Original Research Paper

Volume : 5 | Issue : 8 | August 2016 • ISSN No 2277 - 8179 | IF : 3.508 | IC Value : 69.48

To Study the Clinical Profile of Spontaneous Pneumothorax in the Patients Admitted in Ghccd, Visakhapatnam, A.P From January 2014 To September 2015.

Medical Science

KEYWORDS :
Pneumoth orax, Primary SP, Secondary SP.

DR RAGHUMANDA SUNIL KUMAR	MD ASSOCIATE PROFESSOR, DEPT OF PULMONARY MEDICINE, ANDHRA MEDICAL COLLEGE,VISAKHAPATNAM, A.P.
DR CHAPPA RAMA NAGA BHUSHANA RAO.	MD , DTCD , ASSOCIATE PROFESSOR, DEPT OF PULMONARY MEDICINE, ANDHRA MEDICAL COLLEGE, VISAKHAPATNAM,A.P.
DR GORANTLA SAMBASIVA RAO	HOD &PROFESSOR OF PULMONARY MEDICINE, DEPT OF PULMONARY MEDICINE, ANDHRA MEDICAL COLLEGE, VISAKHAPATNAM,A.P.
DR SWETHA	MD (PULMONARY MEDICINE) . DEPT OF PULMONARY MEDICINE,ANDHRA MEDICAL COLLEGE, VISAKHAPATNAM, A.P.

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. Tension pneumothorax defined umothorax as "pneumothorax with significant respiratory or hemodynamic compromise that reverses on decompression (needle or finger) alone" i.e., the improvement occurs before one way valve drainage is established. Thus, two distinct epidemiological types of SP are evident: PSP and SSP. PSP shows a peak incidence in young individuals contrary to SSP having peak incidence at ages of 55 years. PSP remains an important health problem with an annual incidence of 18-28 per 100,000 populations in males and 1.2-6.0 per 100,000 populations in females. A well-known risk factor for PSP incidence regarding both genders is smoking.

AIM OF THE STUDY:

To study the clinical profile of spontaneous pneumothorax in the patients admitted in GHCCD from January 2014 to September 2015.

OBJECTIVES OF THE STUDY

1. To study the modes of presentation of spontaneous pneumothorax.
2. To study the various aetiology of spontaneous pneumothorax.
3. To study the risk factors for spontaneous pneumothorax
4. To study the various modalities adapted for the management of spontaneous pneumothorax.

PATIENTS AND METHODS:

STUDY DESIGN: hospital based prospective study

SAMPLE SIZE: 50 patients diagnosed as either primary or secondary spontaneous pneumothorax

STUDY PERIOD: from January 2014 to September 2015

INCLUSIONCRITERIA: All patients with spontaneous pneumothorax with or with out complications.

EXCLUSION CRITERIA:

1.Patient age 14 years and below
2.patients with traumatic history
3.iatrogenic pneumothorax

STUDY PROCEDURE:

This was a prospective descriptive study conducted at a tertiary care institute in GHCCD,AMC, Visakhapatnam between January 2014 and September 2015. All the patients admitted to the hospital with a diagnosis of SP were included

Group comparisons were made between patients with PSP and SSP with variables like age, sex, smoking, BMI, height.

Results are described in a descriptive fashion using percentage, mean and median.

INVESTIGATIONS:

RADIOLOGICAL: CHEST X-RAY
SPUTUM AFB
SPUTUM MICROSCOPY AND CULTURE
USG THORAX
CT SCAN CHEST

RESULTS:

SEX DISTRIBUTION

The study consisted of 50 patients, out of which 38(76%) were males,12(24%) were females.

TABLE 1.SEX DISTRIBUTION

SEX	NUMBER
MALE	38
FEMALE	12

GRAPH 1.SEX DISTRIBUTION

In the present study 76% were males and 24% were females.

