

# The possibility of using CARAT questionnaire for reening of llergic rhinitis and asthma

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## ABSTRACT

allergic rhinitis and asthma (ARIA) – disease of inflammatory genesis and often associated with lack of control of these diseases that cause a significant reduction in quality of life for the patient and important social and economic burden [1,2]. According to international recommendations, disease control is a major challenge in the treatment of allergic diseases of respiratory way [1,3]. Guidelines "Allergic rhinitis and its impact on asthma (ARIA)" [1] stressed the importance of a comprehensive approach for assessment and control of ARA. Thus, in the fight against disease, the problem should be considered at the same time as the pathology of the upper and lower respiratory ways [4].Based on definition of control of asthma from the Global initiative of asthma [3], control over a chronic disease can be characterized so: patients feel the minimum symptoms, seldom need preparations of so-called ambulance, all physiological functions are close to norm, so patients don't experience restrictions in activity and extremely seldom have aggravations.By 2009 some questionnaires on quality of life of the patient, symptoms and weight in points [5-9], also some questionnaires were developed for an assessment of control of a disease [10-13]. To a lesser extent the same occurred and for allergic rhinitis [14-16]. Nevertheless, it wasn't developed any questionnaire for simultaneous control of asthma and allergic rhinitis. Actually, only Rhinasthma [15] made attempt, but the questionnaire was intended for an assessment of the quality of life connected with influence of these diseases.

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## Introduction:

allergic rhinitis and asthma (ARIA) – disease of inflammatory genesis and often associated with lack of control of these diseases that cause a significant reduction in quality of life for the patient and important social and economic burden [1,2]. According to international recommendations, disease control is a major challenge in the treatment of allergic diseases of respiratory way [1,3]. Guidelines "Allergic rhinitis and its impact on asthma (ARIA)" [1] stressed the importance of a comprehensive approach for assessment and control of ARA. Thus, in the fight against disease, the problem should be considered at the same time as the pathology of the

upper and lower respiratory ways [4].Based on definition of control of asthma from the Global initiative of asthma [3], control over a chronic disease can be characterized so: patients feel the minimum symptoms, seldom need preparations of so-called ambulance, all physiological functions are close to norm, so patients don't experience restrictions in activity and extremely seldom have aggravations.By 2009 some questionnaires on quality of life of the patient, symptoms and weight in points [5-9], also some questionnaires were developed for an assessment of control of a disease [10-13]. To a lesser extent the same occurred and for allergic rhinitis [14-16]. Nevertheless, it wasn't developed any questionnaire for simultaneous control of asthma

and allergic rhinitis. Actually, only Rhinasthma [15] made attempt, but the questionnaire was intended for an assessment of the quality of life connected with influence of these diseases. In the same time there was the first publication which described the tool for simultaneous control of symptoms of allergic rhinitis and asthma in the form of test (CARAT). The CARAT developers checked some questionnaires to estimate control of rhinitis [17,18] and asthmas [19,20]. Researches of that time strengthened relations of rhinitis and asthma, and ARIA more than 10 years recommended simultaneous estimates and managements of these diseases [21,22]. Also there were researches which likely indicated the need of creations of the universal questionnaire. In cross research of patients with asthma from 85 establishments of primary medical care in the United Kingdom, rhinitis was identified as the main predictor of bad control of asthma [23]. Besides, data from the Western Sweden on research of asthma connect extent of control of symptoms of rhinitis with risk of emergence or clinically imperceptible several symptoms of asthma [24]. After creation of the questionnaire in 2009 cross research was made in which researchers carried out the factorial analysis with the aim to reduce the questionnaire and to estimate its suitability in daily practice. CARAT 10 (that is the 10th viewing) was created [25]. Subsequently the questionnaire was offered as the first tool for realization of the principles of ARIA in clinical practice [26], after all to serve the set purpose; this tool has to have the corresponding properties for an assessment of asthma and allergic rhinitis prolonged in time. For the proof of effectiveness research in 4 Portuguese central hospitals was conducted. At the initial examination and re-examination (4-6 weeks interval) patients completed CARAT 10 and complete clinical and laboratory examination. From the 62 patients included in the study, 51 patients completely filled out the questionnaire during both visits. Reliability of retesting computed as the correlation coefficient within the class and was equal to 0.82. As for the response to treatment in clinically unstable patients, it was 95% ( $p = 0.002$ ), and sensitivity by Guyatt index was 1.54. As for an assessment longitudinal actions, coefficients of correlation of changes of indicators were in the range from 0,49 to 0,65 while with an assessment of the doctor they fluctuated from 0,31 to 0,41. So these researches showed that CARAT 10

