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The Effect of Smoke and the Effect of Treatment of Asthma in Females by Measuring the Vitamin D and Bone Mineral Density

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Running Title: Effect of smoke and treatment of asthma in females

Abstract: ***The study aims to tell the incidence of female smokers at Srikakulam district, Andhra Pradesh, and add on effect to the disease burden in case of asthma, COPD and ACOS. To give the evidence of woman smokers and their habitual disturbances may increase the burden to the disease with the treatment effect of corticosteroids. A total of 260 subjects (123 males & 137females) aged >+ 25years attending the routine check-up for NRI Institute of Medical Sciences, Visakhapatnam, to the pulmonology department. Data Collected in detailed, filed along with their concern forms, measured bone mineral density with an ultra-sonogram machine, did investigative procedures to know the blood calcium, vitamin – D levels. Summary and Conclusion: Even though they got pleasure temporarily, that it results in palatal changes and adds on the burden to the lungs with the treatment effect of respiratory diseases by decreasing bone mineral density, vitamin D & body mass index.***

Keywords: smoke, bronchial asthma (BA), chronic obstructive pulmonary disease (COPD), Asthma-COPD overlap syndrome (ACOS) is when you have symptoms of both asthma and chronic obstructive pulmonary disease (COPD).

1. Introduction

Bronchial asthma (BA) and chronic obstructive pulmonary disease (COPD) is a prevalent disease condition that is caused due to respiratory air-flow limitation and characterized by airway inflammation. The disease develops with dyspnea and oxygenation impairment thus contributing a great burden to patients by Ford E S et. al, (2016) [6]. As of (2006)[3,5] Barman SS et. al, asthma has affected more than three hundred million people worldwide and is responsible for 180 thousand deaths every year. According to Roycraft et. al, (2015)[11,12] asthma is a common health issue not just in developed but also in developing countries where > 80% of asthma-related deaths occur. In recent years, mortality due to COPD has been elevating rapidly in women than that in men. As per the World Health Organization (WHO) report, this mortality would be the third cause by 2020.

In addition to that, Smoking can cause diseases of nearly all organs of our body. According to Koning HWDE et. al, in 1985[8] Adult smokers can become ill or die from smoking-related diseases like heart disease, chronic obstructive pulmonary disease, lung and bladder cancer, stroke, hardening of the arteries, and asthma. Brown S D et. al, in (2012) said non-smokers exposed to second-hand smoke can develop heart disease, stroke, and lung cancer. Second-hand smoke can also cause asthma, ear infections, and sudden infant death syndrome in children.

In developing countries with high levels of traditional tobacco use among women, such as chewing or smoking with the lit end of the chutta inside the mouth, tobacco use is associated with high levels of oral cancer (see also Pershagen in this issue). For example, the highest reported rate of mouth cancer in the world is among women in Bangalore, India. Indeed it is estimated that tobacco use causes around one in five of all cancers in women in India by Stanley K, Stjernswardin (1989)[13].

Acute asthma exacerbation is the most important event that can affect fetal morbidity and mortality during pregnancy. Studies suggest that youth who smoke may be more likely to develop asthma. Exposure to secondhand smoke can trigger an asthma attack in both children and adults. A severe asthma attack can put a child's life in danger.

The 1964 Surgeon General's report also determined that: "Cigarette smoking is the most important of the causes of chronic bronchitis in the United States, and increases the risk of dying from chronic bronchitis and emphysema" (U.S. Department of Health, Education, and Welfare [USDHEW] 1964, p. 31). The first Surgeon General's Report on smoking and health in 1964 found that smoking was a cause of lung cancer in men. Since that time, risks for developing lung cancer have risen steadily among smokers, and have risen dramatically among women smokers.

2. Methodology

During routine check-ups to our institutional hospital visits we collected the total study samples from 260 cases, among them 167 are either smokers or exposed to smoke. In that interestingly female smokers with respiratory diseases like asthma, ACOS and COPD are 93. Got ethical committee clearance and obtained informed consent from each patient.

3. Results

Patients with the effect of smoke exposure 64.2% are suffering from the more disease burden. P value is significant when cases are compared with controls

Table 1: Showing Smoker and Non-smoker Groups in asthma, COPD, ACOS cases

			Group				Total
			COPD	Asthma	ACOS	Control	
Smoker / Non-smoker	Smoker	Count	24	42	47	54	167
		% within Group	36.90%	64.60%	72.30%	83.10%	64.20%
	Non-smoker	Count	41	23	18	11	93
		% within Group	63.10%	35.40%	27.70%	16.90%	35.80%
Total		Count	65	65	65	65	260
		% within Group	100.00%	100.00%	100.00%	100.00%	100.00%

Table 2: Smoker and Non-smoker Groups in Sex wise Cross tabulation

Sex				COPD	Asthma	ACOS	Control	Total
Male	Smoker / Non-smoker	Smoker	Count	14	26	26	36	102
			% within Smoker / Non-smoker	13.70%	25.50%	25.50%	35.30%	100.00%
		Non-smoker	Count	2	8	7	4	21
			% within Smoker / Non-smoker	9.50%	38.10%	33.30%	19.00%	100.00%
	Total		Count	16	34	33	40	123
			% within Smoker / Non-smoker	13.00%	27.60%	26.80%	32.50%	100.00%
Female	Smoker / Non-smoker	Smoker	Count	10	16	21	18	65
			% within Smoker / Non-smoker	15.40%	24.60%	32.30%	27.70%	100.00%
		Non-smoker	Count	39	15	11	7	72
			% within Smoker / Non-smoker	54.20%	20.80%	15.30%	9.70%	100.00%
	Total		Count	49	31	32	25	137
			% within Smoker / Non-smoker	35.80%	22.60%	23.40%	18.20%	100.00%

