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POSTER PRESENTATION Open Access

Subsequent childhood asthma and wheeze amongst small-for-gestational-age infants in Manitoba and India: an International Partnership Initiative

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Background

Globally, asthma and wheeze are increasing. Concurrently, the incidence of infants born small-for-gestational-age (SGA) is rising. Evidence describing associations between these two conditions are conflicting. We sought to explore this phenomenon in two distinct populations: Manitoba, Canada and Bangalore, India.

Materials and methods

1995 Manitoba Birth Cohort nested case-control study: Gestational period and birth weight were extracted from hospital records and classified as per Canadian SGA guidelines. At 8-10 years, asthma status and presence of wheeze were ascertained via pediatric allergist assessment. Parental-reported data included wheeze (ever, current [past year], or during various activities) as per International Study of Allergies and Asthma in Children (ISSAC) questionnaire, and demographic data. *Bangalore Cohort:* Gestational period at birth and birth weight were measured. SGA babies were classified as per World Health Organization's SGA guidelines. At 2-7 years, presence of wheeze was ascertained via physician assessment/prescription record and ISAAC questionnaire. Asthma status was not assessed. All data were analyzed using descriptive statistics and x^2 tests.

Results

In Manitoba, 725 children (56.0% boys) were assessed. Mean gestational period was 39.5 ± 2.12 weeks (non-significant [NS] differences by gender). Mean birth weight was 3.38 ± 0.64 kg; girls were significantly smaller than boys ($p < 0.006$). 114 (16.1%) children (54.4% boys) were SGA. At ages 9.06 ± 0.64 years, 246 (34.1%) of children (149 boys) had asthma. No associations were identified between SGA and asthma, or between SGA and wheeze, when considering both genders combined or amongst boys only. Girls who were SGA were significantly more likely to have wheeze-related sleep disturbances than girls who were non-SGA (OR 0.33; 95% CI 0.12-0.94; $p < 0.03$).

In Bangalore, 432 children (48.0% boys) were assessed for wheeze-like symptoms. Mean gestational period was 38.68 ± 1.62 weeks and mean birth weight was 2.87 ± 0.49 kg (both NS differences between genders). Participants' mean age was 3.78 ± 1.30 years. 130 (30.2%) children (47.7% boys) were SGA. 71 (16.4%) of children (38.4% boys) had a doctor diagnosis of wheeze. SGA children had twice the risk of developing wheeze at follow-up (OR 2.19; 95%CI 1.30-3.68; $p < 0.003$). After stratification by gender, these associations were only significant amongst boys (OR 3.24; 95% CI 1.44-7.31; $p < 0.003$).

Conclusion

Children born SGA are at higher risk of developing wheeze-like symptoms, especially among the Indian boys. There is a small, yet significant association between SGA and wheeze-related sleep disturbances in

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Manitoban girls. Understanding the associations between SGA and wheeze may lead to enhanced pediatric clinical assessments. Public policy ought to target prevention of SGA.

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