
O. A. Golikova, E.B. Romantsova, A.F. Babtseva, O. B. Prihodko

Dynamics of allergic diseases in children of RS (Y) at the present stage

В статье отражена динамика распространенности аллергических заболеваний в зависимости от возраста детей и экологических условий проживания.

Ключевые слова: аллергические заболевания, распространенность, дети, возраст, экология.

In this article dynamics of prevalence of allergic diseases depending on age of children and ecological living conditions is shown.

Keywords: allergic diseases, prevalence, children, age, ecology.

Kapustina T.A., Markina A.N., Belova E.V.

**CHLAMYDIA CONTAMINATION IN UPPER RESPIRATORY TRACT IN
KRASNOYARSK REGION POPULATION**

State Scientific Research Institute of Northern Problems of
Siberian Division of Russian Academy of Medical Sciences, Krasnoyarsk, Russia
(headed by RAMS corresponding member Mr. V.T. Manchuk)

Abstract. The article shows the data on high prevalence of Chlamydia contamination in upper respiratory tract in different populations (in organized population, both children and adults, in patients with acute and chronic inflammatory diseases of nose, paranasal sinus and nasopharynx). Authors show species structure in identified Chlamydia in accordance with age and gender of the examined subjects.

Keywords: Chlamydia infection of upper respiratory tract, respiratory Chlamydiosis.

Relevance of the study. Researchers of the world during two last decades observe noticeable changes in the spectrum of the main agents of inflammatory diseases in upper respiratory tract with the increase of etiological meaning of intra-cellular infection, including Chlamydia [4, 8, 15 and many others].

The results of many research, devoted to founding and studying different types of Chlamydia, encouraged considerable shift of points of view of doctors and scientists on Chlamydia infection. It has been regarded not only as the agent of urinogenital system diseases. Numerous research allowed to define etiopathogenic meaning of Chlamydia infection in the nascency of diseases in central and peripheral nerve system, locomotor, cardio-vascular and bronchopulmonary systems, digestive tract, eyes [2, 6, 7, 11, 13, 14 and many others].

Since early 90-s Chlamydia as etiological factor attracted attention of Russian and foreign E.N.T. scientists. Unfortunately, the researchers focused mainly on the subjects, who are medical patients, but not the other groups of the population. Besides, the research is few and to great extent they are aimed only at studying the frequency of Chlamydia under different ENT pathology and Chlamydiosis different clinical signs. In many cases the results of the research show contradictory character. This opinion is based on large diapason in variance of infection frequency under different ENT pathology - from 7% to 74.4% [1, 3, 5, 10, 12].

The above-mentioned circumstances have caused the aim of the present research, namely determination of the prevalence and peculiarities of signs in Chlamydia contamination of upper respiratory tract in different segments of population.

Subject and methods of the research.

The subject of the research is organized urban population (Numbering 1 329 subjects. Out of them: 846 children and 483 adults) and ENT upper respiratory tract patients (Numbering 498 subjects. Out of them: 246 children and 252 adults) in ages from 3 to 60 years. The formation of samples of organized population was performed using the lists of children and adult of collective groups in different institutions (response - from 84.1% to 89.5%). Representative size of groups was determined by V.I.Paniotto (1982) [9] technique. Set samples were formed according to the presence/absence of respiratory Chlamydiosis. They were comparable by gender and age.

In order to study the frequency of Chlamydia infection in ENT, we examined out- and in-patients of ENT Department of SSRI NP SD RAMS, who received treatment because of inefficiency of treatment under polyclinics conditions. Formation of main and control groups with different diseases was performed by the method of sequential accumulation of patients up to

the number necessary for receiving statistically meaningful characteristics for the presence or absence of Chlamydia infection. The compared groups were homogenous in age and gender.

