CHILD ASTHMA AND ENVIRONMENTAL FACTORS IN MONTENGRO

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Abstract:

Introduction: Asthma is most common chronic disease in the childhood. It is estimated that 8-10% of school age children in Podgorica have child asthma. The data about prevalence of child asthma in Montenegro are uncertain.

Material and methods: The data about different aspects of child asthma in Montenegro were collected (different regions in Montenegro: 100 patients from sea-side and 100 patients mountain part of the country, both sexes, age 6-14) from 2004 to 2008 using questionnaire from Institute for Health Care of Mother and Children from Faculty of Medicine from Belgrade.

Results: The most common environmental factor involved in the development of child asthma was domestic mite, without differences between two explored regions from Montenegro.

Conclusion: Most of children affected by child asthma in Montenegro have allergic asthma. The most common environmental factors involved in the development of child asthma in Montenegro are house dust mite and outdoors allergens: pollen of trees and some sorts of grasses.

Key-words: *child asthma, Montenegro*

Introduction.

Asthma is serious global health problem. People of all ages in countries throughout the world are affected by this chronic airway disorder that, when uncontrolled, can place sever limits on daily life and is sometimes fatal. The prevalence of asthma is increasing in most countries, especially among children. Asthma is a significant burden, not only in terms of health care costs but also of lost productivity and reduced participation in family life.

Asthma is a chronic inflammatory disorder of the airways in which many cells and cellular elements play a role. The chronic inflammation is associated with airway hiperres-sposiveness that leads to recurrent episodes of wheezing, breathlessness, chest tightness, and coughing, particularly at night or in the early morning. These episodes are usually associated with widespread, but variable, airflow obstruc-tion within the lung that is often reversible either spontaneously or with treatment.

Asthma is a problem worldwide, with an estimated 300 million affected individuals. It appears that the global prevalence of asthma ranges from 1% to 18% of the population in different countries. The World Health Organi-sation has estimated that 15 million disability-adjusted life years (DALYs) are lost due to asthma, representing 1% of the total global disease burden. Annual worldwide deaths from asthma have been estimated at 250.000 and mortality does not appear to correlate well with prevalence.

Asthma is most common chronic disease in the childhood.

A number of factors that influence a person's risk of developing asthma have been identified. These can be divided into host factors (primarily genetics, e.g. genes pre-disposing to atopy, genes pre-disposing to airway hyperresponsiveness, obesity, sex) and environmental factors (allergens indoor: domestic mite, furred animals, cockroach allergen, fungi, molds, yeasts and outdoor: pollens, fungi, molds, yeasts), infections-predominantly viral, tobacco smoke (passive and active smoking), outdoor and indoor air pollution, diet.

Host factors: Asthma has a heritable component, but it is not completely understood. Current data snow that multiple genes may be involved in the pathogenesis of asthma, and different genes may be involved in different ethnic groups. The search for genes linked to the development of asthma is focused on four major areas: production of allergen specific IgE antibodies (atopy), expression of airway hyper-responsiveness, generation of inflammatory mediators, such as cytokines, chemokines, and growth factors, and determination of the ratio between Th1 and Th2 immune responses.

In addition to genes that predispose to asthma are the genes that are associated with the response to asthma treatments. Variations of in the gene encoding the beta-adrenoreceptors have been linked to differences in subject's responses to beta2-agonists. Other genes of interests modify the responsiveness to glucocorticosteroids and leucotriene modifiers.

Environmental factors: There is some overlap between environmental factors that influence the risk of developing asthma and factors that cause asthma symptoms. Although indoor and outdoor allergens are well-known to cause asthma exacerbation, their specific role in the development of asthma is still not fully resolved.

The most common factors influencing development and expression of asthma are:

- Allergens:
  - Indoor: domestic mites, furred animals (dogs, cats, mice), kockroach allergen, fungi, molds, yeasts
  - Outdoor: Pollens, fungi, molds, yeasts,
- Infections (predominantly viral)
- Occupational sensitizers
- Tobacco smoke (passive and active smoking)
- Outdoor and indoor air pollution
- Diet

Exposure to tabacco smokes both prenatally and after birth is associated with measurable harmful effects including greater risk of developing asthma-like symptoms in early childhood.

It is estimated that 8-10% of school age children in Podgorica (the capital of Montenegro) have child asthma. The data about prevalence of child asthma in Montenegro are uncertain.

