Characteristics of Rhinitis in Children in ORL-HNS Clinic of Hasan Sadikin Hospital Indonesia

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ABSTRACT----

Background : Rhinitis is a common problem in children and adolescent that cause negative impacts on physical, social and psychological. Its prevalence is increased. Rhinitis is an inflammation of nasal epithelium which is characterized by nasal discharge, nasal obstruction, sneezing and nasal itching. It is classified into allergic rhinitis, infectious rhinitis and non-allergic non-infectious rhinitis. Rhinitis has comorbidities such as conjunctivitis, asthma, impaired hearing, rhinosinusitis, and sleep problems

Purpose : To provide characteristic of rhinitis in pediatric population. Methods : This study is a descriptive study that was conducted at ORL-HNS clinic Hasan Sadikin Hospital during the period of January 2013-December 2013. The classification was based on Pediatric Rhinitis Position Paper of EAACI. There were 101 patient which age is range from 3-18 years old. The diagnosed based on anamnesis, physical examination, and skin prick test. Results : Most of the patient 48,3% was classified as allergic rhinitis. Followed by infectious rhinitis 37,3%, and non-allergic non-infectious rhinitis 25.2%. As a comorbidity conjunctivitis was found in 20,7% patients, rhinosinusitis 37,6%, asthma 5,9%, impaired hearing 19,8%, and sleep-problems 32,6%. Most common therapy was oral antihistamine 80,1% and intranasal corticosteroid 52,4%.

Conclusion: Allergic rhinitis was the most prevalent classification in pediatric rhinitis patient at ORL-HNS clinic Hasan Sadikin Hospital according to Pediatric Rhinitis Position Paper of EAACI. There was significant correlation between nasal obstruction and sleep problems.

Keywords--- rhinitis, children, adolescents, characteristic

1. INTRODUCTION

Rhinitis is a common problem in children and adolescent that cause negative impacts on physical, social and psychological. Its prevalence is increased. Rhinitis is an inflammation of nasal epithelium which is characterized by nasal discharge, nasal obstruction, sneezing and nasal itching.[1]

In childhood, rhinitis become problem that its prevalence is increasing. Based on ISAAC study (International Study of Asthma and Allergies in Childhood), prevalence of rhinitis globally in children 6-7 years old varied in range 2,2% in Iran to 24,2% in Taiwan. In 13-14 years old its range 4,8% in Indonesia to 45,1% in Paraguay.[2]

In Arifianto dan Madiadipoera research in 2012, number of allergic rhinitis patients visiting rhinology-allergy clinic of Otolaryngology head and neck surgery department in Hasan Sadikin hospital was 134 pasients (57 male and 77 female) with classification <14 years old 35%, 15-24 years old 54% , >44 years old 11,1%. Prevalence in age less than 14 years old in 2012 was 35%.[3]

Rhinitis is classified into allergic rhinitis, infectious rhinitis and non-allergic non-infectious rhinitis based on *Pediatric Rhinitis Position Paper of EAACI*.[1] Group of age in childhood rhinitis divided into preschool age, school age, and adolescence.[1] Allergic rhinitis is the most prevalent from non-infectious rhinitis and related with immune response mediated by IgE towards allergen. Allergens in allergic rhinitis are house dust mites, cockroach, animal danders (cat, dog, horse, chicken), pollen (rice, corn) and fungi. ARIA WHO classified allergic rhinitis into intermittent or persistent depend on its frequency and mild or moderate-severe depend on severity of allergy to quality of patient's life.[2] Allergic rhinitis was initiated by allergen exposure at the sensitization phase that affect the formation of IgE production which makes activated mast cell to become granulated. Then it is releasing histamin and other inflammatory mediators.[2]

Those allergic reaction can cause nasal symptoms such as nasal discharge, sneezing, nasal obstruction, nasal itching, and ephipora.[5,6] Allergic rhinitis is part of allergic march in children. Allergic march is a sequence of allergic events in accordance with the age patient. Those are food allergy (gastrointestinal), eczema, asthma, and allergic rhinitis.[7,8]