Laboratory methods of research included identification of: Chlamydia trachomatis (CT) and Chlamydophila pneumoniae (CP). We used single method to identify Chlamydia in organized population, namely direct immune fluorescent analysis. Verifications of Chlamydia infection in the patients were performed by simultaneous implementation of 3 tests: direct immune fluorescent analysis (to reveal Chlamydia antigens), polymerase chain reaction (to reveal Chlamydia DNA) and immune enzyme analysis (to reveal Chlamydia antigens). Immune fluorescent analysis was carried out with “ChlamySlide” (“Galart” - Diagnostikum) test system. “VectorChlamy-DNA-amli” and “ChlamBest-strip” (“Vector-Best”) were used for polymerase-chain reaction and immune enzyme analysis.

To describe binaural signs we calculated their relative frequencies and 95% confidence interval (95% CI). Estimation of significance of differences between main indices was carried out by Student’s t-criterion, Fisher’s exact criterion and χ^2 criterion. The quantity for error maximum probability of 1 genus (p) was accepted as index equal or less than 0.05.

Results and discussions

In cumulative group of organized children Chlamydia antigens were found in 14.2% subjects (Table 1). Taking into account age distribution of urban population in Russian Federation, standardized index was lower and approached 12.9%. CP as monoinfection was diagnosed in 8.5%, CT - in 2.4% children. Simultaneous presence of both types was marked in 3.3% cases. In the structure of identified types the share of chlamydophilic infection was twice more than CT (in 67.6% cases against 32.4%). It was diagnosed in 11.8% children, but CT was revealed in 5.7% subjects.

Chlamydia contamination in mucosa of upper respiratory tract was influenced by the age of a child (Table 1). The highest percentage of infected children was marked in pre-school ages (in 24.8%). Chlamydia was less frequent in early school ages (in 14.7%). Much more rarely they were identified in senior schoolchildren (in 7.7%). In pre-school and early school ages and also in cumulative children group CP was verified significantly more often ($p < 0.01$): in 20.7% and 12.8 % against 8.3% and 6.1% correspondingly as compared to identified CT. In ages 12 to 17 we didn’t marked the differences in between the frequency of CP (in 5.1%) and CT (in 3.4%) ($p = 0.4$). The presence of gender peculiarities in Chlamydia contamination in children of different ages was not proved.

Chlamydia in children leads to high probability of ENT-pathology. It has been proven by the fact of higher percentage of diseases in children with identified Chlamydia as compared to

the children without confirmed infection ($p < 0.001$): in 72.5% (95% CI 67.8 – 83.0) against 38.6% (95% CI 35.1 – 42.1). We marked higher level of both acute (in 37.5% against 12.3%, $p < 0.001$) and chronic pathology (35.0% against 26.3%, $p = 0.05$). Higher frequency of acute diseases in different phases of inflammatory process activity in Chlamydia infection was based upon the prevailing of rhinopharyngitis (in 31.0% against 9.6%, $p < 0.001$) and rhinitis (in 6.7% against 2.6%, $p = 0.04$). Differences in the prevalence of chronic ENT pathology were caused by pharynx diseases (in 30.0% against 18.9%, $p = 0.01$), such as adenoiditis (in 11.7% against 4.8%, $p = 0.01$) and hypertrophy of palatine tonsils (in 8.3% against 2.2%, $p = 0.004$).

Higher level of common ENT-pathology in Chlamydia infected children took place in all age categories due to the higher level of acute diseases: rhinopharyngitis in pre-school and early school ages (16.7 – 36.1% against 2.2 – 11.9%) and rhinitis in senior schoolchildren (in 11.1% against 1.4%). Besides, pharynx chronic pathology was diagnosed more often in the last ones (in 27.3% against 11.1%).

Chlamydia contamination of upper respiratory tract mucosa in adults of employable age was found in 11.0% of the subjects (Chart 2). Standardized index was 10.4%. CP as monoinfection was diagnosed in 5.6% subjects and CT – in 3.1%. Chlamydia mixed infection took place in 2.3% subjects. In the structure of identified Chlamydia types, the share of chlamydropilic infection was almost 1.5 times higher than CT share and amounted to 59.4%.

We didn't reveal that Chlamydia contamination frequency depend on age. In groups from 18 to 29 years of age and from 30 to 60 years Chlamydia was identified in 12.7% and 9.5% ($p = 0.3$) correspondingly. But Chlamydia mixed infection was more often marked in ages before 30 years (Table 2). We revealed gender specifics, which was shown by more frequent Chlamydia contamination in females (15.1% in females against 7.9% in males, $p = 0.01$) due to CT monoinfection (4.9% against 1,8%).

