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Management of Recurrent respiratory disorders: A Case Study

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Abstract— **Recurrent respiratory tract infections are especially common in young children; in developed countries, they affect up to 25% of children under one year of age and 18% of children one to four years of age. Immune deficiencies are considered as underlying conditions predisposing to this pathology. This work is about to determine when and how to explore the immune system when facing recurrent respiratory infections. A 01 year and 05 months old female child came with complaints of recurrent common cold and cough since birth. *Swarnaprashan* maintained general health of the body and works as an immunomodulatory which decreased recurrent common cold and cough in children. Duration of *swarnaprashan* can be determined depending upon the administered and its duration can be determined depending upon the desired effects like decrease morbidity rate and increase immunity level in children.**

***key words*— Respiratory tract infections, *Swarnaaprashan*, Immunomodulatory.**

I. INTRODUCTION

Acute infections of the respiratory tract are associated with significant morbidity and mortality among pediatric patients [1]. In developed countries, recurrent RTIs are especially common in young children. They affect up to 25% of children under one year of age and 18% of children one to four years of age [2]. The most commonly used definition of respiratory tract infection is an upper or lower respiratory disease and any respiratory illness associated with fever (axillary temperature ≥ 37.5°C or rectal temperature ≥ 38°C) [3]

II.CASE REPORT

A 01 years and 05 months old female child named 'Praticia' came to *Kaumarabhritya* OPD of National Institute of Ayurveda, Jaipur with complaints of recurrent common cold and cough since birth. The frequency of common cold and cough is 4 times in 6 months. Assessment of clinical examination revealed running nose, Fever and cough are found in patient. Running nose is found in morning and evening both times which is watery inconsistency. Intermittent fever is found which is of 100°F-103°F. Intermittent dry cough present in the child. The child is weak and the growth of the weight of the child is not satisfactory, due to these illnesses.

A. *History of present illness*

As per guardian, the patient was suffered from recurrent common cold and cough with moderate fever since birth. Treatment was taken and patient got relief. But again after 2-3 days the patient presented with moderate fever along with watery running nose in morning and evening both time and dry cough. Since then the patient has taken allopathic treatment but did not get any relief. As a result, the patient was brought to *Kaumarabhritya* OPD of the National Institute of Ayurveda, Jaipur by his parents to seek *Ayurvedic* treatment for their child.

B. *Anthropometry measurement*

Weight: 9 Kg
Height: 81cm
Head circumference: 48cm
Chest circumference: 45cm
Mid-arm circumference: 14cm

C. *Investigations*

IgG- 598 mg/dl
Hb gm%-11.40 gm/dl
ESR- 5 at the end of 1st hour
TLC- 10.50 thousand/mm^3
Neutrophil count- 33.61%
Lymphocyte count- 64.68%
Eosinophil count- 4.27%

D. *Treatment*

The drug *Swarnaprashan* is prescribed in doses according to body weight of child (0.1-0.2mg/Kg/day or 1.0drop/Kg/day) for 4 weeks (28 days) and follow-up was done weekly and post treatment follow up was done after 4 weeks and 12 weeks of therapy.

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E. Assessment

Assessment was conducted on day one and on the last day using different parameters.

TABLE 1. SHOWING INCIDENCE IN LAST 6 MONTHS

S.N.	Parameters	Incidence						
		1	*2*	*3*	*4*	*>4*	*Total*	*%*
1.	Running nose							
2.	Nasal obstruction							
3.	Enlarge tonsils							
4.	Dyspnoea							
5	Fever							
6.	Cough							
7.	Sore throat							

