Estrogen receptor positivity improves breast cancer survival for all underserved ethnic groups except African Americans

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Background

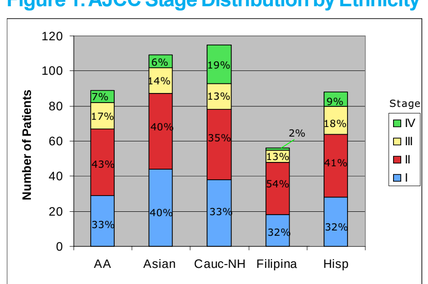
California Cancer Registry data from 1997-2001 indicate age-adjusted breast cancer mortality rates (per 100,000) for San Francisco County are highest for African Americans (43) compared to non-Hispanic Caucasians (32), Hispanics (16) and Asians/Pacific Islanders (12). However, these data cut across heterogeneous socioeconomic strata and do not account for unequal access to care and diverse treatment practices. The San Francisco General Hospital Breast Clinic provides diagnostic and treatment services to the city's underserved, low Socioeconomic Status (SES), and multiethnic population, enabling a breast cancer outcome comparison among low SES patients of different ethnicities uniformly offered treatment.

Methods

An initial review of Tumor Registry data included 1014 invasive breast cancer patients diagnosed between 1985-2004, and revealed outcome differences between 5 ethnic groups: African Americans (AA), Asians, Non-Hispanic Caucasians (Cauc-NH), Filipinas, and Hispanics. We have now begun a detailed chart review of 563 SFGH analytic cases diagnosed between 1992 and mid-2004; in 1992 the SFGH Breast Clinic was founded, at which time patients began receiving uniform treatment by specialized surgeons and oncologists. Analytic Stage IV patients are included. Patients with DCIS only are excluded. "Asian" includes Chinese, Japanese, Vietnamese and Korean patients. Ten patients (Samoan, Thai, Indian/Pakistani) are categorized as "other" and are, thus, excluded from survival analysis. Estrogen receptor data is missing or not available for approximately 30% of patients in each ethnic group and there is no difference between groups (p=NS).

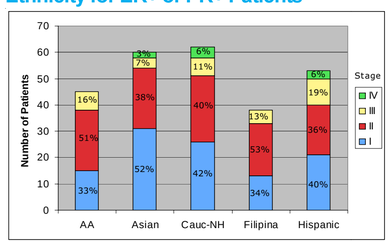
Demographics of Patients Presenting to SFGH

Figure 1. AJCC Stage Distribution by Ethnicity



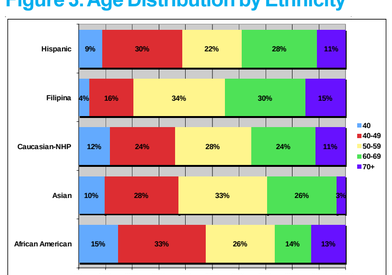
p=0.03 for Cauc-NH presenting with the most stage IV disease, and Filipinas presenting with the least stage IV disease at SFGH. At SFGH, there is not a higher proportion of AA's that present with advanced stage breast cancer compared to other groups.

Figure 2. AJCC Stage Distribution by Ethnicity for ER+ or PR+ Patients



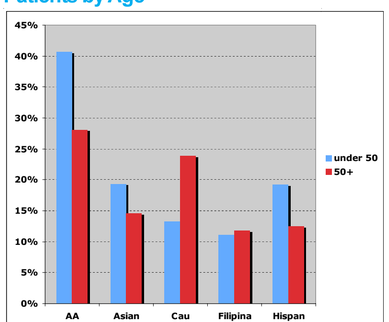
Similar distribution of patients by stage and ethnicity for ER+ or PR+ patients as for all breast cancer patients that present to SFGH (p=NS). A higher proportion of ER+ patients in all groups, including AA, are age >50.

Figure 3. Age Distribution by Ethnicity



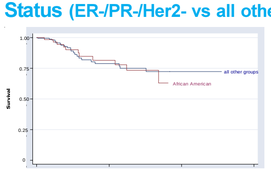
48% of all AA's presenting at SFGH are age Under 50 (p=0.007). Most of the young AA patients are ER negative (data not shown).

Figure 4. Distribution of ER-/PR-/Her2- Patients by Age



For age Under 50, more AA's are negative for ER, PR and Her2neu (p=0.005) compared to all others. For age 50+, the AA and Caucasian groups include a similar number of patients that are negative for all three markers (p=0.19). *Her2neu was defined as negative unless IHC=2+ or 3+. FISH overamplification has not yet been verified for all 2+ tumors.*

Figure 5. Survival in Age <50, Adjusted for AJCC Stage and ER/PR/Her2 Combined Status (ER-/PR-/Her2- vs all others)



AJCC Stage adjusted survival differences between AA's and other groups disappear in patients age Under 50 when adjusted for ER/PR/Her2neu (p=0.907).

Survival Data

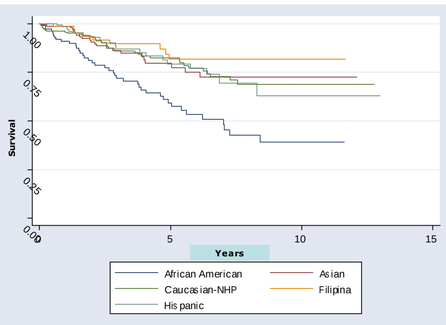
Table 1. Survival Differences among Ethnic Groups

Ethnicity	% ER+ or PR+	% ER+/PR-	%5-year Survival (all)	%5-year Survival (ER+ or PR+)	%Currently Alive, Free of Disease
AA	63	10	53*	67*	36*
Asian	74	13	77	87	70*
Cauc-NH	78	16	66	77	53
Filipina	79	13	80	84	67
Hispanic	74	18	76	83	62

*p<0.01 vs all others

Survival of ER+ or PR+ patients is better than the group as a whole, for each ethnic group. However, survival for AA's is lower than for all other groups even when hormone receptors are positive. The proportion of AA's and Asians that are currently Alive and Free of Breast Cancer is significant compared to all others.

Figure 6. AJCC Stage Adjusted Survival by Ethnicity



AJCC Stage adjusted survival is lower for AA's than all other groups (p=0.002).

Conclusions

As is typical of invasive breast cancer in the San Francisco Bay Area and the United States, survival for African American women at San Francisco General Hospital is inferior to that of women from other ethnic groups. African American women are least likely to be alive and disease free while Asian women are most likely.

Among hormone receptor negative patients, we found that the phenotype ER-/PR-/Her2- was more frequent in young African American women and contributed to their poor survival. Analyses based on Estrogen and Progesterone receptors suggest that the survival advantage of hormone receptor positivity is smaller for African American women than for all other ethnic groups. The comparative lack of benefit among ER+ African Americans cannot be accounted for by an excess proportion of ER+/PR- cases.

ER+ breast cancers arising in African Americans may possess other unique high-risk biological features. Our data suggests that overall survival differences among ethnic groups cannot be fully explained by differences in SES or delivery of care.

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