

Original Research

Assessment of cases of pneumothorax in a Tertiary Care Hospital - A clinical study

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ABSTRACT:

Background: Pneumothorax is defined as the presence of air in the pleural cavity. The present study was conducted to assess cases of pneumothorax. **Materials & Methods:** This present study was conducted on 68 patients diagnosed with pneumothorax of both genders. A thorough clinical examination was performed and findings on general, respiratory and systemic examination were recorded. Chest radiographs was prescribed. **Results:** Out of 68 patients, males were 32 and females were 34. 20 had Primary spontaneous Pneumothorax (PSP), 32 had Spontaneous Pneumothorax (SP) and 16 had Secondary spontaneous Pneumothorax (SSP). The difference was significant ($P < 0.05$). Common diagnosis was pulmonary tuberculosis in 38, COPD in 14, pneumonia in 5 and HIV associated PT in 3. Miscellaneous included lung malignancy in 2, bullous lung disease in 1, pulmonary thromboembolism in 2 and systemic lupus erythematosus in 1. The difference was significant ($P < 0.05$). **Conclusion:** Common types were primary spontaneous pneumothorax, spontaneous pneumothorax and secondary spontaneous pneumothorax. Common diagnosis was pulmonary tuberculosis and COPD.

Key words: Primary spontaneous pneumothorax, Pulmonary tuberculosis, Spontaneous pneumothorax

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INTRODUCTION

Pneumothorax is defined as the presence of air in the pleural cavity. It is usually classified into spontaneous, occurring without a preceding cause, and traumatic which follows penetrating, blunt or barometric trauma to the chest. Spontaneous pneumothorax (SP) is subdivided into primary spontaneous pneumothorax (PSP), occurring in otherwise healthy individuals and secondary spontaneous pneumothorax (SSP), which occurs in patients with an underlying lung disease.¹

The pressure within the pleural space is negative with respect to the alveolar pressure during the entire respiratory cycle. This negative pressure results from the inherent tendency for the lung to collapse (elastic recoil) and the

chest wall to expand.² When a communication develops between an alveolus and the pleural space, air will move from the alveolus into the pleural space until there is equalization of pressure or the communication is sealed. The same happens with a communication between the chest wall and pleural cavity.³

The etiology and clinical spectrum of pneumothorax have undergone a marked change in the recent years. For example, pulmonary manifestations of acquired immunodeficiency syndrome (AIDS) have emerged as important cause of SSP. Data regarding epidemiology and clinical profile of SP are limited, especially so from the Indian subcontinent. Besides several case reports focusing on pneumothorax, there are few studies dealing with

diagnosis and treatment of SP in India.⁴ The present study was conducted to assess cases of pneumothorax.

MATERIALS & METHODS

This present study was conducted in the department of pulmonary Medicine. It comprised of 68 patients diagnosed with pneumothorax of both genders. Ethical clearance was taken from institutional ethical committee. All patients

were informed regarding the study and written consent was obtained.

Information such as name, age, gender etc. was recorded in case history performa. A thorough clinical examination was performed and findings on general, respiratory and systemic examination were recorded. Chest radiographs was prescribed. Results were tabulated and subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of cases

Total- 68		
Gender	Males	Females
Number	32	34

Table I shows that out of 68 patients, males were 32 and females were 34.

Table II Types of Pneumothorax

Types	Number	P value
Primary spontaneous Pneumothorax	20	0.05
Spontaneous Pneumothorax	32	
Secondary spontaneous Pneumothorax	16	

Table II, graph I shows that 20 had Primary spontaneous Pneumothorax (PSP), 32 had Spontaneous Pneumothorax (SP) and 16 had Secondary spontaneous Pneumothorax (SSP). The difference was significant (P< 0.05).