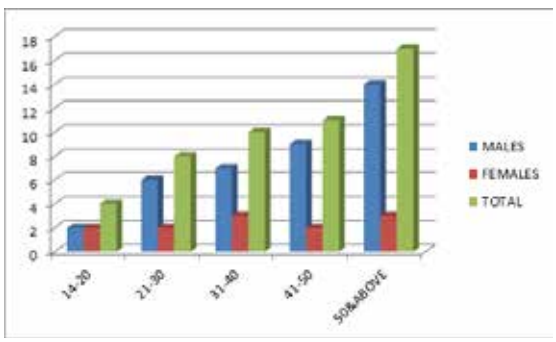
AGE DISTRIBUTION:

TABLE 2:AGE DISTRIBUTION

AGE	14-20	21-30	31-40	41-50	50&ABOVE
MALES	2	6	7	9	14
F E - MALES	2	2	3	2	3
TOTAL	4	8	10	11	17

Out of 50 patients included in the study,patients less than 20 years of the age were 4(8%),between 21 to 30 years were 8(16%),and between 31 to 40 years of age were 10(20%),and 41 to 50 years of age were 11(22%),and above 50 years of age were 17(34%).

GRAPH 2.AGE DISTRIBUTION



The mean age was 43.5±15.8

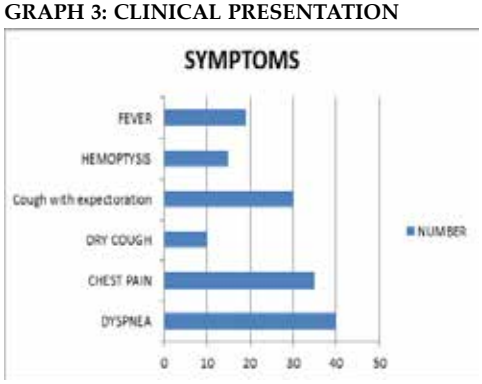
CLINICAL PRESENTATION:

Out of 50 patients,40 (80%) complained of dyspnoea,35(70%) had chest pain,30(60%) had cough with expectoration,10(20%) had dry cough,15(30%) had hemoptysis,19(38%) had fever.

TABLE 3: CLINICAL PRESENTATION

SYMPTOMS	NUMBER	PERCENTAGE
DYSPNEA	40	80%
CHEST PAIN	35	70%
DRY COUGH	10	20%
COUGH WITH EXPECTORATION	30	60%
HEMOPTYSIS	15	30%
FEVER	19	38%

GRAPH 3: CLINICAL PRESENTATION



In the present study, most of the patients presented with dyspnea followed by chest pain, cough with expectoration.

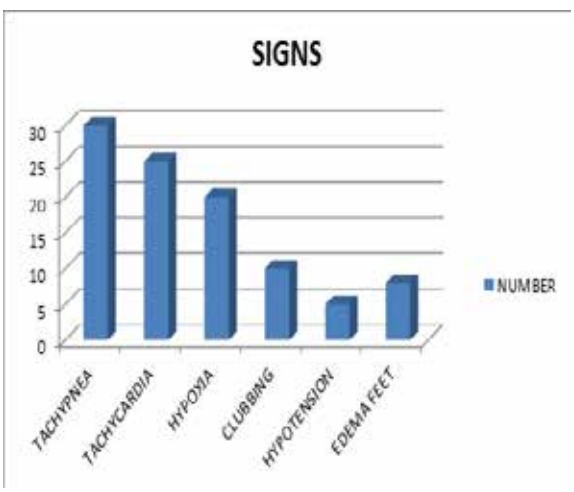
SIGNS:

Out of 50 patients, 30(60%) had tachypnea, 25(50%) had tachycardia, 20(40%) had hypoxia,10(20%) had clubbing,5(10%) had hypotension,8(16%) had oedema feet.

TABLE 4: SIGNS

SIGNS	NUMBER	PERCENTAGE
TACHYPNEA	30	60%
TACHYCARDIA	25	50%
HYPOXIA	20	40%
CLUBBING	10	20%
HYPOTENSION	5	10%
EDEMA FEET	8	16%

GRAPH 4: SIGNS



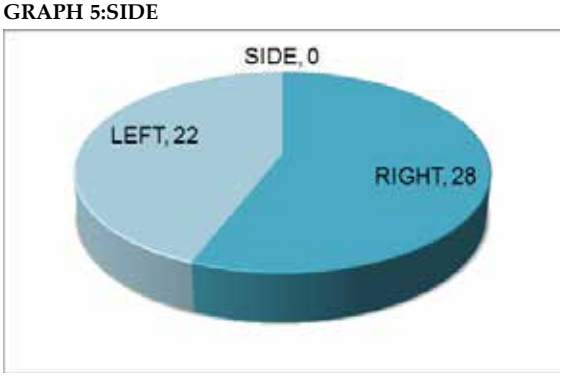
SIDE:

In the study of 50 patients,28(56%) had right side pneumothorax and 22(44%) had left side pneumothorax.