TABLE 2. SHOWING SEVERITY IN LAST 6 MONTHS

S.N.	Symptoms	Subjective grading	Grading
1.	**Running nose (Frequency)**	Nil	0
		Only in morning or evening	1
		Mostly morning and evening	2
		Continuous	3
2.	**Running nose (Consistency)**	Nil	0
		Watery	1
		Remittent	2
		Continuous	3
3.	**Fever (Character)**	Normal	0
		Up to 100°F	1
		100°F- 103°F	2
		> 103°F	3
4.	**Fever (Frequency)**	Nil	0
		Intermittent	1
		Remittent	2
		Continuous	3
5.	**Cough (Character)**	Nil	0
		Only dry cough	1
		Productive cough (mucoid)	2
		Mucopurulent expectorant on coughing	3
6.	**Cough (Frequency)**	Nil	0
		Occasionally	1
		Intermittent, Particularly in day/night time	2
		Continuously (Throughout day)	3

F. Laboratory Parameters (Hematological and Biochemical Parameters)

Following parameters were adopted for assessment of the patient under trial-IgG, Hb gm%, TLC, Neutrophil count, Lymphocyte count, Eosinophil count, ESR.

III. RESULT

TABLE 3. SHOWING RESULT OF CLINICAL ASSESSMENT BEFORE AND AFTER TREATMENT

Parameters		Before treatment (1st day)	After treatment (28th day)	56th day	84th day
Running nose	Frequency	2	1	1	2
	Consistency	1	1	1	1
Fever	Character	2	1	1	1
	Frequency	1	1	1	1
Cough	Character	1	1	1	1
	Frequency	2	1	1	2

TABLE 4. SHOWING RESULTS OF LABORATORY PARAMETERS BEFORE AND AFTER TREATMENT:

Laboratory Parameters	Before treatment(1st day)	After treatment(28th day)
IgG%	598 mg/dl	685 mg/dl
Hb gm%	11.4 gm/dl	11.7 gm/dl
ESR	5 mm/hr	14 mm/hr
TLC	10.50 thousand/mm^3	7.1 thousand/mm^3
Neutrophil count	33.61%	35%
Lymphocyte count	64.68%	59%
Eosinophil count	4.27%	3%
Absolute eosinophil count	44.1 thousand/mm^3	21.3 thousand/mm^3

TABLE 5. SHOWING RESULTS OF ANTHROPOMETRY MEASUREMENT BEFORE AND AFTER TREATMENT

S. N.	Anthropometry measurement	Before treatment (1st day)	After treatment (28th day)
1.	Weight	9 Kg	9.3 Kg
2.	Height	81 cm	82 cm
3.	Head circumference	47 cm	47.5cm
4.	Chest	46 cm	47cm

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S. N.	Anthropometry measurement	Before treatment (1st day)	After treatment (28th day)
	circumference		
5.	Mid-arm circumference	14 cm	14.5cm

IV. DISCUSSION

Symptoms of recurrent respiratory infections (RTIs) include general symptoms at least one of the following: runny nose, nasal congestion, sore throat, cough, earache, wheezing, and/or shortness of breath lasting at least two to three days or more. Recurrent episodes should be separated by at least a two-week period with no symptoms. RTIs may be further classified into those that affect the upper or lower respiratory tracts. The majority of RTIs affect the upper respiratory tract, presenting as the common cold, tonsillitis, pharyngitis, laryngitis, rhinosinusitis, and otitis media [4]. According to Ayurveda's view, these symptoms are found in disease *Kasa*. In the pathogenesis of disease *Kasa*, vitiated *Kapha* obstructs the free flow of *Prana Vata* in *Kantha* and *Uras* [5]. Since *Kapha* is the main culprit in the production of *Kasa* and *Kapha* is the dominating Dosha in *Balyavastha* (during childhood), the incidence is more in this age group. Pediatric age group is more vulnerable because of anatomical and physiological peculiarities (hypertrophied lymphoid tissues [6], mucous hyper secretion [7], peculiarities of Eustachian tube [8], etc.), immunological considerations [9] (first exposure, immature immunological defenses, etc.), and social factors (attending school [5], improper food and eating habits [10], etc.). Recurrent cough is the common manifestation of recurrent respiratory tract infections (RRTI) which is more similar to the disease *Kasa* delineated in Ayurvedic classics.