Infectious rhinitis is viral infection or bacterial infection and sometimes fungal. Children can have several episodes of respiratory tract. For example, children can have up to eleven times upper respiratory tract infection during

infancy in a year, eight times in preschool age and four times in school age. Infectious rhinitis can develop into a sinus infection. Non-allergic non-infectious rhinitis is a presentation of rhinitis that cannot be categorized in the two previous rhinitis.This may be associated with exposure of irritants, gastroesophageal reflux, hormonal dysfunction, vasomotor and drugs.[1,4]

Rhinitis have comorbidities including conjunctivitis, asthma, hearing loss, rhinosinusitis and sleeping disorders. This can happend because the nose is associated with eyes, paranasal sinus, nasopharynx, middle ear, larynx, and lower respiratory tract.[1,9]

Management of rhinitis is by giving antihistamines, intranasal corticosteroids, oral leucotrien antagonist receptor, oral anticholinergic, decongestants, nasal sodium chromoglycate, nasal saline, and immunotherapy.[1,4]

The aim of this study was to know the characteristics of rhinitis in children based on *Pediatric Rhinitis Position Paper of EAACI*.

2. MATERIALS AND METHOD

This was prospective descriptive study that held in the rhinology-allergy clinic in ORL-HNS department in Hasan Sadikin Hospital, during 1 January 2013- 31 December 2013 with range of age 3-18 years old.

Diagnosis made by anamnesis (nasal obstruction, rhinorrea, nasal itching, sneezing), physical examination, and skin prick test to differentiate allergic rhinitis with infectious rhinitis and non-allergic non-infectious rhinitis. Allergic rhinitis patients categorized into four groups according to ARIA-WHO classification. Those are mild intermittent, mild persistent, moderate-severe intermittent, moderate-severe persistent.

3. RESULT AND DISCUSSION

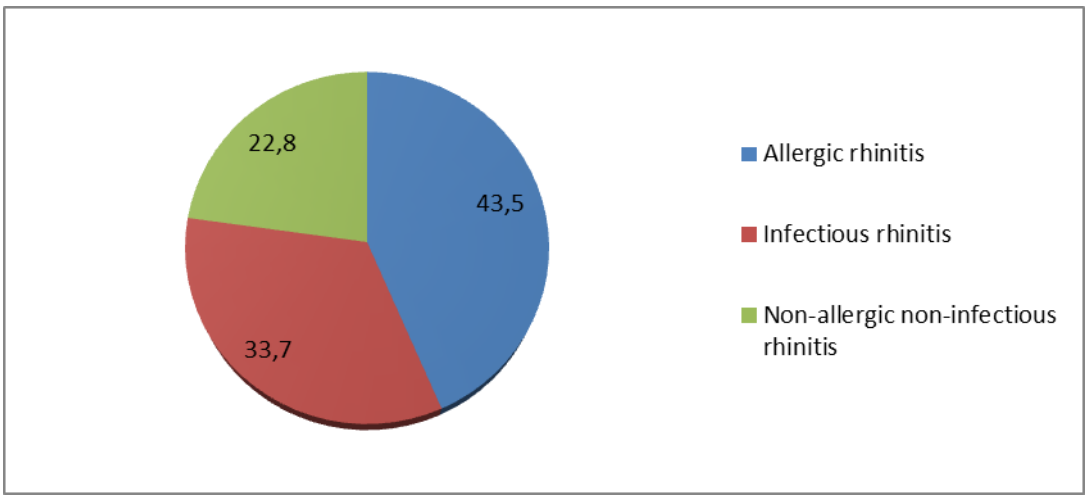
During the period 1 January 2013-31 December 2013, there are 101 pediatric rhinitis patients of Otolaryngology clinic Hasan Sadikin Hospital.

Age range of patients in this study is the age of 3-18 years old, divided into pre-school age (< 5 y.o), school age (6-12 y.o) and adolescents (13-18 y.o). Male patients (53,4%) are more than female patients (46,5%).

