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REPRODUCTIVE FACTORS AND BREAST CANCER RISK AMONG OLDER WOMEN. *S Shantakumar, M B Terry, S L Teitelbaum, J A Britton, A I Neugut, and M D Gammon (UNC-Chapel Hill, Chapel Hill, NC 27599)

Reproductive factors have been shown to affect pre- and postmenopausal breast cancer risk differently, but whether there are additional age-specific differences among menopausal women as they age has not been clarified. We analyzed data from a large population-based case-control study that included 1508 breast cancer cases and 1556 controls, aged 20–98 years, who completed an in-home interviewer-administered questionnaire. The following subgroups were created to examine if the associations between reproductive factors and breast cancer risk varied by age- and menopausal-status: premenopausal (n = 968), postmenopausal <65 years (n = 1045), postmenopausal ≥ 65 years (n = 958). Among postmenopausal women ≥65 years, ever having breastfed decreased risk (OR = 0.69, 95% CI = 0.48, 0.99), and a strong dose-response relationship was observed for longer durations of breastfeeding (p trend = 0.02), with the most pronounced protective effect observed for ≥14 months of breastfeeding (OR = 0.40, 95% CI = 0.19,0.81). Older age at last birth increased risk in this group (OR = 2.14, 95% CI = 1.04,4.43 for ≥ 35 years vs. <28 years), while late age at menarche and surgical menopause decreased risk. Odds ratios for multiparity and older age at first birth (AFB) were close to the null. Factors associated with breast cancer risk among premenopausal women and post-menopausal women <65 years were multiparity, which decreased risk, and older AFB, which increased risk. Our findings suggest that the effects of many well-known reproductive factors for breast cancer attenuate with older age. Moreover, breastfeeding, one of the few modifiable risk factors, was an important factor in decreasing breast cancer risk among older parous postmenopausal women.

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OPTICAL REFLECTANCE SPECTROSCOPY FOR PROSPECTIVE STUDIES ON BREAST CANCER RISK IN ADOLESCENT GIRLS. *S Dick and L Lilge (Ontario Cancer Institute, Toronto, ON M5G 2M9)

Prospective studies on diet and lifestyle effects on future breast cancer risk in young girls typically rely on establishing correlations between risk factors and serum sex and growth hormones. Quantitative physical information on developing breast tissue is limited to breast density derived from DEXA at a cost of ionizing radiation exposure. Near-infrared Optical Reflectance Spectroscopy (ORS) uses light to access structural and metabolic bulk tissue properties, providing quantitative physical and functional information. Here we want to evaluate the ability of ORS to detect spectral differences between different Tanner stages of breast development indicative of changes in chromophore concentration and distribution. Measurements were obtained from 7 adolescent girls ages 10–14 years. Spectrally resolved reflected light from 2 radial distances, 1.5 and 3.0cm, providing different sample depth, is detected. Principle Component Analysis (PCA) was used to reduce the spectral data and generate individual scores, representing physiologic and morphologic tissue information. Four principle components were identified accounting for 99.92% of the spectral variance. Radial distances and hence tissue depth, had an impact on ORS parameters t1, t2 and t4 (all at $p < 0.05$, 2-tail independent t-test). Pearson correlation analysis indicated a positive correlation between t3 ($r(110) = -0.462$, $p < 0.001$) and increasing breast Tanner stages; t4 ($r(110) = 0.240$, $p < 0.011$) showed a reverse relationship. r values were strengthened when adjusted for menarche status and radial distances. ORS may provide an alternative tool to DEXA to identify morphologic and physiologic changes to the breast tissue resulting from an intervention during the adolescent years.

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RISK OF IN SITU BREAST CANCER AND MAMMOGRAPHIC DENSITY: THE MULTIETHNIC COHORT. *J Gill, G Maskarinec, I Pagano, L N Kolonel (Cancer Research Center of Hawaii, Honolulu, HI, 96813)

Background: It is well established that women with high mammographic density are at greater risk of breast cancer than women with low breast density. However, little research has been done on mammographic density and breast carcinoma in situ (BCIS), which is thought to be a precursor lesion to some invasive breast cancers. Methods: We conducted a nested case-control study within the Multiethnic Cohort and compared the mammographic densities of 482 invasive breast cancer cases and 125 BCIS cases to 667 cancer free controls. A reader blinded to disease status performed computer-assisted density assessment. For women with more than one mammogram, mean density values were computed. Polytomous logistic regression models were used to compute adjusted odds ratios (ORs) and 95% confidence intervals (CIs) for two measurements of mammographic density: percent density and dense area. Results: Mammographic density was significantly associated with invasive breast cancer and BCIS. For the highest category of percent breast density (≥ 50%) as compared to the lowest (< 10%), the OR was 3.58, 95% CI (2.26–5.66) for invasive breast cancer and 3.06, 95% CI (1.50–6.24) for BCIS. Similarly, for the highest category of dense area (≥ 45 cm^2) as compared to the lowest (< 15 cm^2), the OR was 2.92, 95% CI (2.01–4.25) for invasive breast cancer and 2.86, 95% CI (1.57–5.20) for BCIS. Trend tests were significant for invasive breast cancer (P$_{trend}$ <0.0001) and BCIS (P$_{trend}$ < 0.001) for both percent density and dense area. Conclusion: The similar strengths of association for mammographic density with BCIS and invasive breast cancer suggest a common etiology for both cancers.

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TIME TRENDS IN BREAST CANCER IN THE U.S. SEER SYSTEM 1975–2002. *J Y Song, Y Y Han, and D L Davis (University of Pittsburgh, Department of Epidemiology, Pittsburgh, PA15260)

This paper assesses trends in recent time, period, and birth cohorts for breast cancers in women. We used data from the SEER 9 Registry to perform age-period-cohort analyses of breast cancer incidence rates among black and white women in the U.S. from 1975 to 2002. We also used the SEER*Stat software to fit Joinpoint models to summarize time trends. For 20–49 year olds, black and white women had similar incidence rates; however, whites had higher incidence rate than blacks in women aged 50–84. For whites, breast cancer shows steeper slopes in more recent years, with no tapering off at menopause. For blacks, similar patterns are evident, but incidence is about 30% less at the older age group. Estimates of the long-term increase in breast cancer rates over time are given by the average annual change: 1.1% for whites and 1.0% for blacks. These simple linear time trends alone do not adequately capture the temporal patterns in black women. Breast cancer incidences in white and black women deviated from linearity due to age, time period, and cohort effect. Regarding generational risk, the chances of getting breast cancer in new generations are about 30% higher than previous generations. Mammographic screening only became widespread after 1994, and it was used more by whites in their fifties, than by those in their sixties and older. This may account for patterns in whites after 1994, but cannot explain patterns in blacks. Additional research investigating the differences in ethnos is needed to determine whether preventable factors account for some of these patterns and to anticipate demands for health care delivery.

* = Presenter; S = The work was completed while the presenter was a student