



## PROFILE OF PATIENTS OF SECONDARY SPONTANEOUS PNEUMOTHORAX IN KNOWN COPD

### Medicine

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### ABSTRACT

**INTRODUCTION :** Pneumothorax is classified into spontaneous traumatic or iatrogenic. A secondary spontaneous pneumothorax (SSP) is when pneumothorax occurs as a complication of underlying lung disease. Severity of COPD correlates with the likelihood of developing SSP. The high recurrence rate of spontaneous pneumothorax secondary to COPD highlights the need for the prevention of recurrence with cheap and cost-effective method.

**METHODOLOGY:** The current study was planned and conducted among the indoor patients admitted to the respiratory department in the tertiary care centre of central Maharashtra who are diagnosed to be having chronic pulmonary disease with secondary spontaneous pneumothorax. The study was done among 30 patients after considering the inclusion and exclusion criteria.

**RESULTS:** Majority of the patients were males (93.3%). The patients mostly belonged to the age group of 51-60 years. Most common symptom was chest pain followed by breathlessness and cough. Majority were smokers (56.6%). Most of the lesions were right sided. Among the associated symptoms pulmonary tuberculosis was the commonest one with 16.6%.

**CONCLUSION:** Special care is required among males and smokers to prevent further complications.

### KEYWORDS

#### INTRODUCTION

A pneumothorax is defined to be accumulation of air in the pleural cavity, that is, between the lung and the chest wall, leading in collapse of the lung on the affected side.<sup>1,2</sup>

Pneumothorax is classified into spontaneous traumatic or iatrogenic. There are two types of spontaneous pneumothorax, primary and secondary pneumothorax. In primary spontaneous pneumothorax occurs without a precipitating event in the absence of clinical lung disease.<sup>1</sup>

A secondary spontaneous pneumothorax (SSP) is when pneumothorax occurs as a complication of underlying lung disease. Usually it is associated with COPD, pulmonary fibrosis. It most commonly occurs in elderly patients usually in the age group of 60 y and above. Spontaneous pneumothorax (SP) is cardiopulmonary emergency occurring in the absence of iatrogenic or traumatic causes. The most common pathology is the rupture of an apical sub pleural bleb or bulla.<sup>1,4</sup>

Nearly every lung disease can be complicated by secondary spontaneous pneumothorax (SSP), although the most commonly associated diseases are chronic obstructive pulmonary disease, cystic fibrosis, primary or metastatic lung malignancy, and necrotizing pneumonia (eg, bacterial or fungal pneumonia, Pneumocystis jirovecii pneumonia, and tuberculosis).<sup>5</sup>

Chronic obstructive pulmonary disease-Chronic obstructive pulmonary disease (COPD) is the most common cause of SSP, with 50 to 70 percent of SSP in case series attributed to COPD. Rupture of apical blebs is the usual cause. Spontaneous pneumothorax, a significant health problem, the incidence varies considerably. A study by Gupta et al estimated an incidence for this disease to be 16.8 per 100 000 population per year. According to the British Thoracic Society (BTS), smoking, height of the male patients, age are among the important risk factors for recurrence in primary pneumothorax, in cases of secondary pneumothorax the factors like age, pulmonary fibrosis, and emphysema plays a significant role.<sup>6-11</sup>

Severity of COPD correlates with the likelihood of developing SSP. As an example, more than 30 percent of patients with SSP due to COPD have a forced expiratory volume in one second (FEV1) less than one

litre and an FEV1 to forced vital capacity (FEV1/FVC) ratio less than 40 percent.<sup>12</sup>

The high recurrence rate of spontaneous pneumothorax secondary to COPD highlights the need for the prevention of recurrence with cheap and cost-effective method. Chemical pleurodesis with tetracycline hydrochlorides may be a good option for the prevention of recurrence of pneumothorax and thereby enables satisfactory patient outcome.<sup>12</sup>

#### Methodology

The current study was planned and conducted among the indoor patients admitted to the respiratory department in the tertiary care centre of central Maharashtra who are diagnosed to be having chronic pulmonary disease with secondary spontaneous pneumothorax. The study conducted was a cross sectional observational study made to look for the profile of the patients admitted.

The patients attending and admitted in the inpatient department under the respiratory department between the study period of 1 year starting from July 2016 to June 2017 were included in the study.

The study included patients who were having secondary spontaneous pneumothorax and is a known case of chronic obstructive pulmonary disease. The patients who were haemodynamically stable were considered for the study. The patients who were willing to participate were considered. Patients who did not consent were excluded from the study, patients who were haemodynamically unstable were excluded. The total study sample after considering the inclusion and exclusion criteria was 30 patients.

