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Early Breast Cancer, HER2 Status, and Adjuvant Anthracyclines

In the treatment of early breast cancer, anthracycline-based adjuvant chemotherapy improves disease-free and overall survival compared with non–anthracycline-based adjuvant chemotherapy. However, it is unclear whether the response depends on the HER2 status of the breast tumors. **Gennari et al. (p. 14)** performed a pooled analysis of data from eight randomized controlled trials that compared anthracycline-based with non–anthracycline-based adjuvant chemotherapy regimens in early breast cancer treatment. The analysis included 6,564 randomly assigned patients, 5,354 of whom had HER2 status information available. Anthracyclines were superior to non–anthracyclines in terms of disease-free and overall survival in women with HER2-positive disease but not in women with HER2-negative disease. The authors conclude that the added benefits of adjuvant chemotherapy with anthracyclines appear to be confined to women whose breast tumors have overexpressed or amplified HER2.

In an editorial, **Paik et al. (p. 2)** discuss data that suggest that anthracyclines are no longer necessary in the adjuvant treatment of breast cancer in light of our current understanding of the molecular heterogeneity of breast cancer. Optimizing adjuvant chemotherapy for breast cancer patients will depend on further defining the baseline prognosis and the chemosensitivity of each subclass of breast cancer.

Systemic Adjuvant Therapy and Contralateral Breast Cancer Risk

In primary breast cancer, the risk of contralateral breast cancer (cancer in the other breast) is reduced after tamoxifen treatment or chemotherapy. To examine how long the risk is reduced and how factors such as menopausal status and age might affect this risk, **Bertelsen et al. (p. 32)** analyzed data from more than 600 women with contralateral breast cancer and more than 1,100 women with unilateral breast cancer who were under age 55 at their original diagnosis and were enrolled in the Women's Environment, Cancer and Radiation Epidemiology (WECARE) study. Chemotherapy was associated with a reduced risk for contralateral breast cancer from the beginning of treatment and continued up to 10 years after the first breast cancer diagnosis. The risk reduction was greater among women who became postmenopausal 1 year after the diagnosis. The association between tamoxifen treatment and reduced risk for contralateral breast cancer continued up to 5 years after the first diagnosis. The authors conclude that ovarian suppression may be involved in the association with chemotherapy.

Quality of Care for Nursing Home Residents Treated for Cancer

The quality of care for nursing home residents has received relatively little attention. **Bradley et al. (p. 21)** analyzed data from the Michigan Tumor Registry and Medicare and found that nursing home residents diagnosed with cancer had more late or unstaged disease, higher mortality, and lower rates of hospice use than other cancer patients. They also received less surgery and chemotherapy than other patients. The authors note that an aging population makes it especially important to understand the care given to cancer patients in nursing homes.

In an editorial, **Aziz and Bellizzi (p. 4)** suggest that future studies should examine the impact of family preferences and cultural mores on the care given to nursing home residents. They argue that guidelines for care that prevents, detects, or ameliorates the adverse consequences of cancer and cancer treatment are needed, especially for older patients.

Environmental Influences on Risk for Testicular Cancer in Denmark

Testicular cancer accounts for only 1-2% of all cancers in men, yet it is the most common malignancy among young men. There is considerable variation in the incidence of testicular cancer in different countries, and rates in Denmark are especially high. **Myrup et al. (p. 41)** examined testicular cancer incidence among first- and second-generation immigrants to Denmark to determine whether the Danish environment contributes to testicular cancer risk and to clarify the timing of that influence. Second-generation immigrants (men born in Denmark to foreign-born parents) were twice as likely to develop testicular cancer as first-generation immigrants (men born abroad who entered Denmark at a later age). The authors suggest that this finding, combined with other evidence, points to prenatal influences on testicular cancer development.

DNA Breakpoint Information and Breast Cancer Recurrence

Changes in genomic DNA copy number have been used to determine whether breast cancers that recur in the same (ipsilateral) breast are new primary tumors or true recurrences. **Bollet et al. (p. 48)** compared a new method using DNA breakpoint data with methods using either DNA copy number or clinical and pathologic characteristics. The authors examined genomic DNA data from primary breast cancers and ipsilateral breast cancers from 22 women. They also compared the 5-year metastasis-free survival of women whose ipsilateral tumors were defined as new primary tumors or true recurrences based on DNA breakpoints or clinical and pathological characteristics. For 14 women, all three methods agreed on whether the ipsilateral tumor was a new primary tumor or a true recurrence. The DNA breakpoints method more often agreed with the clinical and pathologic determination than did the method using DNA copy number. A larger difference in 5-year metastasis-free survival was observed between women with new primary tumors and those with true recurrences (100% vs 29%) using DNA breakpoint data than using clinical and pathologic characteristics (76% vs 38%). The authors concluded that DNA breakpoints may better determine the nature of the breast cancer recurrence than clinical and pathologic characteristics or DNA copy number information.

Cannabinoid Treatment and Cancer Cell Invasiveness In Vitro

Cannabinoids have been shown to inhibit the proliferation of cancer cells, but how they inhibit tumor growth has not been fully explored. **Ramer and Hinz (p. 59)** found that treatment of cancer cells with cannabinoids inhibited invasion by cancer cells in in vitro assays. Inhibition was dependent on the activation of specific cannabinoid receptors and mitogen-activated protein kinase signaling. Treatment of cancer cells with cannabinoids increased expression of an endogenous inhibitor of the activity of the metalloproteinase (protein-degrading) TIMP-1. Targeting of TIMP-1 expression with small interfering RNA revealed that this protein was required for inhibition of invasion by cannabinoids.