



Perinatal factors and breast cancer risk among Hispanics

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Abstract Purpose: This study assessed whether perinatal factors were associated with breast cancer among Hispanics, a group with fairly low incidence rates of breast cancer.

Methods: Data were used from a case–control study of breast cancer among Hispanics aged 30–79 conducted between 2003 and 2008 on the Texas–Mexico border. In-person interviews were completed with 188 incident breast cancer cases ascertained through surgeons and oncologists, and 974 controls (with respective response rates of 97% and 78%).

Results: Relative to birth weight 2500–3999 g, there was no elevation in breast cancer risk for birth weight of ≥ 4000 g (odds ratio [OR] 0.76, 95% confidence interval [CI] 0.47–1.21).

Conclusions: The results tended to differ slightly from previous studies of this topic perhaps owing to the different hormonal milieu among Hispanics relative to Caucasians, African Americans and Asians in whom all previous studies of this topic

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have been conducted. Confirmation of these findings in larger studies may assist in determining how hormonal mechanisms responsible for breast cancer differ by ethnicity.

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1. Introduction

High birth weight and other perinatal factors thought to reflect on a woman's exposure to hormones, growth factors and other endocrine factors have been linked to subsequent breast cancer [1]. Three meta-analyses of the high birth weight-breast cancer association have reported summary relative risks ranging from 1.15 (95% confidence interval [CI] 1.09–1.21) to 1.24 (95% CI 1.04–1.48) [2–4], while a pooled analysis of this association based on birth records reported a pooled relative risk of 1.12 (95% CI 1.00–1.25) [5]. High birth weight was defined as ≥ 4000 g relative to < 3000 g for the most part in the meta-analyses [2–4] or relative to 3000–3499 g in the pooled analysis [5]. After restricting the types of studies to cohort studies, two meta-analyses of the association between older maternal age defined as ≥ 30 years relative to < 25 years and breast cancer reported summary relative risks of 1.13 (95% CI 1.02–1.25) [2] and 0.99 (95% CI 0.82–1.19) [3], respectively. Neither higher birth order (relative risk [RR] 0.91, 95% CI 0.91–1.04) nor maternal smoking (RR 0.98, 95% CI 0.86–1.13) appeared to be associated with breast cancer in a meta-analysis that included studies of all types [3]. Meta-analyses have reported breast cancer to be positively associated with birth length and older paternal age [2], negatively associated with pre-eclampsia/eclampsia and twin membership [2], and not associated with gestational age [2,3], and maternal diethylstilbestrol (DES) use [2]. However, cohort studies have identified a positive association between maternal DES and breast cancer among women diagnosed at age 40 or older [6,7]. None of the studies reported on the meta-analyses or pooled analysis examined the associations between perinatal factors and breast cancer among Hispanic women who have fairly low incidence rates of breast cancer compared with Caucasian women [8].

Based on mothers who delivered between 1974 and 1977, the birth characteristics of Hispanic women also differ from those of Caucasian women [9]. In comparison with Caucasians, Hispanics weigh slightly less (3.48 vs. 3.42 kg), are born to younger mothers (26.5 vs. 25.7 years), are of

higher birth order (18.6% ≥ 2 vs. 26.0% ≥ 2), and are born to mothers who do not smoke during pregnancy (70.1% vs. 79.4%). Given the differences in perinatal factors and breast cancer incidence rates of Hispanics relative to Caucasians, it was assessed whether perinatal factors were associated with breast cancer among Hispanic women in the current study.

2. Materials and methods

Detailed methods of this clinic-based case-control study conducted in the Lower Rio Grande Valley located at the southern tip of Texas on the Mexico border appear elsewhere [10]. Briefly, cases of self-reported Hispanic ethnicity, aged 30–79, diagnosed with primary invasive breast cancer between November 2003 and August 2008 were identified through surgeons and oncologists shortly after diagnosis or treatment ($n = 190$, response rate 97.0%). Controls of Hispanic ethnicity, aged 30–79, were randomly selected from women receiving a diagnostic or screening mammogram at the mammography center where the case received her diagnostic mammogram. Interviews were completed with approximately five controls per case ($n = 979$, response rate 78.0%). Women who were adopted were excluded resulting in 188 cases, and 974 controls for analysis.

Written informed consent was obtained from subjects and the Institutional Review Boards of the University of Texas at Brownsville and the University of Texas Health Science Center at Houston approved this study's protocol. Trained interviewers conducted in-person interviews on demographic characteristics, suspected breast cancer risk and protective factors, medical history, physical activity, diet, body size and perinatal factors. Exposures were for a period before a reference date, the date of diagnosis for the cases and an assigned date for controls comparable to the date for the cases. For example, controls recruited early in the study were assigned reference dates ranging from November 2003 to December 2005, while controls recruited later in the study were assigned reference dates ranging from January 2006 to August 2008.

Statistical analyses were completed in SAS version 9.2. There were large percentages of missing

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