TABLE 5:SIDE OF PNEUMOTHORAX

SIDE	NUMBER
RIGHT	28(56%)
LEFT	22(44%)

GRAPH 5:SIDE



In the present study most of the patients had right side pneumothorax.

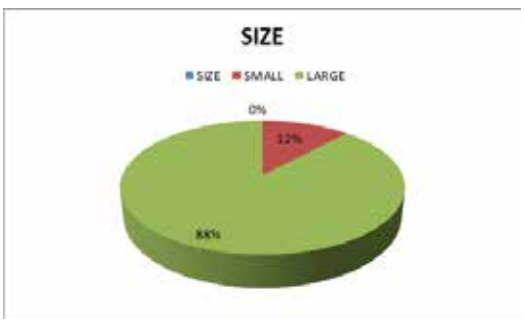
Volume : 5 | Issue : 8 | August 2016 • ISSN No 2277 - 8179 | IF : 3.508 | IC Value : 69.48

SIZE:
In the present study of 50 patients,size of the pneumothorax is small in 6 (12%) cases and large in 44(88%) of cases. Size of pneumothorax is small if it is <2cm and large if it is >2 cm according to BTS guidelines.

TABLE 6:SIZE OF PNEUMOTHORAX

SIZE	NUMBER
SMALL(<2cm)	6
LARGE(>2cm)	44

GRAPH 6:SIZE OF PNEUMOTHORAX

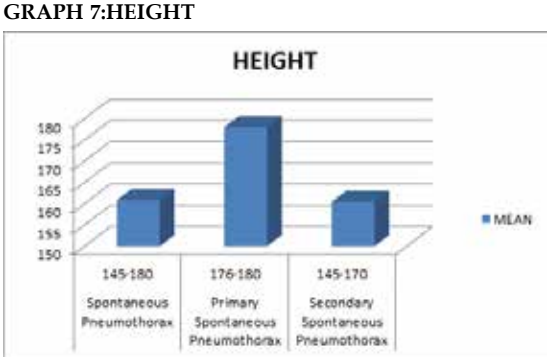


HEIGHT:
TABLE 7:HEIGHT

HEIGHT(cm)	Spontaneous Pneumothorax	Primary Spontaneous Pneumothorax	Secondary Spontaneous Pneumothorax
RANGE	145-180	176-180	145-170
MEAN	160.84	178	160.4

In the present study,out of 50 patients, mean range of the patients height with PSP is 178,and in SSP mean range is 160.4.

GRAPH 7:HEIGHT



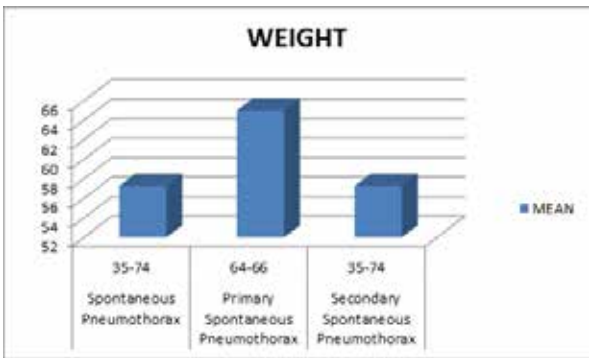
In the present study,patients with primary spontaneous pneumothorax are taller than patients with secondary spontaneous pneumothorax.

WEIGHT:
TABLE 8:WEIGHT

WEIGHT(kg)	Spontaneous Pneumothorax	Primary Spontaneous Pneumothorax	Secondary Spontaneous Pneumothorax
RANGE	35-74kg	64-66kg	35-74kg
MEAN	57.27kg	65kg	57.27kg

In the present study,mean weight of patients with primary spontaneous pneumothorax was 65 kg,and in patients of secondary spontaneous pneumothorax is 57.27 kg.