Table 1. Demography of subjects

	Allergic Rhinitis (n:44)		Infectious Rhinitis (n:34)		Non-allergic non-infectious Rhinitis (n:23)		
	N	%	N	%	N	%	P value
Sex							p:0,209
Male	26	59,1	14	41,1	14	60,8	
Female	18	40,9	20	58,8	9	39,1	
Age							p:0,131
<5 (pre-school)	3	6,8	6	17,6	5	21,7	
5-12 (school)	17	38,6	18	52,9	10	43,4	
13-18 (adolescence)	24	52,2	10	29,4	8	34,7	

*chi square test



Picture 1 Classification of rhinitis in pediatric population.

Table 2. Therapy and Comorbidities of Rhinitis

	Allergic Rhinitis (n:44) %	Infectious Rhinitis (n:34) %	Non allergic non infectious rhinitis (n:23) %	All patients (n:101) %
Comorbidities				
Conjunctivitis	21(47,7)	0(0)	0(0)	21(20,7)
Asthma	5(11,3)	1(2,9)	0(0)	6(5,9)
Hearing disorder	10(22,7)	6(17,6)	4(17,3)	20(19,8)
Rhinosinusitis	15 (34,0)	16(47,0)	7(30,4)	38(37,6)
Sleeping disorder	20(45,4)	3(8,8)	10(43,4)	33(32,6)
Therapy				
Allergen Avoidance	44(100)	0(0)	0(0)	44(43,5)
Antihistamine	34(77,2)	28(82,3)	19(82,6)	81(80,1)
Intranasal Corticosteroid	36(81,8)	7(20,5)	10(41,6)	53(52,4)
Decongestant	11(25)	10(29,4)	6(26,0)	27(26,7)
Nasal Saline	15(34)	16(47)	7(30,4)	38(37,6)
Immunotherapy	8(18,2)	0(0)	0(0)	8(7,9)

In accordance with the classification of Pediatric Rhinitis Position Paper of EAACI, the prevalence of allergic rhinitis in children will increase with age. While on infectious rhinitis, the prevalence will decreases with age. In the non-allergic non-infection rhinitis, the prevalence is likely to be similar in all groups of age.[1] Allergic rhinitis is more often in the age of the children than in adolescents and young adults with a mean age of 8-11 years, however, allergic rhinitis can occur at any age. In 80% of cases of allergic rhinitis is developing at the age of 20 years. The prevalence of allergic rhinitis in children is up to 40% and then declines with increasing age.[7] In this study, allergic rhinitis affects patients of school age (6-12 years) is 38.6% and in age of adolescence (13-18 years) is 52.2% of patients.

This can be caused by an increase in total and specific IgE at age 3 to 6 years and reached the peak in adolescence.[7] Infectious rhinitis obtained decrease in the number of patients according to age. At school age there were 52.9% of patients and adolescence 29.4%. Westman et al mention bacterial colonization in adenoid, adenoid size and respiratory tract viral infection depends on age. This may be the reason more young children suffer from rhinitis infections than older age.[11] While in non-allergic non-infectious rhinitis, prevalence of patients are not much different at each age group, in this study, 43.4% of patients are school-age and adolescence is 34.7%.

In this study, allergic rhinitis is the most common rhinitis in children. It is 48.3%, infectious rhinitis is 37.3% and non-allergic non-infectious rhinitis is 25.2%. There are 48.3% of patients with allergic rhinitis from all children rhinitis patients who come to the ORL-HNS clinic of Hasan Sadikin hospital. This is not much different from a child's allergy survey conducted in the United States that 41% of pediatric patients who went to the ENT doctor-diagnosed rhinitis alergi.[7] Patients of allergic rhinitis are more common in men (59.1%) than women (40, 9%). This is consistent with research that boys are more affected than girl.[1]

The most prevalence of ARIA group classification is persistent moderate-severe. In this study, persistent moderate-severe group is 53.5% of patients, mild intermittent allergic rhinitis is 28.5,% of patients, mild persistent allergic rhinitis is 10.7% of patients, and intermittent moderate-severe allergic rhinitis 7.1% of patients. Arifianto and Madiadipoera's research obtained the highest classification of allergic rhinitis is persistent moderate-severe.[3]