In both adults and children with verified Chlamydia infection ENT pathology was diagnosed more often as compared to non-infected subjects ($p = 0.01$): in 52.8% (95% CI 39.5 – 66.0) against 33.0% (95% CI 28.7 – 37.5). As opposed to children, adults showed differences in totals for the revealed ENT-pathology based only upon prevailing of chronic diseases (in 41.5% against 27.2%, $p = 0.04$) on the account of higher level of pharynx diseases (in 30.2% against 13.3%, $p = 0.004$), chronic tonsillitis in particular (in 11.3% against 2.8%, $p = 0.02$).

Age peculiarities in the frequency of ENT-pathology were manifested not only by higher number of ENT-diseases as a whole in subjects with identified Chlamydia in ages from 18 to 29 years and from 30 to 60 as compared to non-infected subjects (in 52.0 – 53.6% against 32.6 – 33.3%). They were manifested as well by higher levels of chronic pathology ($p = 0.04$) in a group

older than 30 years of ages on the account of pharynx diseases (in 40.0% against 15.6%, $p=0.01$), tonsillitis in particular (in 12.0% against 2.1%, $p=0.05$).

In 27.5% children and in 47.2% adults with identified Chlamydia antigens there was no observed pathology of ENT-organs. The absence of clinical symptoms under the marked presence of Chlamydia can be caused by the development of persisting infection, hardly diagnosed by laboratory means or by the possibility of transitor carrying infection or false-positive character of laboratory test.

Complex laboratory tests had allowed to reveal high indices in the frequency of Chlamydia infection in children with acute maxillary sinusitis, exacerbation of chronic adenoiditis and hypertrophy of pharyngeal tonsil: correspondingly in 48.5% (95% CI 36.6-60.5), in 53.9% (95% CI 45.3-62.4) and in 50.3% (95% CI 42.9-57.7) cases. In adults Chlamydia were registered less frequent than in children in acute purulent maxillary sinusitis, exacerbation of chronic purulent maxillary sinusitis and different forms of chronic rhinitis: correspondingly in 39.1% (95% CI 25.7-53.5), in 33.0% (95% CI 23.6-43.1) and in 40.7% (95% CI 32.0-49.6).

In both patients and organized population the structure of verified Chlamydia showed the dominance of CP. Its share prevailed 1.5 times in children and 2 times in adults in accordance with nosology as compared to CT share. Age differences were marked in children with hypertrophy of pharyngeal tonsil so as Chlamydia were significantly more frequent in pre-schoolchildren (in 60.5% against 39.0% in schoolchildren of 7 to 17 years of age, $p=0.01$) and in adults older than 30 years of age with exacerbation of chronic maxillary sinusitis (in 57.1% against 17.0% in subjects of 18 to 29 years of age, $p<0.001$).

Conclusion

So, the results of the research showed high prevalence of respiratory Chlamydiosis in mucosa of upper respiratory tract in organized population (in 14.2% children and in 11.0% adults) in patients with different pathology of nose, paranasal sinus and pharynx (in 48.5%-53.9% in children and in 33.0%-40.7% in adults).

In children the frequency of Chlamydia verification was less in elder ages (from 24.8% in pre-schoolchildren to 7.7% in senior schoolchildren). As compared to senior schoolchildren with the same frequency of CP and CT, preschoolchildren and junior schoolchildren were more infected with Chlamydia. In adults disregard the age CP prevailed. CP and CT simultaneously were revealed more often in subjects younger than 30 years of age. Chlamydia in females were revealed considerably more often on the account of CT monoinfection.

Chlamydia contamination in upper respiratory tract in organized population determines the tendency to more frequent ENT-pathology as compared to non-infected subjects on the account

of prevailing acute and chronic diseases in children, chronic diseases in adults. Differences in frequency of chronic pathology are caused by pharynx pathology on the account of adenoiditis and hypertrophy of palatine tonsils in children and on the account on tonsillitis in adults.