GRAPH 8:WEIGHT



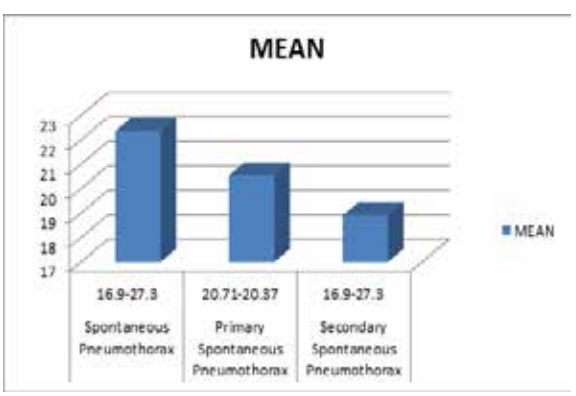
In the present study weight of the patients with secondary spontaneous pneumothorax was usually less than patients with primary spontaneous pneumothorax due to underlying lung disease.

BMI: TABLE 9:
The mean of BMI in patients with primary spontaneous pneumothorax was 20.54 and with patients with secondary spontaneous pneumothorax was 18.9.

BMI
GRAPH 9:

BMI(kg/m^2)	Spontaneous Pneumothorax	Primary Spontaneous Pneumothorax	Secondary Spontaneous Pneumothorax
RANGE	16.9-27.3	20.71-20.37	16.9-27.3
MEAN	22.36	20.54	18.9

In the present study, mean BMI of patients with primary spontaneous pneumothorax was higher.



SMOKING STATUS OF PRESENT STUDY:
In the present study of 50 patients,20(40%) are smokers,15(30%) are exsmokers, 15(20%) are never smokers.

TABLE 10:SMOKING STATUS

SMOKING HISTORY	NUMBER	PERCENTAGE
SMOKERS	20	40%
EXSMOKER	15	30%
NONSMOKER	15	30%

GRAPH 10:SMOKING STATUS

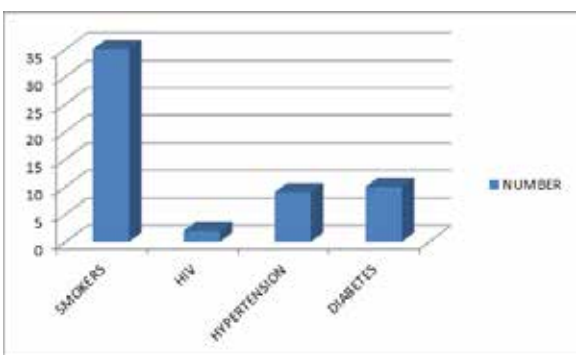
In the present study, most of them were smokers.

COMORBIDITIES:
TABLE 11: COMORBIDITIES

COMORBIDITIES	NUMBER	PERCENTAGE
SMOKERS	35	70%
DIABETES	10	20%
HYPERTENSION	9	18%
HIV	2	4%

In the present study of 50 patients, smoking history was present in 35(70%),2(4%) had HIV ,hypertension was present in 9(18%) ,10(20%) had diabetes.

GRAPH 11:COMORBIDITIES



In the present study most of the patients had smoking history.

HEMATOLOGICAL FINDINGS:
TABLE 12:HEMATOLOGICAL FINDINGS

Hematological findings	MEAN	RANGE
HEMOGLOBIN	9.6±1.5	6.0-13.0
TC	8731±1.5	5600-12600
RBS	114.2±45.1	24-330
SERUM CREATININE	0.93±0.23	0.4-1.2
SERUM BILIRUBIN	0.45±0.23	0.1-1

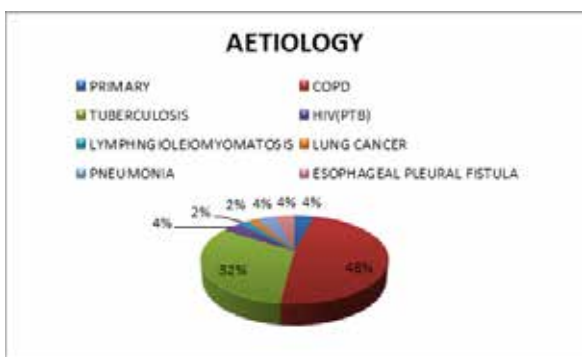
In the present study of 50 patients, mean value of haemoglobin was 9.6±1.5 ,mean value of total leucocyte counts was 8731±1.5 and the range is 5600-12600,mean value of RBS was 114.2±45.1,mean value of serum creatinine was 0.93±0.23, mean value of serum bilirubin was 0.45±0.23.

