



CLINICOPATHOLOGICAL STUDY OF CHRONIC RESPIRATORY DISEASES

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ABSTRACT **AIM:** to study the spectrum of chronic respiratory diseases of lung with reference to age, gender, lifestyle and occupation. **METHODS:** The study is done over a period of 5 years (May 2015 to April 2020) in the Department of Pathology, KMC, Kurnool. Total of 50 lobectomy specimens were Formalin fixed, paraffin embedded and H & E stained tissue sections were studied. Special stains were done whenever necessary. **RESULTS:** Majority of chronic respiratory diseases occurred in the second to fourth decade with M:F ratio 1.38:1. On chest x-ray majority of lung lesions affected in lower lobes. Majority of the cases clinically presented with cough, dyspnea, chestpain and fever. Among the 50 of lobectomies, bronchiectasis commonest followed by tuberculosis. **CONCLUSION:** out of 50 lobectomies, bronchiectasis is commonly (52%) seen followed by Tuberculosis (14%), Hydatid cysts (14%), Aspergilloma(10%), Emphysema (6%), and the least were Lung abscess (4%). In this study, majority were in the younger age group between 21-40 years.

KEYWORDS : Chronic respiratory diseases, Lobectomies, Special stains.

INTRODUCTION:

Chronic respiratory diseases are chronic diseases of the airways and parenchyma of the lung. Respiratory tract infections are more frequent than the other organs both immunocompromised and immunocompetent individuals. The vast majority are upper respiratory infections caused by viruses but bacterial, fungal and parasitic infections still account for an enormous amount of morbidity and mortality at all ages. In developing countries, chronic respiratory diseases represent a challenge to public health because of their frequency, severity, projected trends, and economic impact. Chronic lung infection is the main indication for lobectomy in benign pulmonary diseases.

MATERIAL AND METHODS

Ours is a retrospective and prospective study done over a period of 5 years (May 2015 to April 2020) in the Department of Pathology, Kurnool Medical College, Kurnool. Total of 50 cases were studied, who presented with a mass lesion on CT scan and X-ray to the cardiothoracic unit. Complete clinical details collected from cardiothoracic department of Govt General Hospital, Kurnool, including age, sex, smoking history, family history, duration of complaints and radiological findings. The case material included lobectomies. Specimens were fixed in 10% buffered formalin. Tissues were processed by routine paraffin processing. Sections from paraffin blocks were taken and Haematoxylin & Eosin staining was performed. Special stains (Gomori's methenamine silver stain and Periodic acid schiff) were done whenever necessary.

RESULTS:

Cases in the study were aged between 7 years and 70 years and the mean age was 38yrs. Most common age group was 21-30 years seen in 38% (19/50) of cases followed by 31-40 yrs constituted 22% (11/50) of cases. Males were 29 (58%) and females were 21 (42%) with Male to female ratio is 1.38 : 1. In the present study most common histological type is bronchiectasis which was seen in 26(52%) cases followed by tuberculosis 7cases (14%), hydatid cyst 7cases (14%), aspergilloma 5cases(10%), emphysema 3cases (6%) and the least were lung abscess consisting of 2cases (4%).

Table: Age and sex wise distribution of Histological types of chronic respiratory diseases

| S No | Histological types of chronic respiratory Diseases (cases) | 10-20yr | | 21-30yr | | 31-40yr | | 41-50yr | | 51-60yr | | 61-70yr | | Total | |
|------|--|---------|---|---------|---|---------|---|---------|---|---------|---|---------|---|-------|----|
| | | M | F | M | F | M | F | M | F | M | F | M | F | M | F |
| 1 | Bronchiectasis (26) | 4 | 2 | 4 | 4 | 4 | 3 | 2 | 1 | 1 | 1 | - | - | 15 | 11 |
| 2 | Tuberculosis (7) | - | 1 | 1 | 2 | 2 | - | - | - | - | - | 1 | - | 4 | 3 |
| 3 | Hydatid (7) | 1 | 1 | 1 | 1 | - | 1 | - | 2 | - | - | - | - | 2 | 5 |

