



ORIGINAL ARTICLE

Risk factors associated with wheezing in infants[☆]

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KEYWORDS

Infant;
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Abstract

Objective: to identify possible risk factors associated with wheezing in infants (12-15 months-old) in the state of Mato Grosso, Brazil.

Methods: this was a cross-sectional study performed by applying a standardized written questionnaire from the international study on wheezing in infants (Estudio Internacional de Sibilancia en Lactantes - EISL), phase 3. Parents and/or guardians of infants were interviewed at primary health care clinics or at home from August of 2009 to November of 2010. Factors associated to wheezing were studied using bivariate and multivariate analysis (using the Statistical Package for Social Sciences [SPSS] v.18.0), and expressed as odds ratios (OR) and 95% confidence intervals (95% CI).

Results: the written questionnaire was answered by 1,060 parents and/or guardians. The risk factors for wheezing were: history of asthma in the family [mother (OR = 1.62; 95% CI = 1.07-2.43); father (OR = 1.98; 95% CI = 1.22-3.23); siblings (OR = 2.13; 95% CI = 1.18-3.87)]; history of previous pneumonia (OR = 10.80; 95% CI = 4.52-25.77); having had more than six upper respiratory tract infections (URTIs) (OR = 2.95; 95% CI = 2.11-4.14); having had first URTI before the third month of life (OR = 1.50; 95% CI = 1.04-2.17); living in a moderately polluted area (OR = 1.59; 95% CI = 1.08-2.33); paracetamol use for URTI (OR = 2.13; 95% CI = 1.54-2.95); and antibiotic use for skin infection (OR = 2.29; 95% CI = 1.18-4.46).

Conclusions: the study of risk factors for wheezing in the first year of life is important to help physicians identify young children at high risk of developing asthma and to improve public health prevention strategies in order to reduce the morbidity of wheezing in childhood.

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PALAVRAS-CHAVE

Lactente;
Sibilos;
Asma;
Fatores de risco

Fatores de risco associados à sibilância em lactentes**Resumo**

Objetivo: identificar possíveis fatores de risco associados à sibilância em lactentes (12 a 15 meses) no estado de Mato Grosso, Brasil.

Métodos: estudo transversal, utilizando o questionário escrito padronizado do *Estudio Internacional de Sibilancia en Lactantes* (EISL) – fase 3. Pais e/ou responsáveis pela criança foram entrevistados em Unidades Básicas de Saúde quando as procuravam para imunização de rotina ou durante visitas nos domicílios de crianças matriculadas nos programas de saúde da família, no período de agosto de 2009 a novembro de 2010. Fatores associados à sibilância foram avaliados utilizando análise bivariada e multivariada e expressos como *odds ratio* (OR) e intervalo de confiança 95% (IC95%).

Resultados: ao todo, um mil e sessenta (n = 1.060) pais e/ou responsáveis responderam o questionário escrito. Os fatores de risco para sibilância foram: história familiar de asma [mãe (OR = 1,62; IC95% = 1,07-2,43); pai (OR = 1,98; IC95% = 1,22-3,23); irmãos (OR = 2,13; IC95% = 1,18-3,87)]; história prévia de pneumonia (OR = 10,8; IC 95% = 4,52-25,77); ter mais de seis infecções de vias aéreas superiores (IVAS) (OR = 2,95; IC95% = 2,11-4,14) e a primeira IVAS antes dos três meses de idade (OR = 1,50; IC95% = 1,04-2,17); residir em local com moderada poluição (OR = 1,59; IC95% = 1,08-2,33); uso de paracetamol por IVAS (OR = 2,13; IC95% = 1,54-2,95); e uso de antibiótico por infecção na pele (OR = 2,29; IC 95% = 1,18-4,46).

Conclusões: O estudo dos fatores de risco para sibilância no primeiro ano de vida é importante para auxiliar na identificação, entre os lactentes sibilantes, aqueles de alto risco para desenvolver asma, e para o desenvolvimento de estratégias de prevenção por políticas pública de saúde visando minimizar a morbidade da sibilância na infância.

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Introduction

Wheezing in infants is an important cause of morbidity worldwide, both in developed and developing countries.¹ Some wheezing phenotypes have been described as associated with different risk factors.² In infants and preschool children, the asthma diagnosis is based on clinical symptoms, presence of risk factors, and therapeutic response; therefore, the identification, among wheezing infants, of those at high risk for developing asthma is crucial to define which children will benefit from preventive or therapeutic interventions.³

Prospective studies suggest several risk factors for early wheezing in children and its association with the subsequent development of asthma, such as family history of allergy,⁴ personal history of rhinitis or eczema,^{5,6} maternal smoking during pregnancy or passive exposure after birth,⁷ male gender,^{2,5} viral respiratory infections by respiratory syncytial virus (RSV) or rhinovirus,^{8,9} and attending daycare.¹⁰ Epidemiological studies have observed an association between the development of asthma and regular use of medications such as paracetamol and antibiotics during infancy.^{11,12}

Therefore, risk factors for wheezing in infants have been identified, but their analysis is complex, due to the genetic-environmental interactions. The development of methods to identify and quantify these factors is essential for better understanding the natural history of asthma in childhood. The epidemiology of asthma is known worldwide in school-age children, adolescents, and adults; however, the prevalence and risk factors associated with symptoms of recurrent wheezing in infants and preschool children are still under investigation.¹³

To assess the impact of recurrent wheezing in infants and determine its prevalence and associated risk factors, the International Study of Wheezing in Infants in the first year of life (*Estudio Internacional de Sibilancias en Lactantes - EISL*) was developed. This is an international multicenter study with the participation of Latin American countries, Spain, and the Netherlands, whose tool was a standardized questionnaire validated in all participating centers. Phase 1 of EISL used a standardized questionnaire with 45 questions on demographic characteristics, respiratory symptoms, use of medications, and possible risk factors associated with wheezing.¹ Phase 2 was designed to verify the onset and persistence of wheezing in preschoolers among the children who participated in Phase 1, and the centers that participated have not yet published their results. Phase 3 was designed to be conducted five years after Phase 1 in the same region, to compare the trend in prevalence in relation to Phase 1 data, and it used the same questionnaire as in Phase 1, including five questions on the use of antibiotics and paracetamol in first months of life, totaling 50 questions.

This study aimed to evaluate risk factors associated with wheezing in infants in Midwestern Brazil, using the standardized protocol of EISL - Phase 3.

Patients and methods

Parents or guardians of healthy infants aged 12 to 15 months who answered the standard written questionnaire of EISL (QE-EISL) - Phase 3 participated in the study.

Among the 60 basic health units (BHUs) distributed in four regions - North, South, East and West - of the city, 28 were

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