AETIOLOGY:
Out of 50 patients included in the study, 2(4%) had PSP(primary spontaneous pneumothorax) and 48(96%) had SSP(secondary spontaneous pneumothorax). Out of them 24(48%) were due to COPD,18(36%) were due to TUBERCULOSIS,2(4%) were due to bacterial pneumonia,2(4%) were due to oesophageal pleural fisula,1(2%) was due to lymphangioleiomyomatosis,1(2%)was due to Bronchogenic carcinoma(adenocarcinoma).

TABLE 13:AETIOLOGY

AETIOLOGY	NUMBER	PERCENTAGE
PRIMARY(PSP)	2	4%
COPD	24	48%
TUBERCULOSIS	16	32%
HIV(PTB)	2	4%
ESOPHAGEAL PLEURAL FISTULA	2	4%
Pneumonia	2	4%
BRONCHOGENIC CARCINOMA	1	2%
LYMPHNGIOLEIOMYOMATOSIS	1	2%

GRAPH 12:AETIOLOGY



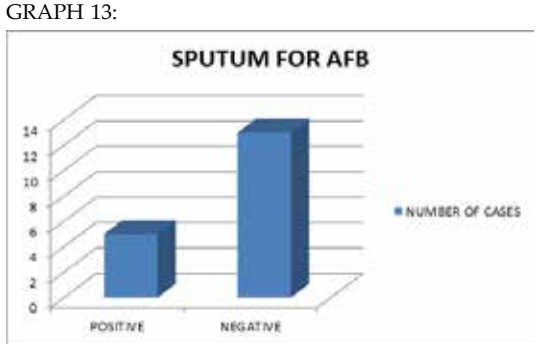
In the present study most of the cases are due to COPD, followed by TUBERCULOSIS.

SPUTUM FOR AFB
TABLE 14:

SPUTUM FOR AFB	POSITIVE	NEGATIVE
NUMBER OF CASES	5	13

In the present study of 50 cases, number of tuberculosis patients were 18,out of them 5 patients were positive for sputum for AFB and 13 patients were negative for sputum for AFB but had HRCT scan findings suggestive of PTB.

GRAPH 13:



In the present study, out of 18 cases with PTB,5 patients were positive for sputum for AFB.

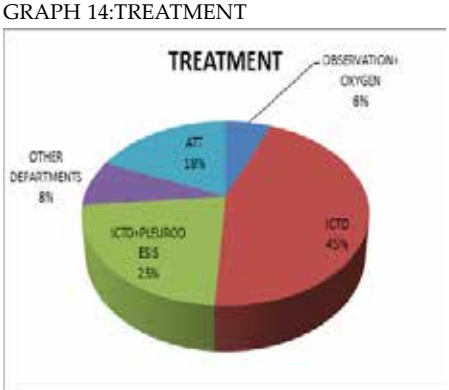
Volume : 5 | Issue : 8 | August 2016 • ISSN No 2277 - 8179 | IF : 3.508 | IC Value : 69.48

TREATMENT:
TABLE 15:TREATMENT

TREATMENT	NUMBER	PERCENTAGE
OBSERVATION+OXYGEN	6	12%
ICTD	44	88%
ICTD+PLEURODESIS	22	44%
OTHER DEPARTMENTS	8	16%
ATT	18	36%

In the present study of 50 patients,6 patients who had small pneumothorax (<2cm) were kept under observation and administered supplementary oxygen. Intercostal tube drainage (ICTD) was done in 44(88%) of the patients, pleurodesis with doxycycline was done in 22(44%) of the patients, 8(16%) were referred to other departments for treatment of bronchogenic cancer, esophageal pleural fistula and broncho pleural fistula, Anti tuberculosis treatment was given in 18(36%) of the patients.