has good reliability of results at repeated testing, and is suitable for long researches in time. Also it can be used for an assessment of control of allergic rhinitis and asthma, both for comparison of groups in clinical trials and for an assessment of certain patients in clinical practice [27]. So since 2012 the questionnaire of CARAT is applied in many European countries as a stage of primary survey by the family doctor to the best differential diagnostics, and to monitoring of progressing of an illness and adequacy of basic therapy and preparations of ambulance. Eventually concept "one respiratory way - one illness" was transformed to the plane of allergic rhinitis and its influence on asthma (ARIA), combining the safe and effective treatment of both diseases focused on optimum control of symptoms both at adults, and at children [28]. By 2014 some more questionnaires for control separately of asthma [29-31] or rhinitis [32,33] at adults were offered. For children the Practical Allergy (PRACTALL) [34] also created some questionnaires for children with asthma [35-38]. But still nobody undertook to estimate control of rhinitis. For the solution of this problem researchers aimed the forces at the development of CARATkids - questionnaires for a simultaneous assessment of control of allergic rhinitis and bronchial asthma at children aged till 12 years. In Russia it was prepared a questionnaire for children from 4 to 12 years with 17 questions with illustrations and an answer with dichotomizing format (yes/no). 29 answers were received from children and their trustees. The so-called share of the agreement between parents and children made 61%. That is parents in rather considerable degree imposed an assessment of symptoms to the children. It once again confirmed need of creation of a questionnaire for patients of early age. The preliminary conclusions of research are as follows: picture illustrating action, but not mood are extremely useful and informative. Reliable it is possible to consider answers of children of 6 years as they well understand all words about which asked in the questionnaire [39]. As still there is no evidential base on absolute truthfulness of results of the questionnaire for children, we, yet, can't use CARATkids in daily practice. But this fact doesn't disprove suppressing effectiveness and efficiency of Carat for adults.

#### **Purpose:**

introduction in daily practice to doctors of primary and secondary link of delivery of health care the test control of allergic rhinitis and asthma (CARAT).

### Materials and methods of research:

At a stage of screening by the family doctor, we distributed 29 questionnaires to patients aged from 12 till 18 years which were passive smokers or had:

- The family anamnesis burdened by an atopiya;
- The relapsing broncho-obstructive syndrome;
- Frequent and long rhinosinusitis (>3 weeks);
- Eosinophilia (< 20%) at the carried-out dehelminthization;

Parents of respondents asked not to help patients with answers. Irrespective of result of the questionnaire, all respondents were examined by the allergist for confirmation or a denial of the possible diagnosis of respiratory alergoz. For each patient allergologic history was collected and physical examination was carried out. Also to each child skin prik-tests with mixed allergens pollen No. 1,2,3,4 and mixed allergen household No. 5 by means of lancets for the rotational prik-test of 1 type of "Immunolog" firm were made. During other part of research, the treating allergologist distributed 40 questionnaires to patients at the age of 12-18 years, with already established diagnosis of allergic rhinitis and/or bronchial asthma. At repeated visit (in 3 months), 34 patients who strictly adhered to appointments, physical examination and repeated re-survey of CARAT was conducted.

### Results and discussion:

At the first stage from 29 patients directed to the allergist two (7%) were found with the positive test for allergic rhinitis and asthma (CARAT). But only at one the sensitization to household allergens was confirmed and the diagnosis allergic year-round rhinitis is established. In the others 27 (93%) patients, with negative skin tests and the negative CARAT test, it wasn't revealed signs respiratory to an alergoz. Consultation of adjacent experts for continuation of diagnostic search was recommended to these patients. At the second investigation phase, during the next survey the allergist, the following results were received:- 11

(32%) from 34 patients subjectively estimated the condition showed results of a questionnaire better. From what we can draw a conclusion that patients got used to a new way of life with an illness and expedient will compare quality of life of the patient in dynamics, but not in comparison with the healthy person.- 7 (20%) patients had to a bronchial asthma and had manifestations of year-round allergic rhinitis which needed additional treatment, with taking into consideration the fact that rhinitis can disturb full control of bronchial asthma.- In 14 (41%) respondents - results of the second survey significantly (more than 3 points) differed from the first that caused correction of basic therapy.

### Conclusions: Thus, CARAT:

- Gives one more opportunity of control of the course of respiratory alergoz and selection of an adequate dose and frequency rate of drug intake;
- At patients with bronchial asthma and the accompanying allergic rhinitis beforehand reminds about need of monitoring or even treatment of the accompanying allergic rhinitis;
- improves compliance and building of partnerships "patient - doctor";
- Gives the chance quickly and cheap to help with screening of respiratory alergoz at an initial stage of delivery of health care as shows high reliability of results (93%).

### Prospects for further research:

At the moment in Ukraine other questionnaires which help to control the course of bronchial asthma or allergic rhinitis and bronchial asthma at the same time are registered. Therefore the purpose of further researches is to compare these questionnaires from CARAT profiles and identification of that that gives the most probable results, it is available and clear for children and fast in filling.

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