The results were analysed using Microsoft excel and as per applicable appropriate tests were done such as t test and chi-square to see for association. Percentage and graph was used to present the descriptive statistics. The study was done after taking ethical committee clearance from the institutional ethical committee and also consent was obtained from the patients before conduction of the study.

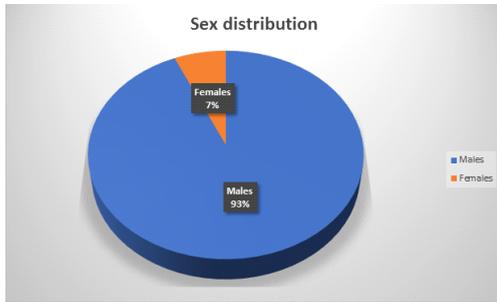
#### RESULTS

The study took into consideration all the subjects attending the respiratory department fulfilling the inclusion criteria among them in

our study we had majority males 28 (93.3%) (Figure 1). The mean age of the patients was found to be 46 years with a standard deviation of 5.65 years. Table no 1 shows in detail the age profile of the patients.

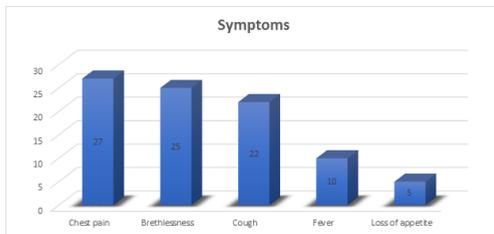
**Table 1: Age wise distribution of study participants.**

Age	Number	Percentage
<40	3	10
41-50	10	33.4
51-60	11	36.6
61-70	6	20
Total	30	100



**Figure : Sex wise distribution of patients.**

In our study most common symptom was found to be chest pain among 27 (90%) and the next common was breathlessness 25 (83.3%) next was cough which as seen among 22 (73.3%) patients. There were other symptoms like loss of appetite and fever. Figure 2 gives in detail symptom profile of the patients.



**Figure : Symptom wise distribution of patients**

In our study we had 17 (56.6%) who were smokers and 11 (36.6 %) who were ex-smokers and there were 2(6.66%) who were non-smokers. The study saw the position of the lesion there were 21(70%) who had right sided lesion and it was the most common one and there were 9 (30%) left sided lesions. In our study along with the patients having primarily COPD there were 16(53.3%) who had associated or complicated disease among them, 5 (16.6%) who had pulmonary koch's associated and there were other complications too, table 2 gives in detail about the associated diseases.

Associated disease	Number	Percentage
Pulmonary koch's	5	16.6
BPF and IHD	3	10.0
Squamous cell carcinoma	3	10.0
IPF with IHD	2	6.6
ILD	2	6.6
Recurrent pneumothorax	1	3.3
Total	16	53.3

The clinical examination showed few characteristic, there were 14 (46.6%) who had decreased breath sound on the side of affection and 10 (33.3%) with absent breath sounds on the affected side, and there were adventitious sounds like crept among 6 (20.0 %) of the patients.

**DISCUSSION**

The current study had majority male patients similar rates were seen in a study by Manabendra<sup>13</sup> et al., The study by Muhammad<sup>14</sup> et al, also had 73.3%males, similar to the current study. The study by Muhammad<sup>14</sup> et al, had majority patients with secondary pneumothorax mostly in the 5<sup>th</sup> decade in the current study we had majority between age group of 51-60 years which is similar. The study by Gupta et al,<sup>7</sup> had peak at 2<sup>nd</sup> decade and 8<sup>th</sup> decade which is bit higher than the current study.

and 74% chest pain , in the current study percentage of breathlessness was found to be 85.3%. The study by Muhammad et al<sup>14</sup> , had most common symptoms as dyspnoea while in the current study it was chest pain followed by breathlessness. The study by Guo Y,<sup>6</sup> et al, had 16.5% cases of tuberculosis, in the current study, it was same but the cases were in association with COPD. The study by Muhammad<sup>14</sup> et al, had 44% cases of tuberculosis who had spontaneous pneumothorax, the current study had only 16.6%. There were studies which saw more recurrence in cases of secondary pneumothorax, the current study had only 3.3% of recurrent cases.

**CONCLUSION**

In our study majority were males and there were associated diseases along with COPD . The study also had majority who were smokers. So, special care should be taken about these groups to prevent further complications. There are studies which have showed that “Secondary spontaneous pneumothorax associated with infectious diseases had a higher rate of treatment failure than SSP associated with obstructive lung conditions”<sup>5</sup> so care must be taken to prevent infections and also treat infections promptly to prevent recurrences.

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The study by Dines et al,<sup>15</sup> had patients who had 100% breathlessness