SUMMARY

1. We marked high frequency of Chlamydia contamination in mucosa of upper respiratory tract in organized children and adult groups (correspondingly in 14.2% and 11.0%, standardized indices 12.9% and 10.4%), in patients with different pathology of nose, paranasal sinuses and pharynx (in 48.5%-53.9% in children and in 33.0%-40.7% in adults).

2. The higher was the age of children, the smaller was the frequency of Chlamydia verification (from 24.8% in pre-school children to 7.7% in secondary school children).

3. Unlike schoolchildren of final classes (in whom CP and CT were revealed with the same frequency) pre-schoolchildren and junior schoolchildren were infected with Chlamydia more frequently (in 20.7% and in 12.8% against 8.3% and in 6.1% correspondingly).

4. In adults irrespective of the age CP infection prevailed. Simultaneous CP and CT infection was revealed more often in subjects younger than 30 years of age (in 4.1% against 0.8% in subjects of senior ages).

5. Considerably more often Chlamydia was found in female subjects (in 15.1% against 7.9% male) on the account of mono infection with *C.trachomatis* (in 4.9% against 1.8%).

REFERENCES

1. Belova E.V. Clinical epidemiological aspects of Chlamydia infection in upper respiratory tract in children: abstract to MD thesis. Krasnoyarsk., 2008. - 22 p.
2. Gavalov S.M. Chlamydiosis – disbiosis. Integral interrelations. Novosibirsk: RTP, 2003. 220 p.
3. Kapustina T.A. [et al.] Immunity peculiarities in upper respiratory tract pathology of Chlamydia etiology / T.A. Kapustina [et al]. // Journal of microbiology, epidemiology and immunobiology. - 2008. - № 3. - P. 94-96.
4. Layko A.A., Bredun A.Y., Yanovskaya V.G.. The role of Chlamydia infection in chronic pathology of paranasal sinus in children // Journal of ENT diseases. 2004. №1. P. 40- 43.
5. Lihanova M.A., Mingalev R.N., Lebedeva R.N. The role of Chlamydia infection in allergic rhinosinusopathy // Otolaryngology Bulletin. 2006. №5. P. 244-245.
6. Molochkov V.A. Urinogenital Chlamydiosis. M.: Medizina, 2006. 208p.
7. Nonikov V.E. Lung Chlamydiosis: diagnostics and treatment // Consilium medicum. 2007. №10. P. 46-48.

8. Palchun V.T., Gurov A.V., Chivkin V.Y. The role of Chlamydia and mycoplasmal infection in upper respiratory tract diseases // Otolaryngology Bulletin. 2006. № 5. P. 60-61.
9. Paniotto V.I., Maksimenko V.S. Quantitative methods in sociologic research. Kiev: The Health 1982. 160 p.
10. Sidorchuk S.N. Clinical immune peculiarities, diagnosis and treatment of pneumo chlamydiosis in young ages: abstract to MD thesis. SPb., 2004. 21 p.
11. Sidorenko I.V. The position of atypical flora in the etiology of chronic sinusitis and its diagnostics by PCR method // Russian rhinology. 2004. №4. P. 32-34.
12. Andersen P. Pathogenesis of lower respiratory tract infections due to Chlamydia, Mycoplasma, Legionella and viruses / P. Andersen // Thorax. - 1998. - Vol.53, - №4. - P. 302-307.
13. Association of Clamydia pneumoniae and acute coronary heart diseases events in non-insulin dependent diabetic and non-diabetic subject in Finland / H. Mettinen [et al.] // Eur. Heart J. - 1996. - V. 17. - P. 682-688.
14. Chlamydophila pneumoniae infection in adult asthmatics patients / A. Kocabas [et al.] // J. Asthma. - 2008. - V. 45. - P. 39-43.
15. Principi N. Mycoplasma pneumoniae and Chlamydia pneumoniae cause lower respiratory tract disease in paediatric patients / N. Principi, S. Esposito // Curr. Opin. Infect. Dis. - 2002. - V.15. - №3. - P. 295-300.