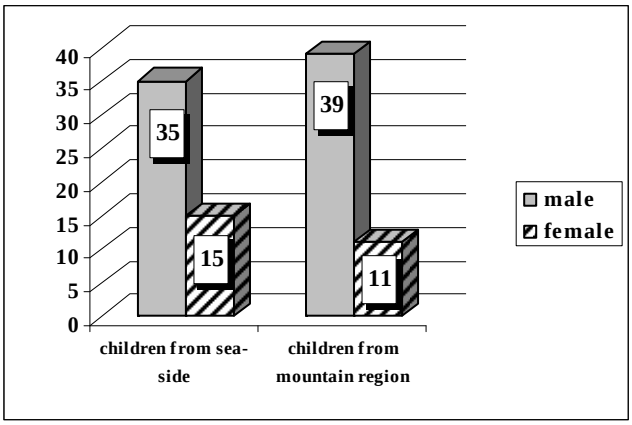
Material and methods:

The data about different aspects of child asthma in Montenegro were collected (different regions in Montenegro: 50 patients from sea-side and 50 patients mountain part of the country, both sexes, age 6-14) from 2004 to 2008 using questionnaire from Institute for Health Care of Mother and Children from Faculty of Medicine from Belgrade, Serbia. All of them had mild persistent asthma; diagnosis was done using international criteria. Total serum level of IgE antibodies were measured using ELISA tests. All of our patients were tested by allergic skin prick tests.

Results:

		Children from sea-side	Children from mountain region	X	P	
sex	Male	35	39	1.48	0.05	NS
	Female	15	11	1.48	0.05	NS

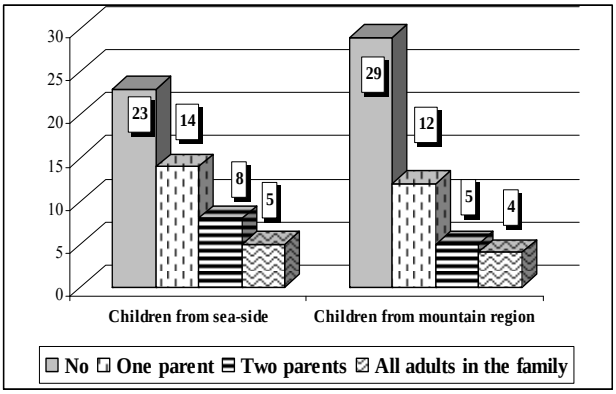
Table 1. Distribution of asthmatic children according sex



Graph 1. Distribution of asthmatic children according sex

Passive smoking	Childre n from sea-side	Children from mountain region	X	p	
No	23	29	1.60	0.05	NS
One parent	14	12	0.90	0.05	NS
Two parents	8	5	1.01	0.05	NS
All adults in the family	5	4	0.44	0.05	NS

Table 2. - Distribution of asthmatic children according to exposition to passive smoking



Graph 2. - Distribution of asthmatic children according to exposition to passive smoking

IgE-asthmatic children			IgE- healthy children from control group					
n1	X1	SD1	n2	X2	SD2	t	p	
50	181,14	63,42	30	73,8	20,37	6,98	0,01	VS

Table 3. - Comparison of serum levels of total serum IgE between asthmatic children and healthy children

Legend:
n1 – number of tested asthmatic children
n2 – number of children in control group
X1 – average values of total serum IgE in n1
X2 – average values of total serum IgE in n2
SD1 – standard deviation for X1
SD2 - standard deviation for X2

Dust from the bed- linen	Negative Mild positive reaction Strong positive reaction	39 1 0
Pollen of the grasse	Negative Mild positive reaction Strong positive reaction	34 1 5
Pollen of the trees	Negative Mild positive reaction Strong positive reaction	25 2 13
Pollen of the weeds	Negative Mild positive reaction Strong positive reaction	34 1 5
Feathers	Negative Mild positive reaction Strong positive reaction	37 1 2
Tobacco	Negative Mild positive reaction Strong positive reaction	38 1 1
Mold	Negative Mild positive reaction Strong positive reaction	40 0 0
Bacterial Allergens	Negative Mild positive reaction Strong positive reaction	38 1 1
House dust	Negative Mild positive reaction Strong positive reaction	0 15 25
Dermato-phagoides Pteronissinus	Negative Mild positive reaction Strong positive reaction	0 15 25

Table 4. - Results of skin tests of inhaled allergens of 40 tested asthmatic children

Discussion:

The most common environmental factor involved in the development of child asthma was domestic mite, without differences between two explored groups from different regions from Montenegro. The second one was pollen of trees. 90% of studied children had allergic asthma. Values of total serum level of IgE immunoglobulin were high at very high percent of tested asthmatic children. Around 90% of asthmatic children in Montenegro have allergic asthma.

Conclusion:

Most of children affected by child asthma in Montenegro have allergic asthma. All of them have atopy as a genetic risk factor. The most common environmental factors involved in the development of child asthma in Montenegro are house dust mite and outdoors allergens: pollen of trees and some grasses. It is necessary to continue investigations and make comparison with data from this issue from other countries.

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