Graph I Types of Pneumothorax

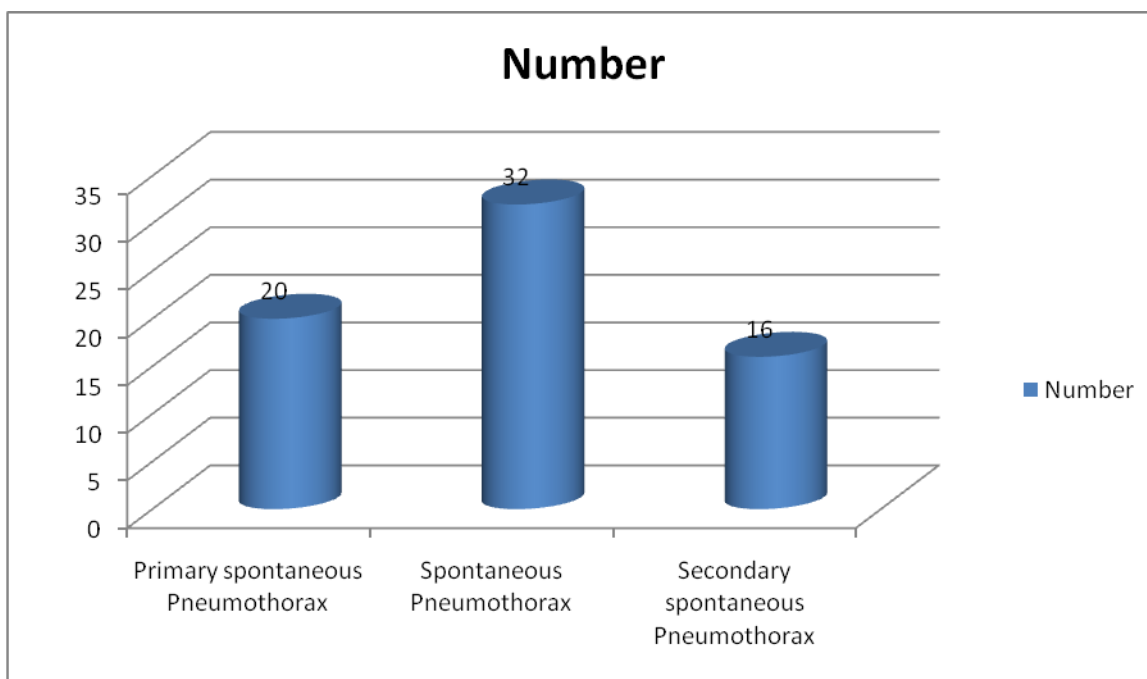
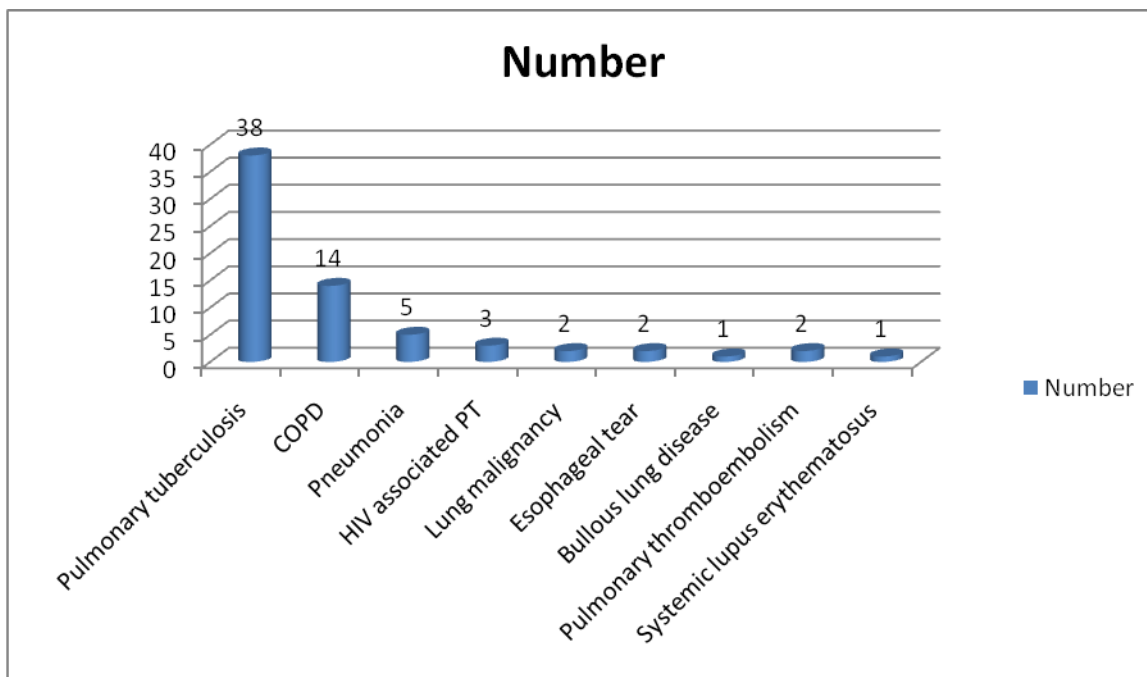


