

**STUDY ON PRANAVAHA SROTAS W.S.R. TO RAJA (DUST PARTICLE)**

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**ABSTRACT**

*Raja* (~Dust particle) is a minute particles present in the environment. Often these particles are too small to be seen but, because they are airborne, they can be breathed in through the nose and mouth. There is a higher risk of developing *Pranavaha Sroto Dusti* (~Vitiation of air flowing channels) in individuals who are exposed to *Raja* because of their occupation in these areas. The subjects exposed and unexposed to *Raja* were selected by purposive sampling method and made into two groups. A self prepared scale was prepared to assess the *Pranavaha Sroto Dusti Lakshana* (~Symptoms of Vitiation of air flowing channels). The *Pranavaha Sroto Dushti Lakshanas* was evidently found in the exposed group. Absolute Eosinophil count was raised and peak expiratory flow rate was less. This study was undertaken with a view to assess the effect of *Raja* on *Pranavaha Srotas* on exposed and unexposed group.

**Keywords:** *Raja, Pranavaha Srotas, Dusti*

**INTRODUCTION**

The term “*Srotas*” means a channel or path. The organism is group of channels. *Srotas* transport the metabolic derivatives of the body which are essential constituents. *Srotas* are also defined as the structures through which *Sraavan* (~ flowing) takes place.<sup>1</sup> The *Srotas* also acts as one of the important factor in *Samprapti* (~pathogenesis of diseases), as it is said that diseases are caused because of the obstruction in the *Srotas*.<sup>2</sup> *Srotas* is classified into different types according to various authors.<sup>3</sup>

The *Srotas* related with the transportation and transfusion of *Prana vayu* (~life sustaining air) in the human body has been named as *Pranavaha Srotas*, its *moolasthanas* (root) are *Hrudaya* (heart) and *Mahasrotas* (~alimentary canal)<sup>4</sup> and others opine that *Hrudya* (heart) and *Rasavahi*

*Dhamani* (blood vessels).<sup>5</sup> *Pranavaha Srotas* is correlated to respiratory system due to similarity in its function. It gets vitiated because of various reasons like *Raja*, *Dhuma* (~smoke), *Shita Sthana* (~cold environment), *Shita Ambu Sevana* (~drinking cold water), and *Ati Vyayama* (~excessive exercise) etc<sup>6</sup>

*Raja* is one of the prime factors which cause the vitiation of *Srotas*. *Raja* is considered as *Dhuli*.<sup>7</sup> *Dhuli* indicate minute particles which are visible or may not visible to our naked eyes. *Raja* which enters through mouth and nose develops diseases such as *Kasa*, *Hikka*, *Shwasa*,<sup>8</sup> *Pratishaya*<sup>9</sup>. Dust particle has various classifications according to size, shape and different origin. The dust particle hampers the breathing pattern when it is excessively inhaled. Dust and smoke particles add friction to the air flow during breathing. Particles larger than

30-50µm in size tend to not to be inhaled through the nose whereas particulates on the order of 5- 10µm impact on the naso pharynx and do enter the conducting airway.<sup>10</sup>

## MATERIALS AND METHODS

### Method of collection of data

Subjects who are constantly exposed and who are not exposed to dust particles were screened and grouped into two groups.

Group A –Subjects regularly exposed to dust.

Group B – Subjects irregularly exposed to dust.

**Inclusion criteria:** Group A: Age from 20 to 50 years. The subjects working in an

occupation related to exposure to dust for more than two years.

Group B: Age from 20 to 50 years. The subjects working in an occupation not related to exposure to dust.

**Exclusion criteria:** Individuals with any systemic diseases, having the habit of smoking, chewing tobacco, under any medical intervention were excluded.

**Assessment criteria:** Assessment was done based on subjective parameters and objective parameters. For this an extensive print and electronic research was done and the symptoms of *Pranavaha Sroto Dusti* were included in the study.

**Table 1: Shows the objective and subjective parameters**

Objective Parameters	Subjective Parameters
Absolute Eosinophil Count	<i>Athisrustam</i> (increased rate of breathing)
Peak Expiratory Flow Rate	<i>Athibaddha</i> (difficulty in breathing),
	<i>Kupitham, alpam</i> or <i>abhiksnam</i> (Breathing pattern is short breath with increased frequency),
	<i>Sa shabdha shula</i> (Breathing associated with sound and pain),

### Sources of the Data:

Group A: 30 Persons working as traffic police was selected as per inclusion and Exclusion criteria.

Group B: 30 apparently healthy individuals living and working in the campus of SDM college of Ayurveda, Hassan was selected irrespective of their gender, caste, socio economic status etc.

### Methods of collection of data:

- The subjects exposed and unexposed to *Raja* were selected by purposive sampling method and made into two groups.
- Informed consent was obtained before study.
- Patients were studied with a detailed case sheet Proforma prepared for the study.

**Scale:** A self prepared scale was designed to assess *Pranavaha Sroto dusti* caused by dust particles. *Dusti* was assessed in two stages: Subjective and objective. Subjective were examined by using close ended questionnaire. Objective parameters were assessed using AEC (absolute eosinophil count) and Peak flow meter.

## OBSERVATIONS

### Demographic Details:

Group A: All the subjects were male and were working as traffic police men in Hassan

Group B: In this group 18 (60.0%) subjects were male and 12 (40.0%) were female and they were students from SDM College of Ayurveda and Hospital, Hassan.