Early intervention is necessary in the case of *Kasa* as it is a potential *Nidanarthakara Vyadhi* (disease having a tendency to produce secondary diseases) to produce *Kshaya* [11] (a disease characterized by severe emaciation). It is noted that children suffering from recurrent RTI exhibit significantly hampered growth and development (including intellectual and social up-gradation) [12]. In the above condition of recurrent *Kasa*, the treatment should fulfill duel targets; one which subsides the disease *Kasa* and the other which promotes the immune system.

On examination of the child, there was a running nose with fever and cough. Before treatment, the child was suffered from the watery running nose in the morning and evening both times. After treatment, the frequency of the running nose was changed. It was present morning or evening but no change in the consistency of running nose. After follow up (56th day), no change was found and it remained the same as after treatment whereas after follow up (84th day), the frequency of running nose increased and consistency remained the same. Before treatment, the child was suffered from 100°F -103°F temperature which was intermittent in nature. After treatment fever was up to 100°F with intermittent nature. After follow up (56th day) & after follow up (84th day), no change was found and it remains the same as after treatment. Before treatment, dry cough was found in patients intermittently but after treatment, occasionally, dry cough was found in patient. After follow up (56th day), no change was found and it remains the same as after treatment but after follow up (84th day), the frequency of cough was increased and character remains same after treatment.

After treatment, the level of IgG was increased. Patients with immune deficiency syndromes suffer from recurrent pyogenic infections primarily involving the sinopulmonary tract. These defects usually manifest after 6 months of life when the passively transferred maternal IgG antibodies levels begin to reduce [13]. A pharmaco-clinical study on neonates *Madhu-Ghrita-Swarna-Vacha* combination also showed a significant effect of humoral anti-body formation and it acted on the immunological system, which was evident by triggering the response of the immunological system by a rise in the total proteins and serum IgG levels which supports the present findings [14]. Another study also revealed that there was an increase in the mean levels of Immunoglobulin's (IgG, IgM, and IgA) after six months of administration of *Swarnaprashan* [15].

After treatment, Hb gm% was increased. It may be due to ingredients of medicine like *Swarna* and *Brahmi* is having action on *Panduroga* as mentioned in various classics [16, 17]. The TLC level decreased and the neutrophil count increased. Lymphocyte and eosinophil count reduced. ESR level increased but it was found within normal limit. Gold acts within the body as gold compounds, inhibit macrophages to inhibit pathological immune responses. It helps to suppress the immune system when it is overactive on the other, gold can trigger an allergic reaction, which is an inappropriate immune response. While gold inhibits some immune cells that create inflammation, it simultaneously stimulates others [18].

When a child is healthy then its physiological growth will be normal according to age whereas when a child is suffered by some illnesses then physiological growth will not be proper according to age. Before treatment, the weight and height of patient were not proper according to age whereas after treatment, the weight and height of the patient is increased. Increase in weight and height occurs due to the physiological process as well as due to the action of medicine both. This study also documented that *Swarnaprashan* maintained general health by increasing the immunity level of the body. The general health of the children is one of the important factors for the growth of weight and height. It improves digestion and metabolism of the body which keeps the *Tridoshas* in balance state. Thus the child is free from seasonal variances and shows effective growth in their physical parameters [19].

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V. CONCLUSION

Low socioeconomic status, poor hygiene, illiteracy, less sanitary facilities, and incomplete immunization are the chief predisposing factors of poor immunity in rural areas along with poor nutrition. *Swarnaprashan* was given, improvement in some morbidity features was found i.e. in Running nose frequency, Fever character, and cough frequency. Changes were found in laboratory parameters *i.e.* increased Hb%, decreased eosinophil, increase ESR level, decreased TLC, increase neutrophil, decreased lymphocyte and increased IgG, decreased absolute eosinophil count at a suggesting the effectiveness of the drug. All anthropometric parameters are also increased after taking the trial drug. *Swarnaprashan* works as an immunomodulatory and cures recurrent respiratory disorders.

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