Table III Etiologic distribution of secondary spontaneous pneumothorax

Diagnosis	Number	P value
Pulmonary tuberculosis	5	0.01
COPD	2	
Pneumonia	2	
HIV associated PT	2	
Miscellaneous		
Lung malignancy	2	
Esophageal tear	2	
Bullous lung disease	1	
Pulmonary thromboembolism	2	
Systemic lupus erythematosus	1	

Table III shows that common diagnosis was pulmonary tuberculosis in 38, COPD in 14, pneumonia in 5 and HIV associated PT in 3. Miscellaneous included lung malignancy in 2, bullous lung disease in 1, pulmonary thromboembolism in 2 and systemic lupus erythematosus in 1. The difference was significant ($P < 0.05$).

Graph II Etiologic distribution of secondary spontaneous pneumothorax



DISCUSSION

Common classification is to classify it into spontaneous pneumothorax (SP) which occurs without a preceding external trauma, and traumatic pneumothorax which follows penetrating, blunt or barometric trauma to the chest. Spontaneous pneumothorax can further be classified into primary spontaneous pneumothorax (PSP), occurring in otherwise healthy individuals and secondary spontaneous.⁵ Traumatic (or nonspontaneous) pneumothorax occurs as the result of blunt (nonpenetrating) or penetrating trauma disrupting the lung, bronchus, or esophagus.⁶ A subcategory of traumatic pneumothorax is iatrogenic pneumothorax, which

occurs as a consequence of diagnostic or therapeutic maneuvers (i.e., thoracoentesis, insertion of a central venous catheter, surgery, or mechanical ventilation).⁷ Primary spontaneous pneumothorax results from rupture of sub pleural emphysematous blebs that are usually located in the apices of the lung. The pathogenesis of these sub pleural blebs is probably related to airway inflammation.⁸ Respiratory bronchiolitis was found to be associated with primary spontaneous pneumothorax. Cigarette smoking can certainly produce airway inflammation. Cigarette smoking is known to be strongly associated with the development of both primary and secondary spontaneous pneumothorax.⁹

The present study was conducted to assess cases of pneumothorax.