Table 1

The prevalence of different types of Chlamydia infections in organized children

Age group, its volume	Mono infection with Chlamydophila pneumoniae		Mono infection with Chlamydia trachomatis		Chlamydia mixed infection		Total for children with verified Chlamydia	
	n	%, 95% CI	n	%, 95% CI	n	%, 95% CI	n	%, 95% CI
Group 1 3-6 years (n=121)	20	16.5 10.5-23.5 $p_{1-2}=0.01$ $p_{1-3}<0.001$	5	4.1 1.3-8.4 $p_{1-2}=0.2$ $p_{1-3}=0.4$	5	4.1 1.3-8.4 $p_{1-2}=0.9$ $p_{1-3}=0.04$	30	24.8 17.5-32.8 $p_{1-2}=0.01$ $p_{1-3}<0.001$
Group 2 7-11 years (n=491)	42	8.6 6.2-11.2 $p_{2-3}=0.03$	9	1,8 0.8-3.2 $p_{2-3}=0.5$	21	4.3 2.7-6.2 $p_{2-3}=0.003$	72	14,7 11.7-17.9 $p_{2-3}<0.001$
Group 3 12-17 years (n=234)	10	4.3 2.1-7.2	6	2.6 0.9-5.0	2	0.9 0.1-2.4	18	7.7 4.6-11.4
Total (n=846)	72	8.5 6.7-10.5	20	2.4 1.4-3.5	28	3.3 2.2-4.6	120	14.2 11.9-16.6

Note: p is statistical meaning for the differences between children in different age groups as per Student's criterion and exact Fisher's criterion.

Table 2

The prevalence of Chlamydia infection in
adults of employable age

Age group, its volume	Mono infection with Chlamydophila pneumoniae		Mono infection with Chlamydia trachomatis		Chlamydia mixed infection		Total for children with verified Chlamydia	
	n	%, 95% CI	n	%, 95% CI	n	%, 95% CI	n	%, 95% CI
Group 1: 18 - 29 years (n=221)	11	5.0 2.5-8.2 $p_{1-2}=0.6$	8	3.6 1.6-6.5 $p_{1-2}=0.6$	9	4.1 1.9-7.1 $p_{1-2}=0.01$	28	12.7 8.6-17.4 $p_{1-2}=0.3$
Group 2: 30 - 60 years (n=262)	16	6.1 3.5-9.3	7	2.7 1.1-5	2	0.8 0.1-2.2	25	9.5 6.3-13.4
Total (n=483)	27	5.6 3.7-7.8	15	3.1 1.7-4.8	11	2.3 1.1-3.8	53	11.0 8.3-14.0

Note: p is statistical meaning for the differences between children in different age groups as per Student's criterion and exact Fisher's criterion.

Authors' signatures.

- KAPUSTINA Tatiana Anatolievna – full professor of Medicine, leading scientist in Ecological Pathology Department of SSRI NP SD RAMS
- MARKINA Anjela Nikolaevna, senior scientist of Ecological Pathology Department of SSRI NP SD RAMS.
- BELOVA Elena Valentinovna, MD , senior scientist of Ecological Pathology Department of SSRI NP SD RAMS.

Author to contact with:

KAPUSTINA Tatiana Anatolievna, Russian, 660017, Krasnoyarsk, ul.Dubrovinskogo, d.106, kv.193, office phone number is +7 391 228 06 58, phone - 8-908-021-9902

E-mail: TAK34@yandex.ru (home) and rsimpn@scn.ru (office).

A.L. Timofeev

The social status of the population of rural settlement in territory of city district Yakutsk (on an example of v. Magan)

Представлена оценка социального статуса населения сельского поселения на территории городского округа «Якутск».

Ключевые слова: социально-демографические показатели, жилищно-бытовые условия, совокупный семейный доход.

An assessment of the social status of the population of rural settlement in the city district "Yakutsk" territory is presented.

Keywords: socio-demographic characteristics, living conditions, the total family income.

Author's Data: Timofeev Artem Leonidovich - the general practitioner, the head of Magansky branch MU «YGB № 2»