



**Embargoed for Release:**  
5:00 p.m. CT, Dec. 7, 2011

**Media Contact:**  
Jeremy Moore  
(215) 446-7109  
[Jeremy.Moore@aacr.org](mailto:Jeremy.Moore@aacr.org)  
**In San Antonio:**  
(210) 582-7021

## **Obesity Linked to Worse Outcomes in Early Breast Cancer Treatment**

- In the overall group, obese patients had an increased risk for worse survival.
- Obese patients who received chemotherapy had significantly worse survival outcomes.
- Overweight patients who received tamoxifen had significantly better survival outcomes.

SAN ANTONIO — Obesity is associated with worse outcomes overall in early-stage breast cancer, researchers reported at the 2011 CTRC-AACR San Antonio Breast Cancer Symposium, held Dec. 6-10, 2011.

Obesity was linked to shorter time to recurrence (TTR), disease-free survival (DFS) and overall survival (OS). The exception was treatment with endocrine therapy (mainly tamoxifen), in which obesity was associated with a protective effect.

“The findings add to the body of evidence indicating that obesity, in general, increases a patient’s chance for having a worse prognosis,” said lead researcher Sao Jiralerspong, M.D., Ph.D., an assistant professor of medicine at Baylor College of Medicine.

“Obesity is a probable risk factor for worse breast cancer outcomes, and ours is the latest study to suggest it has an effect on treatment outcome as well,” Jiralerspong said.

Using data from the Lester and Sue Smith Breast Center at Baylor, Jiralerspong and colleagues examined the link between weight and treatment modality in 4,368 patients treated between 1970 and 1995.

For the group as a whole, data revealed that overweight patients had similar outcomes to normal-weight patients, but obese patients had an increased risk for worse TTR, DFS and OS.

Among patients who received no adjuvant chemotherapy or endocrine therapy, there was a trend for worse survival outcomes in obese patients compared with normal-weight patients.

Obese patients who received chemotherapy fared significantly worse compared with normal-weight patients, “with the magnitude of this effect approaching that of the degree of benefit expected from chemotherapy,” Jiralerspong said.

In contrast, overweight patients who received endocrine therapy, predominantly tamoxifen, fared significantly better compared with normal-weight patients.

“Finding that overweight patients have a better outcome than normal-weight patients after tamoxifen treatment is surprising. We are examining the possible reasons for this,” Jiralerspong said.

He said that obesity could contribute to worse outcomes because of biological factors associated with excess weight, such as higher blood insulin and estrogen levels, inflammation and growth factors secreted by fat cells. But Jiralerspong also added that more research is needed to understand the effect of body mass on adjuvant treatment because of the unexpected findings and because additional agents are in use today compared with the time period studied.

The study was funded by the Lester and Sue Smith Breast Center at Baylor College of Medicine.

###

The mission of the CTRC-AACR San Antonio Breast Cancer Symposium is to produce a unique and comprehensive scientific meeting that encompasses the full spectrum of breast cancer research, facilitating the rapid translation of new knowledge into better care for patients with breast cancer. The Cancer Therapy & Research Center (CTRC) at The University of Texas Health Science Center at San Antonio, the American Association for Cancer Research (AACR) and Baylor College of Medicine are joint sponsors of the San Antonio Breast Cancer Symposium. This collaboration utilizes the clinical strengths of the CTRC and Baylor and the AACR’s scientific prestige in basic, translational and clinical cancer research to expedite the delivery of the latest scientific advances to the clinic. The 34th annual symposium is expected to draw nearly 8,000 participants from more than 90 countries.

**Presenter:** Sao Jiralerspong, M.D., Ph.D.

**Abstract Number:** P1-08-04

**Title:** Obesity, Adjuvant Therapy, and Survival Outcomes in Early-Stage Breast Cancer.

**Author Block:** *Sao Jiralerspong<sup>1</sup>, Tao Wang<sup>1</sup>, Mothaffar F Rimawi<sup>1</sup>, Julie R Nangia<sup>1</sup>, Rachel Schiff<sup>1</sup>, Sharon H Giordano<sup>2</sup>, Michael N Pollak<sup>3</sup>, Carol C Chenault<sup>1</sup>, C Kent Osborne<sup>1</sup> and Susan G Hilsenbeck<sup>1</sup>.* <sup>1</sup>Lester & Sue Smith Breast Center, Baylor College of Medicine, Houston, TX; <sup>2</sup>M.D. Anderson Cancer Center, Houston, TX and <sup>3</sup>McGill University, Montreal, Canada.