In this study, out of 68 patients, males were 32 and females were 34. We found that 20 had primary spontaneous pneumothorax (PSP), 32 had spontaneous pneumothorax (SP) and 16 had secondary spontaneous pneumothorax (SSP). Upadhyay et al¹⁰ studied the etiology, clinical profile, and management protocols of spontaneous pneumothorax in adults in India. Annual incidence of spontaneous pneumothorax was calculated as 21.739 per 100000 hospital admissions. Out of 100 patients studied 95 were diagnosed with secondary spontaneous pneumothorax and 5 with primary spontaneous pneumothorax. Chronic obstructive pulmonary disease (COPD) was found to be the most common etiological factor. Male to female ratio was found to be 9:1. Age distribution showed a biphasic pattern. We found that common diagnosis was pulmonary tuberculosis in 38, COPD in 14, pneumonia in 5 and HIV associated PT in 3. Miscellaneous included lung malignancy in 2, bullous lung disease in 1, pulmonary thromboembolism in 2 and systemic lupus erythematosus in 1. The difference was significant ($P < 0.05$). Baumann et al¹¹ in their study assessed etiology and clinical profile of patients with SP. Patients were divided into two groups primary spontaneous pneumothorax (PSP), if no underlying etiology for pneumothorax was found, and secondary spontaneous pneumothorax (SSP), when an underlying respiratory disorder could be identified. The clinical features were compared between the two groups. Sixty patients (12 with PSP and 48 with SSP) were included in the study. Annual incidence of SP was calculated as 99.9 per 100,000 hospital admissions. Annual incidence figures for PSP and SSP were 20.0 and 80.0 per 100,000 hospital admissions respectively. Age distribution showed a biphasic pattern and the overall male to female ratio was 5: 1. The most common cause of SSP was found to be pulmonary tuberculosis (41.7%). Ferraro et al¹² conducted a study in which out of the 60 cases of spontaneous pneumothorax (SP), eight patients (13.33%) had recurrent pneumothorax and among these eight cases, pleurodesis could not be done in only two cases of secondary long-term follow-up.

CONCLUSION

Common types were primary spontaneous pneumothorax, spontaneous pneumothorax and secondary spontaneous pneumothorax. Common diagnosis was pulmonary tuberculosis and COPD.

REFERENCES

1. Shramel FM, Postmus PE, Vandershueren RG. Current aspects of spontaneous pneumothorax. *Eur Respir J* 1997; 10:1372–9.
2. Gupta D, Mishra S, Faruqi S, Aggarwal AN. Aetiology and clinical profile of Spontaneous pneumothorax in adults. *Lung India* 2006;48:261–4.
3. Janmeja A, Raj B, Saini V, Gupta KB. Analysis of 100 cases of spontaneous pneumothorax. *Lung India* 1995;13:12–6.
4. Ahangar AG, Hussain SS, Mir IA, Dar AM, Bhat MK, Lone GN, et al. Spontaneous pneumothorax. *Indian J Surg* 2003; 65:423–6.
5. Agnihotri S, Sharma, TN, Jain NK, Madan A, Mandhana RG, Saxena A. Spontaneous pneumothorax : a clinical study of eighty cases in Jaipur. *Lung India* 1987; 5: 189–92.
6. Boghani AB, Patel RB. Spontaneous pneumothorax – a clinical study. *Lung India* 1985;3:37 40.
7. MacDuff A, Arnold A, Harvey J; BTS Pleural Disease Guideline Group. Management of spontaneous pneumothorax: British Thoracic Society Pleural Disease Guideline 2010. *Thorax* 2010;65(Suppl 2):ii18–31.
8. DeVries WC, Wolfe WG. The management of spontaneous pneumothorax and bullous emphysema. *Surg Clin North Am* 1980;60:851–66.
9. Weeden D, Smith GH. Surgical experience in the management of spontaneous pneumothorax, 1972–82. *Thorax* 1983;38:737–43.
10. Upadhyay GP, Thakker RM. Spontaneous pneumothorax – a clinical study of 100 cases. *Int J Med Sci Public Health* 2017;6:154–158.
11. Baumann MH, Strange C, Heffner JE, Light R, Kirby TJ, Klein J, et al.; ACCP Pneumothorax Consensus Group. Management of spontaneous pneumothorax: An American College of Chest Physicians Delphi Consensus Statement. *Chest* 2001;119:590–602.
12. Ferraro P, Beauchamp G, Lord F, Emond C, Bastien E. Spontaneous primary and secondary pneumothorax: a 10–year study of management alternatives. *Can J Surg* 1994; 37: 197–202.