduced from 109.8 (40.9) to 47.8 (13.8), a 50.4% reduction, p=0.02. Of 25 patients, 14 patients (56%) had a >50% reduction in hot flash score, and 19 patients (76%) had a >25% reduction. Side effects were minor: 2 women stopped the drug for adverse effects including 1 person with migraine headache and 1 with nausea. Compliance was excellent and many patients continued treatment after the trial.

**Conclusion**: Oral magnesium appears to have helped more than half of the patients and was well tolerated. Side effects and cost ($0.02/tablet) were minimal. A randomized placebo-controlled trial is planned.
Poster Title: One Tiny Reason to Quit: A Prenatal Smoking Cessation Campaign in Richmond, VA

Objective: To describe a community outreach campaign aimed at encouraging pregnant African American women to call an evidence-based quitline for smoking cessation services and support.

Background: In Richmond, VA, rates of infant mortality (IM) are 4-5 times higher among African-Americans (AA) than among whites. A prevention communication campaign was planned as part of a large research center initiative to address this disparity. Two years of community-based participatory strategic planning and formative data gathering led planners to a smoking cessation focus and identified effective communication channels. The resulting intervention, One Tiny Reason to Quit, was a social marketing campaign encouraging pregnant AA women to call 1-800-QUIT-NOW for smoking cessation counseling and support.

Method: The campaign ran from late June through September 2009 and utilized a two-pronged communication strategy, media and face-to-face outreach. Radio ads were placed on an urban contemporary station, print ads ran in city buses, and billboards were displayed in high-risk communities throughout Richmond. Fifty outreach workers were recruited from local organizations that serve at-risk pregnant women and trained to deliver campaign messages, distribute branded give-away items, and arrange to have posters displayed in community venues frequented by target audience members.

Result: Effects of the campaign were assessed using calls to the quitline. The number of calls from pregnant women during the 3-month campaign increased 137% over the same 3-month period the preceding year, a comparison period that adjusts for seasonal fluctuations in call volume (Wilcoxon test for ranked sums yielded a z = -10.3, p < .0001). The increase was even greater (172%) compared to the previous three months of 2009. An examination of caller characteristics revealed that the increases were due almost entirely to increases among African Americans and Medicaid recipients.

Conclusion: Media campaigns, when combined with face-to-face peer outreach efforts, can prompt at-risk pregnant women to call an evidence-based quitline for smoking cessation counseling and support.
Overall Liz Fries Award Winner

Liz Fries Awards - Best in Basic Science Category

44. Ticar, Jedd Lyn, Research Specialist, Radiation Oncology

Fraley, Elizabeth1; Gentile, Luciana1; Kimmelshue, Katherine2; Mukhopadhyay, Nitai3; Idowu, Michael2; Rizki, Aylin1; 1Department of Radiation Oncology, 2Department of Pathology, 3Department of Biostatistics, Virginia Commonwealth University (VCU), Richmond, VA.

Poster title: MRE11/RAD50/NBS1 Complex Functions in Invasion in Breast Cells and Tumor Progression

Objective: To investigate the involvement of the MRE11/RAD50/NBS1 or MRN complex in breast cancer progression.

Background: The MRN complex performs an essential role in conserving genetic integrity. The complex distinguishes double strand breaks, recruits ATM kinase to damage sites, and activates homologous recombination repair of double strand breaks. Individuals with mutations in the MRE11 (Ataxia Telangiectasia-like Disorder) and NBS1 (Nijmegen Breakage Syndrome) gene are characterized with radiation sensitivity and are associated with a higher cancer rate. Using the HMT-3522 human breast cancer progression series of cell lines, we previously showed that expression levels of some genes involved in DNA double strand break repair are regulated by three-dimensional laminin-rich extracellular matrix (3D lrECM), and some of these are involved in regulating cell invasiveness. Based on these data, we set out to determine the involvement of the MRN complex in the progression to the invasive phenotype in breast cancer.

Method: Western blots or immunohistochemistry were used to determine the MRN protein expression levels. MRN proteins were downregulated using small interfering RNA (siRNA) and protein expression levels were quantified and observed using western blot analysis. Transwell invasion assay or Boyden Chamber assay was used to measure the ability of cells to invade through ECM.

Result: In non-invasive S1 cells, 3DlrECM cultures had higher levels of MRN proteins. However, in pre-invasive S3-C and invasive T4-2 cells, 3DlrECM no longer upregulated these proteins. Consequently, in 3DlrECM cultures non-invasive S1 cells had higher expression levels of MRE11, RAD50 and NBS1 compared to invasive T4-2 cells. Immunohistochemistry performed on breast tissue sections showed that, on average, normal breast tissues have higher levels of expression of MRN than in situ carcinoma and in situ carcinoma has higher levels of expression than invasive carcinoma. The functional significance of altered MRN expression was investigated by downregulation of more than 50% in MRE11, RAD50 and NBS1 in invasive T4-2 cells. This resulted in significant upregulation of the ability of the cells to invade through ECM.

Conclusion: These results support our hypothesis and suggest that the MRN complex proteins are negative regulators of breast cell invasiveness.