**Table 2: showing the incidence of age in Group A and Group B**

Group A			Group B		
Age Group	Frequency	Percentage	Age Group	Frequency	Percentage
21-25	3	10.0%	20-24	6	20.0%
26-30	7	23.3%	25-29	21	70.0%
31-35	1	3.3%	30-34	2	6.7%
36-40	9	30.0%	35-39	1	3.3%
41-45	5	16.7%			
46-50	5	16.7%			

**Incidence of symptoms:**

Subjective Symptoms:

**Group A:** Among 30 subjects 17 (56.7%) not at all had *Athisrutham Shwasana*. 15 (50%) subjects had *Athibaddham Shwasana* after 2 minutes of exposure to *Raja*, 23 (76.75%) not at all had *Kupitha, Alpam, Alpa Bhikashanm Shwasana* and 18(60.0%) subjects had *Sha Shabdha Shulam*.

**Table 3: Showing the prevalence of symptoms in a Group A**

Lakshana	After 2 Min of exposure	After 1 Min of exposure	After 30 Sec of exposure	After 10 Sec of exposure	Immediately After Exposure	Not At All	Total
<i>Athisrutham</i>	12 (40%)	0	0	0	1(3.3%)	17(56.7%)	30
<i>Athibaddam</i>	15(50%)	1(3.3%)	0	0	2 (6.7%)	12(40.0%)	30

Lakshana	Immediately After Exposure	During day	During night	Early morning	Not At All	Total
<i>Kupitha, alpam, alpa bhikashanm</i>	3 (10.0%)	1(3.3%)	1(3.3%)	2(6.7%)	23(76.75)	30
<i>Sha shabdha shula</i>	1(3.3%)	2 (6.7%)	6(20.0%)	3(10.0%)	18(60.0%)	30

**Group B:** All the subjects didn't had any symptoms

**Table 4 Showing the prevalence of symptoms in a Group B**

Lakshana	After 2 Min of exposure	After 1 Min of exposure	After 30 Sec of exposure	After 10 Sec of exposure	Immediately After Exposure	Not At All	Total
<i>Athisrutham</i>	0	0	0	0	0	0	30
<i>Athibaddam</i>	0	0	0	0	0	0	30

Lakshana	Immediately After Exposure	During day	During night	Early morning	Not At All	Total
<i>Kupitha, alpam, alpa bhikashanm</i>	0	0	0	0	0	30
<i>Sha shabdha shula</i>	0	0	0	0	0	30

Objective Symptoms: Group A: 5 (16.7%) of the subjects had absolute eosinophil count between 351- 400 cells/mm<sup>3</sup> and 401-450

cells/mm<sup>3</sup>. Group B: 12 (40.0%) of the subjects had absolute esoniphil count between 301- 350 cells/mm<sup>3</sup>.

**Table 5: Showing AEC of both groups**

Group A			Group B		
AEC (cells/mm <sup>3</sup> )	Frequency	Percentage	AEC (cells/mm <sup>3</sup> )	Frequency	Percentage
200-250	2	6.7%	200-250	4	13.3%
251-300	5	16.7%	251-300	4	13.3%
301-350	4	13.3%	301-350	12	40.0%
351-400	5	16.7%	351-400	10	33.3%
401-450	5	16.7%			
451-500	4	13.3%			
501-550	4	13.3%			
551-600	1	3.3%			

Group A: 14(46.7%) of the subjects had peak expiratory flow rate between 301- 400 ml.

Group B: 9 (30.0%) of the subjects had peak expiratory flow rate between 301- 400 ml and 501-600 ml.

**Table 6: showing the incidence of PEFR in Group A and Group B**

Group A			Group B		
PEFR(ml)	Frequency	Percentage	PEFR (ml)	Frequency	Percentage
201-300	6	20.0%	201-300	4	13.3%
301-400	14	46.7%	301-400	9	30.0%
401-500	9	30.3%	401-500	6	20.0%
501-600	1	3.3%	501-600	9	30.0%
			601-700	2	6.7%

## DISCUSSION

The current study was conducted to check the effect of *Raja* on *Pranavaha Srotas*. In the study it revealed that in Group A maximum number of traffic police belonged to the age group of 36 – 40 years. This may be because, during this age group people were exposed to dust particle for a longer period. In Group B maximum number of subjects was in the age group of 25 – 29 years, the reason may be due to their occupation as a student. This study reveals the prevalence of *Pranavaha Sroto Dusti Lakshana* was seen more in group A. In group A, AEC was raised above normal range. PEFR was less in group A comparatively with group B. While analyzing *Lakshanas* in group A, *Atibadham* and *Athisrustham* was found in majority of

the subjects. This gave an indication that *Pranavaha sroto dushti* is associated with people exposed to *Raja*.

## CONCLUSION

*Pranavaha Sroto Dusti Lakshana* is evidently seen in subjects exposed to *Raja*. The role of *Raja* to produce *Pranavaha Sroto Dusti* is very significant. PEFR is a good indicator of expiratory effort and it was reduced in traffic policemen as compared to unexposed group. Therefore we can infer that Peak expiratory flow rate gets reduced on exposure to dust. The protective measures like use of mask, regular health check up and also awareness on health impacts of pollution need to be adopted for protection of traffic policemen working on the heavy traffic roads.

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