4. Discussion

In women, household smoke is considered as one of the predisposing factors for COPD and BA. Source of smoke is mainly from biomass wood; traditionally used for cooking and exposure to indoor pollutants, dust, fumes in the kitchen, etc. doubles the risk of respiratory air-flow limitation. The most important are particles, carbon monoxide, nitrous oxides, sulfur oxides, formaldehyde, and polycyclic organic matter, including carcinogens such as benzopyrene, which can penetrate deeply into the lungs and appear to have the greatest potential for respiratory air-flow limitation said by van Boven JF, et. al, in (2016)[1,9,14].

In Kumbhare S, et. al, (2016)[7] analyses, allergic rhinitis, anxiety, gastroesophageal reflux disease, and osteoporosis were more frequent in ACOS than COPD. Chronic kidney disease and ischemic heart disease were less frequent. Still, in patients with ACOS, cardiovascular diseases showed the strongest prognosis for hospitalization. The ACOS group was more likely to have at least one comorbidity than the COPD group.

Odler B et. al, in (2015)[10] Vitamin D deficiency is present in ACOS patients and circulating 25(OH)D level may be of prognostic significance, since a positive correlation was found between 25(OH)D level and FEV1, forced vital capacity, forced expiratory flow between 25 and 75% of FVC, and peak expiratory flow.

Corticosteroids are commonly prescribed to improve the disease state in COPD, ACOS and asthma cases. Asthma with its treatment and smoking leads to a higher incidence of reduced bone mineral density. The mechanism of bone loss induced by glucocorticosteroids is two-fold, with decreased bone formation and increased bone resorption. Similar findings have been observed by BHATTACHARYA et. al, in 2011[2]., in Indian COPD patients.

A study showed the decreased absorption of calcium from the gastrointestinal tract may cause reduced bone mineral density. The risk of osteoporosis in COPD cases using glucocorticosteroids was observed in the present study. we also confirmed the decrease of bone mass by measuring the bone mineral density in smoking females with low vitamin d levels also. In 2018 Ceyda Anar et al., demonstrated that patients with low vitamin D levels and subsequent risk of acute exacerbation -prone COPD patients.

5. Conclusion

Disease severity is an important in the etiology of reduced bone mineral density influenced by cofactors like smoking can increase the disease burden, prone for fracture risk to the persons, families finally to the society.

References

[1] Albalak R and Frisancho ARGJK: Domestic biomass fuel combustion and chronic bronchitis in two rural Bolivian villages. Thorax 1999; 54: 1004-1008.
[2] Bhattacharya P, Paul R, Ghosh M, Dey R Barooah N et al. Prevalence of osteoporosis and osteopenia in advanced chronic obstructive pulmonary disease patients. Lung India. 2011; 28:184 - 6.
[3] Braman SS. The global burden of asthma. Chest 2006;130(1 suppl):4S–12S. [PubMed] [Google Scholar].

[4] Brown SD, Calvert HH, Fitzpatrick AM. Vitamin D and asthma. Dermatoendocrinol 2012;4:137–45. [PMC free article] [PubMed] [Google Scholar].
[5] Checkley W, Robinson CL, Baumann LM, et al. 25-hydroxy vitamin D levels are associated with childhood asthma in a population-based study in Peru. Clin Exp Allergy 2015;45:273–82. [PMC free article] [PubMed] [Google Scholar].
[6] Ford ES, Croft JB, Mannino DM, Wheaton AG, Zhang X, Wayne H. and Giles M: US COPD surveillance data. Am Coll Chest Physicians 2013; 144(1): 284-305.
[7] Kumbhare S, Pleasants R, Ohar JA, Strange C. Characteristics and prevalence of asthma/chronic obstructive pulmonary disease overlap in the United States. Ann Am Thorac Soc. 2016. doi:10.1513/AnnalsATS.201508-554OC.
[8] Koning HWDE, Smith KR, and Last JM: Biomass fuel combustion and health. Wor Heal Organ 1985; 63: 11-26.
[9] Landis SH, Muellerova H, Mannino DM, Menezes AM, Han MK, van der Molen T, Ichinose M, Aisanov Z and Oh YMKJD: Continuing to confront COPD International Patient Survey: methods, COPD prevalence and disease burden in 2012-2013. Int J COPD 2014; 9: 597-611.
[10] Odler B, Ivancso I, Somogyi V, et al. Vitamin D deficiency is associated with impaired disease control in asthma-COPD overlap syndrome patients. Int J Chron Obstruct Pulmon Dis. 2015. doi:10.2147/copd. s91654.
[11] Raherison C and Girodet PO: Epidemiology of COPD. Eur Respir Rev 2009; 18: 213-221.
[12] Rycroft CE, Heyes A, and Lanza KBL: Epidemiology of chronic obstructive pulmonary disease: A Literature Review. Int J COPD 2012; 7: 457-494.
[13] Stanley K, Stjernsward J. Lung cancer in developing countries. In: Hansen HH, ed. Basic Clinical Concepts of Lung Cancer. Boston: Kluyer Academic, 1989.
[14] Van Boven JF, Roman-Rodriguez M, Palmer JF, et al. Comorbidome, pattern, and impact of asthma-COPD overlap syndrome in real life. Chest. 2016. doi: 10.1016/j.chest.2015.12.002.