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To evaluate management modalities and their outcomes in patients with spontaneous pneumothorax

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Abstract

Background: The burden of Spontaneous Pneumothorax has been recorded as alarming health problem in medical sciences and is adversely influenced by environmental factors.

Methods: A total of 100 patients, including both males and females, admitted during the given period to the hospital with a diagnosis of spontaneous Pneumothorax (SP) were included in the study after applying to the inclusion and exclusion criteria.

Results: ICDT was primary treatment modality in 60% PSP patients. Needle aspiration was done in 30% and observation was in 10% subjects. Among SSP patients most patients (86.6%) were treated initially with ICDT and only 6 patients were needle aspirated and kept under observation each. Chi square test showed that this difference in primary treatment modality among PSP and SSP was significantly different ($P<0.05$).

Conclusion: Observation and needle aspiration are the leading management modalities in patients with small sized spontaneous pneumothorax, with excellent clinical outcomes; whereas intercostal tube drainage is the mainstay of the treatment in patients with large sized spontaneous pneumothorax, with good clinical outcomes

Keywords: ICTD, TB, Management

Introduction

The term pneumothorax was first coined in 1803 by Itard and its clinical descriptions were described by Laennec in 1819. [1] Pneumothorax is defined as the entry of air into the pleural space without any external cause and with secondary lung collapse. Pneumothorax can occur spontaneously or after trauma to the lung or chest wall. [2] Pneumothorax can also be divided into tension and nontension. A tension pneumothorax is a medical emergency due to rising intra-thoracic pressure from progressive air accumulation in the pleural space. Circulatory or respiratory failure might be developed from subsequent lung or mediastinal compression. [3,4]

There are some precipitating factors, such as change in atmospheric pressure or emotional change. Hearing loud music has also being reported as a risk factor of PSP, which may be due to changes in trans-pulmonary pressure by exposure to sound energy. Some patients with PSP have a positive family history (Hereditary predisposition).[5] some gene mutations, such as folliculin (FLCN, rel disaese, Birt-Hogg-Dube syndrome), have been found with relation to the development of PSP.

Material and Methods

Study Area: Institute of Respiratory Diseases, SMS Medical College, Jaipur, Rajasthan.

Duration of Study: 1 year (from March 2016 to Feb 2017)

Study Design: Hospital based prospective type of observational study was conducted and proper management were given to each patient as per BTS guidelines 2010.

Study Population: Patients admitted in Institute of Respiratory Diseases, SMS Medical College

Study Subjects: On the basis of Inclusion and exclusion criteria, patients reporting to department of

Study subjects: A total of 100 patients, including both males and females, admitted during the given period to the hospital with a diagnosis of spontaneous Pneumothorax (SP) were included in the study after applying to the inclusion and exclusion criteria.

Inclusion Criteria

All patients having spontaneous pneumothorax admitting in Institute of Respiratory Diseases Jaipur

Exclusion Criteria

Patients having traumatic pneumothorax. Patients having hydropneumothorax. Patients having bilateral pneumothorax. Patients having recurrent pneumothorax. Pregnant women Patient who do not give consent.

Statistical Analysis

Data were entered in MS EXCEL sheet and subjected to statistical analysis. The qualitative data were expressed in proportion and percentage. The quantitative data were expressed as means and Standard deviation. The difference in proportions was analyzed by using Chi-square test. The difference in mean was analyzed by using unpaired t-test. The significance level for tests has determined as 95% (<0.05). MED CALC 12.2.1.0 version software has used for all statistical analysis.

Results

Table 1: Primary treatment modality in spontaneous pneumothorax patients

Primary treatment modality	PSP	SSP	Total
Observation	1(10.00%)	6(6.7%)	7
Needle aspiration	3(30.00%)	6(6.7%)	9
ICDT	6(60.00%)	78(686.6%)	84
Total	10	90	100

Chi-square = 6.349 with 2 degrees of freedom; P = 0.042 (S)

Present table depicts that ICDT was primary treatment modality in 60% PSP patients. Needle aspiration was done in 30% and observation was in 10% subjects. Among SSP patients most patients (86.6%) were treated initially with ICDT and only 6 patients were needle aspirated and kept under observation each. Chi square test showed that this difference in primary treatment modality among PSP and SSP was significantly different (P<0.05).

Table 2: Primary treatment modality in relation to size of Pneumothorax

Primary treatment modality	PSP		SSP		Total	
	Small	Large	Small	Large	Small	Large
Observation	1	0	6	0	7	0
Needle aspiration	0	3	6	0	6	3
ICDT	0	6	2	76	2	82
Total	1	9	14	75	15	85
p-value	0.001		0.001		0.001	

This table shows that observation (46.6%) and needle aspiration (40%) was the leading management modalities in small size spontaneous pneumothorax. Similarly ICDT was the leading management modality (96.4%) in large size spontaneous pneumothorax. This difference in primary treatment modality in small and

large lesion was significantly different in both PSP and SSP patients.

Discussion

The aim of management was to get the collapsed lung expanded at the earliest so as to prevent further complications of pneumothorax and to provide quicker relief from the distress and reduction of hospital stay of the patient. The Ruckley CV and MacCormack RJM recommend Intercostal Tube Drainage (ICTD) -Tube Thoracostomy with under water seal was the treatment of choice.[5] The intercostal drainage tube was always inserted in the 5 th intercostal space just behind anterior axillary line, this help in drainage of pus or fluid from the pleural space in addition to the air in the pleural space. The So Sy and Yu DYC found ICTD without suction as the better way of the treatment.[6] Suction was not used in our study. Boghaut AB and Patel RB treated 72.5% of the patients with ICTD and 5% with rest.[7] In the present study, ICDT was primary treatment modality in 60% PSP patients. Needle aspiration was done in 30% and observation was in 10% subjects. Among SSP patients most patients (86.6%) were treated initially with ICDT and only 6 patients were needle aspirated and kept under observation each.

Spontaneous pneumothorax remains a clinical problem worldwide with high mortality. The underlying pathogenesis is probably multifocal. The initial approach to the management differs from country to country and it is very difficult to establish an international protocol

Conclusion

Observation and needle aspiration are the leading management modalities in patients with small sized spontaneous pneumothorax, with excellent clinical

Outcomes whereas intercostal tube drainage is the mainstay of the treatment in patients with large sized spontaneous pneumothorax, with good clinical outcomes.

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