House dust mites (Dermatophagoides pteronyssinus) is the most widely allergens in patients with allergic rhinitis. Patients can be sensitized by more than one type of allergen. This is consistent with research Rambe and Arifianto that the most common allergens are house dust mites.[3,10]

Comorbidities of allergic rhinitis in the form of conjunctivitis 47.7%, asthma 11.3%, hearing disorders 22.7%, rhinosinusitis 34.0%, and sleep disorders 45.4%. Conjunctivitis is reported to be associated with the most common komorbititas rhinitis alergi.[1,9] Only 11.3% of patients with allergic rhinitis have asthma. Patients with comorbid allergic rhinitis can have another form of atopy, namely asthma. When allergic rhinitis is not treated properly it can cause asthma later.[8] Comorbidity of infectious rhinitis is asthma 2.9%, hearing disorders 17.6%, rhinosinusitis 47.0%, and sleep disturbances 8.8%, no one experienced conjungtivitis. Comorbidity of non-allergic non-infectious rhinitis is conjunctivitis 21.7%, hearing disorders 17.3%, rhinosinusitis 30.4%, sleep disorders 43.4% and none having asthma and conjunctivitis. Rhinitis lead to inflammation of the mucous membranes of the nose, eyes, eustachian tubes, middle ear, sinuses and pharynx.[1,9] Presence of inflammation causing congestion in the sinus ostium which favor the occurrence of acute or chronic rhinosinusitis or other comorbidities,[9,10] including hearing disorders and sleep disorders[1,10] Impaired hearing associated with the occurrence of otitis media and rhinitis.[10,12] Tubal dysfunction in patients with sleep disorders can be caused by disruption of breathing due to nasal congestion or due to hypertrophy of adenoid.[13,14] Hypertrophy adenoid in rhinitis caused by chronic inflammation that causes enlargement of limphoid tissue.[15]

Nasal congestion is a symptom that is most common in this study. It is occurred in 83.2% of patients with rhinitis. Other symptoms are rhinorrhea 69.3%, nasal itching 59.4% and sneezing 50.4%.

Rhinitis management is generally performed by administering antihistamines, intranasal corticosteroids, decongestants and nasal saline.[1,17] Rhinitis patients in this study were treated with allergen avoidance of 43.5%, antihistamines 80.1%, intranasal corticosteroids 52.4%, decongestants 26.7%, nasal saline 37.6%, and immunotherapy 7.9%. Oral antihistamines quite well tolerated in children and become the most widely prescribed drugs in the study

patients. The first generation antihistamines are not recommended to use.[1,18] In this study there were none of patient is given intranasal antihistamines, leucotrient receptor antagonist, and sodium cromoglycate because the drug is not avalailable. Intranasal corticosteroids are also well tolerated in children with rhinitis. The most effective drug in the treatment of all symptoms of rhinitis.[17] Webb et. al mentioned that patients given intranasal corticosteroids improved the symptoms of nasal congestion and rhinorrea.[19] Decongestants may be given a few days to a heavy stuffy nose but not recommended to use in long term because it can cause rebound effect.[1] Nasal saline has good effect on rhinitis and its cost is not expensive.[1] Avoidance of allergen and immunotherapy is the treatment especially in patients with allergic rhinitis.[1,4]

4. CONCLUSION

Characteristics of rhinitis patients in the pediatric population in the Allergy-Rhinology department of ORL-HNS Hasan Sadikin Hospital during the period January 1, 2013 - December 31, 2013. There are more men than women with a range of 3-18 years age group. Allergic rhinitis is the most common category of rhinitis. The most common comorbid of allergic rhinitis is conjunctivitis, the infectious is rhinosinusitis, non-allergic non-infectious rhinitis is sleep disorder. Most children rhinitis patients are treated with antihistamines and intranasalcorticosteroids.

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