Analysis of clinical characteristics of non-allergic rhinitis of children

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Abstract. Purpose: This study aims to discuss clinical manifestations of non-allergic rhinitis (non-allergic rhinitis, NAR) children patients aged 15 years old or younger and their inducement, comorbid diseases, family medical history and quality of life and to analyze clinical characteristics of children of different age groups so as to provide clinical evidence for the improvement of NAR children patients' comprehensive diagnosis and treatment. Method: Questionnaires were issued to 74 children patients diagnosed with NAR between June, 2014 and June, 2015 and all of them had the specialized examination of nasal cavity. The standardized 100-point visual analogue scale (VAS) was used as the symptoms survey scale to evaluate the severity of symptoms. Those patients surveyed were divided into two groups: Group A of preschool children under 6 years old and Group B of school-age children under 15 years old. Lateral comparison was done for severity of symptoms of single sample so as to reduce the subjective factors. After that, symptom characteristics of both groups were compared and SPSS 13.0 was also used to finish the statistical analysis. Results: The occurrence rate of sneezing, nasal mucus, nasal obstruction and nasal blockage of NAR children patients was 86.49%, 84.60%, 91.20% and 73.65% respectively. The most serious symptom of children of Group A was nasal obstruction and its occurrence rate was higher than that of Group B. The difference had statistical significance ($x2=19.194$, $P<0.05$). These two groups had no significant difference in terms of sneezing and nasal blockage ($x2=0.474$, $x2=0.048$, $P>0.05$). The most serious symptom of children of Group B was nasal mucus and its occurrence rate was higher than that of Group A. The difference had statistical significance ($x2=16.92$, $P<0.05$). Conclusion: Characteristics of NAR clinical symptoms of children under 6 years old (including 6 years old) and children above 6 years old were different. The acquisition of concomitant symptoms, inducements and other clinical data of children NAR can provide a reference for improving the comprehensive diagnosis and treatment level of children NAR.

1 Instruction

The prevalence rate of non-allergic rhinitis (NAR) of children gets higher year by year in the world. According to the clinical diagnostic standard, its allergen test is negative. During the attack, the nasal cavity will be in a high reaction condition, showing some clinical symptoms such as nasal blockage, sneezing, watery nasal mucus and nasal obstruction, which can strongly affect physical and psychological health of the children [2]. However, NAR children patients usually do not show atypical clinical manifestations and they rarely tell that to their parents. Besides, parents or children often overlook that, which will lead to the delayed treatment. This study adopts the way of questionnaire survey and the standardized visual analogue scale (VAS) to evaluate clinical features of NAR children

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patients and to analyze clinical characteristics of children at different ages. This will provide clinical basis for more accurate diagnosis.

2 Materials and methods

2.1 Clinical data

74 cases of NAR children patients were included in our study from June 2014 to June 2015. 50 male cases and 44 female cases were included. The study was approved by the institutional review board of China-Japan Union Hospital. All the participants provided written informed consent before the study.

Inclusion criteria: (1) Main symptoms include nasal blockage, sneezing, much watery nasal discharge and nasal obstruction. They have suffered the disease for four weeks. (2) The specialized examination of their nasal cavities show that they have pale nasal mucosa, oedematous and watery nasal discharge. (3) Their skin prick test is negative. (4) They are aged under 15 years old (including 15 years old) and the youngest child is 3 years old.

Exclusion criteria: (1) They have suffered from acute upper respiratory infection, infantile pneumonia and other infectious diseases for the nearest two weeks. (2) Some patients are suffering from congenital heart disease, chronic bronchitis, amygdalitis, autoimmunity disease and other diseases.

Groups divided according to the age sections: Children patients are divided into two groups: one is for preschool children under 6 years old and the other is for school-age children under 15 years old.

2.2 Survey methods

Questionnaire survey. Refer to researches of international children asthma and allergic diseases (ISAAC) and concrete conditions. Children patients or their parents shall fill in basic situations, symptoms and signs, concomitant diseases, inducement, family disease history and living quality evaluation. Besides, standardized VAS (0—100 points) method is used to evaluate the severity of symptoms.

2.3 Statistical method

The highest score of all symptoms in standardized VAS of single case is evaluated as positive. In order to reduce influence of subjective factors, SPSS 13.0 is used for analysis and the experimental results are shown as percentage. x^2 test is adopted to compare results of the two groups. $P<0.05$ means that the result is meaningful.

3 Results

3.1 Clinical symptoms

The occurrence rate of sneezing, nasal mucus, nasal obstruction and nasal blockage of NAR children patients is 86.49%, 84.60%, 91.20% and 73.65%respectively.

II. Clinical symptoms of preschool children and school-age children

The most serious symptom of children patients in preschool group is nasal obstruction and its occurrence rate is higher than that of Group B. The difference shows statistical significance ($x2=19.194$, $P<0.05$). Both groups have no significant difference in terms of nasal blockage and sneezing ($x2=0.474$, $x2=0.048$, $P>0.05$). The most serious symptom of children patients in school-age group is nasal mucus and its occurrence rate is higher than that of Group A. the difference has statistical significance ($x^2=16.92$, $P<0.05$).

Table 1. The relationship between AR clinical symptoms of children of ~ 6 years old and those of children of ~ 15 years old

Group Total	cases	Nasal obstruction	Nasal mucus	Sneezing	blockage
~6 years old	26	22	19	18	21
~15 years old	48	42	25	28	40
x2		19.194	16.92	0.474	0.048
P		<0.05	<0.05	>0.05	>0.05

Discussion

NAR can greatly damage living quality and daily activities of children [1]. Moreover, NAR of children is closely related to their asthma. Researches have proved that the occurrence rate of asthma in hyper-responsiveness rhinitis children patients is 2 to 7 times higher than that of common people [2]. However, great variation exists in NAR clinical symptoms of children and those symptoms are often ignored by their parents and children patients, which will bring certain difficulty to NAR diagnosis and treatment. In 2004, some scholars conducted related investigations to NAR of children aged 9~10 years old in Nanjing and the results showed that the occurrence rate of sneezing, nasal discharge, nasal obstruction and nasal blockage was 37.7%, 44.4%, 29.0%, 15.6% respectively [3]. This study investigated children under 15 years old (including 15 years old) and made statistics about their nasal symptoms, eye symptoms, coughing and chest symptoms. Statistical results showed that the occurrence rate of main clinical symptoms was high and the occurrence rate of sneezing, nasal mucus, nasal obstruction and nasal blockage was 89.19%, 93.24%, 91.89% and 73.65% respectively. In addition, researches of Kemp and other experts also showed that the common symptom of preschool children was nasal obstruction [4]. This survey also suggested that clinical symptoms of NAR children patients at preschool stage and school-age stage were also different. Except for sneezing and nasal blockage, the main symptom of preschool children patients is nasal obstruction while that of the school-age children patients is nasal mucus. Children with NAR shall be diagnosed and treated as early as possible so that their NAR development can be controlled and the occurrence of complications can be avoided or decreased.

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