GRAPH 14:TREATMENT



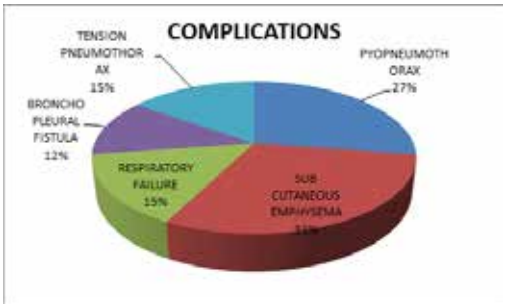
In the present study ICTD was done in most of the patients, pleurodesis was done in 23% of the patients, ATT was given in 18% of the patients,8% were referred to other departments.

COMPLICATIONS:
In this study, out of 50 patients,9(18%) had pyopneumothorax,10(20%) had sub cutaneous emphysema, 5(10%) had respiratory failure, 4(8%) had broncho pleural fistula,5(10%) had tension pneumothorax.

TABLE 16:COMPLICATIONS

COMPLIATIONS	NUMBER	PERCENTAGE
PYOPNEUMOTHORAX	9	18%
SUB CUTANEOUS EMPHYSEMA	10	20%
RESPIRATORY FAILURE	5	10%
BRONCHO PLEURAL FISTULA	4	8%
TENSION PNEUMOTHORAX	5	10%

GRAPH 15:COMPLICATIONS



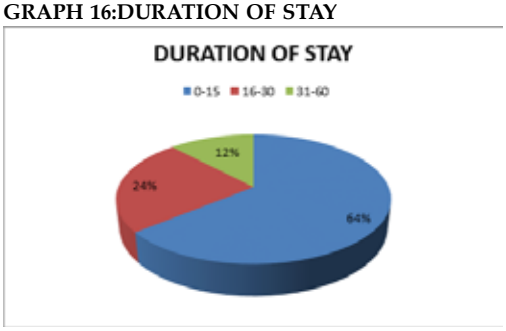
In the present study, most of the cases had subcutaneous emphysema, followed by pyopneumothorax.

DURATION OF STAY:
TABLE 17:DURATION OF STAY IN HOSPITAL

DURATION OF STAY(DAYS)	NUMBER	PERCENTAGE
0-15	32	64%
16-30	12	24%
31-60	6	12%

In the present study, 32(64%) stayed in hospital for 15 days, 12(24%) stayed for 16-30 days,6(12%) stayed for 31-60 days.

GRAPH 16:DURATION OF STAY



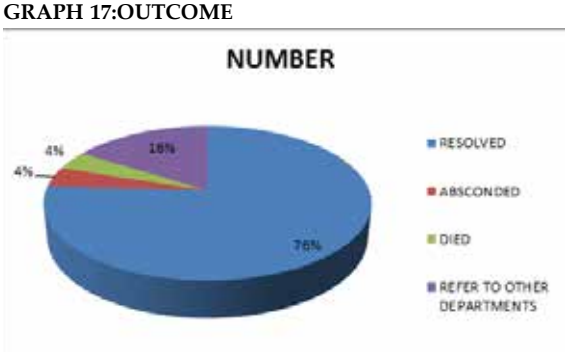
In the present study, majority of the patients stayed in hospital for a duration of 15 days.

OUTCOME:
TABLE 18:OUTCOME

OUTCOME	NUMBER	PERCENTAGE
RESOLVED	38	76%
ABSCONDED	2	4%
DIED	2	4%
REFER TO OTHER DEPARTMENTS	8	16%

In the present study of 50 patients, 38(76%) had complete resolution, 2(4%) patients were absconded, 2(4%) were dead,8(16%) are referred to higher centres.