**Background:** Obesity has risen to epidemic proportions and is associated with worse breast cancer (BC) prognosis in most studies. However, the effects of obesity according to adjuvant therapy choice are largely unknown. To address this issue, we examined the relationship between body mass index (BMI), adjuvant therapy, and survival outcomes in a large cohort of early-stage BC patients.

**Methods:** We retrospectively studied patients from the Baylor Breast Center Tumor Bank treated from 1970-1995. Patients were divided into 3 BMI classes: normal/underweight (N, BMI<25), overweight (Ov, BMI 25-30), obese (Ob, BMI≥30); and 4 treatment groups: no adjuvant therapy, chemotherapy (mainly CMF), endocrine therapy (mainly tamoxifen), both chemo- and endocrine therapy. Time-to-recurrence (TTR), disease-free survival (DFS) and overall survival (OS) were estimated by the Kaplan-Meier method and compared among groups via the log-rank test. Multivariate analysis was conducted via Cox proportional hazards models.

**Results:** There were 4,368 patients. Median age was 58. 74% were postmenopausal. 72% had stage I-II disease, 28% stage III. 76% were estrogen receptor (ER)-positive, 24% ER-negative. Patients distributed into BMI classes as follows: N 48%, Ov 30%, Ob 22%. Higher BMI was associated with postmenopausal status and increasing age, tumor size, positive lymph nodes, and stage, as well as a higher likelihood of receiving treatment. Median follow-up was 5 years. Kaplan-Meier analysis showed that TTR was significantly shorter in the Ov and Ob groups as compared to the N group (p=0.019), due to distant (p=0.001) rather than local (p=0.970) recurrences. DFS was also significantly worse in the Ov and Ob groups (p=0.002), as was OS (p=0.001). The Table shows the hazard ratios for the various survival outcomes after adjustment for age, tumor size, nodal status, and treatment groups. For all patients, TTR, DFS, and OS were significantly worse in the Ob vs. N groups. TTR and DFS were significantly worse in the chemo treated Ob vs. N groups. DFS and OS were significantly better in the endo treated Ov vs. N groups.

**Discussion:** In this large cohort of BC patients, survival outcomes (TTR, DFS, OS) were significantly worse in the obese group. This remained true after adjustment for multiple factors. Obesity was associated with worse survival outcomes in the chemo treated (CMF) group. Overweight was associated with better survival outcomes in the endo treated (tamoxifen) group. These results confirm and extend the results of previous studies. Further studies to discover the reasons for these differences in outcomes are underway.

Summary of hazard ratios by BMI categories and treatment groups

	<b>TTR</b>	<b>DFS</b>	<b>OS</b>
<b>BMI category</b>	<b>All patients</b>		
<b>Ov</b>	1.001 (0.872-1.149)	0.990 (0.887-1.105)	0.972 (0.863-1.095)
<b>Ob</b>	1.156 (0.999-1.339)	1.133 (1.006-1.276)	1.180 (1.040-1.340)
	<b>Untreated</b>		
<b>Ov</b>	0.981 (0.799-1.204)	1.012 (0.869-1.180)	1.042 (0.884-1.227)
<b>Ob</b>	1.179 (0.944-1.472)	1.106 (0.929-1.317)	1.097 (0.909-1.322)
	<b>Chemo</b>		
<b>Ov</b>	1.155 (0.877-1.520)	1.109 (0.868-1.417)	1.026 (0.784-1.343)
<b>Ob</b>	1.380 (1.041-1.830)	1.295 (1.004-1.671)	1.283 (0.970-1.696)
	<b>Endo</b>		
<b>Ov</b>	0.724 (0.488-1.074)	0.631 (0.464-0.857)	0.590 (0.425-0.820)
<b>Ob</b>	0.871 (0.576-1.318)	0.886 (0.653-1.202)	0.997 (0.725-1.370)
	<b>Both</b>		
<b>Ov</b>	1.035 (0.724-1.479)	1.120 (0.828-1.513)	1.101 (0.791-1.533)
<b>Ob</b>	0.952 (0.645-1.405)	1.096 (0.798-1.505)	1.317 (0.942-1.841)