GRAPH 17:OUTCOME



In the present study, most of the patients were responded to ICTD and ATT(Anti Tuberculosis treatment)

SUMMARY

In the present study of spontaneous pneumothorax, males were more common than females and those above 40 years formed the majority who developed spontaneous pneumothorax. Mean age of the patients is 43.5±15.8.Dyspnea was the predominant symptom followed by chest pain and cough with expectoration.28(56%) of the patients presented with right side pneumothorax, where as left pneumothorax was present in 22(44%).On general examination, clubbing was present in 30(60%) of the patients, pedal edema is present was present in 8(16%) of the patients.Signs of tachypnea was present in 30(60%) of the patients, tachycardia was present in 25(50%) of the patients, hypoxia in 20(40%) of the patients, hypotension in 5(10%) of the patients.2(4%) had PSP(primary spontaneous pneumothorax) and 48(96%) had SSP(secondary spontaneous pneumothorax). Out of them 24(48%) were due to COPD,18(36%) were due to TUBERCULOSIS,1(2%)was due to lymphangioleiomyomatosis,1(2%)was due to bronchogenic carcinoma,2(4%)were due to bacterial pneumonia,2(4%) were due to oesophageal pleural fistula.20(40%) are smokers,15(30%) are ex smokers,15(30%) are non smokers.9(18%) had pyopneumothorax,10(20%) had sub cutaneous emphysema, 5(10%) had respiratory failure, 4(8%) had broncho pleural fistula,5(10%) had tension pneumothorax. 6(12%) who had small pneumothorax(<2 cm) were observed and supplementary oxygen was administered, intercostal drainage (ICTD) was done in 44(88%) of the patients, pleurodesis with doxycycline was done in 22(44%) of the patients, 8(16%) were referred to other departments like CT surgery and oncology, Anti tuberculosis treatment was given in 18(36%) of the patients.38(76%) had complete resolution, 2(4%) were absconded, 2(4%) were died due to extensive tuberculosis,8(16%) were referred to other departments.

CONCLUSION

Spontaneous pneumothorax in India is more often secondary to an underlying lung disease. COPD and pulmonary tuberculosis remains the common causes of Spontaneous Pneumothorax. Smoking is an important risk factor for the development of pneumothorax. X-Ray chest is one of the most important investigations for diagnosis of pneumothorax and CT chest helps in evaluating underlying etiological factor. The most common complication associated with ICT insertion were empyema, subcutaneous emphysema and broncho pleural fistula. Inspite the possible complications, Spontaneous pneumothorax has a good clinical outcome due to good antibiotics and respiratory intensive care with cure rate of 76 percent.

REFERENCES:

1. Rami K, Damor P, Upadhyay GP, Thakor N. Profile of patients of spontaneous pneumothorax of North Gujarat region, India: a prospective study at GMERS medical college, Dharpur-Patan. Int J Res Med Sci 2015;3(8):1874-7.
2. Gupta D, Mishra S, Faruqi S, Aggarwal AN. Aetiology and Clinical Profile of Spontaneous Pneumothorax in Adults. Indian J Chest Dis Allied Sci 2006; 48: 261-4.
3. Amiya Kumar Dwari, Samir sarkar, DibakarHaldar, Abhiksimha, Sowuk Ray, Jaydip Deb – Spontaneous pneumothorax : Experience from a peripheral Tertiary care Teaching Hospital of West – Bengal, India, 10SR Journal of Dental and Medical sciences & - ISSN ; 2279 – 0853, P – LSSN ; 2279 – 0801. Vol (4 issue I Ver. VIII (January 2015) PP 01-07.
4. Shramel FM, Postmus PE, Vandershueren RG. Current aspects of spontaneous pneumothorax. *Eur Respir J* 1997; 10:1372-9.
5. Wait MA, Estrera A. Changing spectrum of spontaneous pneumothorax. *Am J Surg* 1992; 164: 528-31.
6. Gupta KB, Mishra DS, Tandon S, Sindhwani G, Tanwar T.Role of chest CT scan in determining etiology of primary spontaneous pneumothorax. *Indian J Chest Dis Allied Sci* 2003:45: 177.
7. Faruqi S, Gupta D, Aggarwal AN, Jindal SK. Role of simple needle aspiration in the management of pneumothorax. *Indian J Chest Dis Allied Sci* 2004; 46: 183-90.
8. Janmeja A, Raj B, Saini V, Gupta KB. Analysis of 100 cases of spontaneous pneumothorax. *Lung India* 1995; 13: 12-6.
9. Ahangar AG, Hussain SS, Mir IA, Dar AM, Bhat MK, Lone GN, *et al.* Spontaneous pneumothroax. *Indian J Surg* 2003; 65:423-6.
10. 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.