| | | | | | | | | | | | | | | | |
|---|--------------------|----|---|----|---|----|---|---|---|---|---|---|---|----|----|
| 4 | Aspergilliosis (5) | 1 | - | 2 | 1 | 1 | - | - | - | - | - | - | - | 4 | 1 |
| 5 | Emphysema (3) | - | - | 2 | 1 | - | - | - | - | - | - | - | - | 2 | 1 |
| 6 | Abscess (2) | - | - | - | - | - | - | 1 | - | 1 | - | - | - | 2 | 0 |
| | Total(50) | 10 | | 19 | | 11 | | 6 | | 3 | | 1 | | 29 | 21 |

DISCUSSION:

Chronic respiratory diseases are chronic diseases of the airways and lung parenchyma. The spectrum of chronic respiratory diseases are studied in view of age, sex incidence, clinical features and histopathology. The age ranging between 7years and 70 years with mean age of 38.5 years with male preponderance and the commonly affected were lower lobes(44%) which is comparable with Weber et al¹ where in, out of 53 total lobectomies, the age ranged from 17 - 82 years with mean age of 47.1 years and slight male preponderance.

Bronchiectasis-

Of the 50 lobectomies, majority were bronchiectasis constituting 52%(26/50). The predominant age group was 21-30 years with male predominance(58%). Patients mainly presented with cough, dyspnea, fever and chest pain. Radiologically all the cases showed dilated and thickened bronchioles, predominantly involving the lower lobes(62%).The incidence of bronchiectasis is slightly higher when compared with Weber et al¹ where out of 41 cases of open lobectomies, bronchiectasis were common constituting 18 cases (43%)which is comparable with our study.

Pulmonary tuberculosis were seen in 7cases(14%) out of 50 lobectomy specimens. Of them, 57% of patients seen in the age group between 21-30 years with male preponderance(4/7). All the patients presented with cough and fever followed by weight loss. Majority of the cases were in the middle lobe (4/7) followed by upper lobe (3/7). Azizollah et al¹ studied 34 cases of pulmonary tuberculosis exclusively on lobectomy specimens in complicated cases like multi drug resistant tuberculosis(MDT), bronchiectasis and bronchial stenosis. The mean age in their study was 45 years with male predominance. The present study showed younger age group compared to the above study.

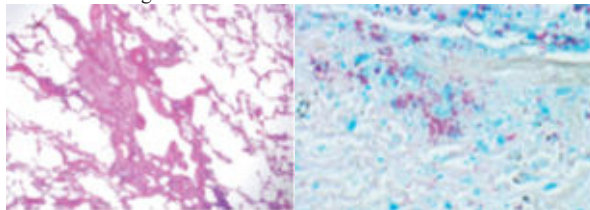
Hydatid disease were seen in 7/50(14%) of cases after tuberculosis in the present study. Majority were in age group of 11-20(57%) and one case was 7 years at the time of diagnosis and female preponderance noted. Where as in Maltem Tor et al² study, mean age was 31 years with high incidence noted in males and majority were asymptomatic at presentation. But in the present study, many of them presented with vague symptoms like chest pain and hemoptysis seen in 4 (57%) cases. Hydatid cysts were mainly seen in the lower lobes (66%) with cysts size varying from 6cm to 8cm.

Aspergilloma were 7cases(14%). All were in the age group between 21 and 40 years with slight male preponderance. In Samarakoon and Soubani study³, the mean age was 65.1 years with male preponderance.

Also in Avraam Karas et al study⁷, patients mean age was 51 years and frequent in men. Cough, dyspnea, hemoptysis were the presenting symptoms in all cases with involvement of lower lobes(66%). Aspergilliosis is more commonly seen in immunocompromised individuals(57%) than in immunocompetent patients(43%). Pure cases of aspergillomas were 3, associated with bronchiectasis were 2, single case each associated with tuberculosis and lung abscess. In an exclusive study on 36 cases of pulmonary aspergilliosis by Avraam Karas et al⁸, 32 (88%) cases had underlying chronic cavitary tuberculosis, 5 cases (13%) had decreased immunity and in 3(9%) cases no underlying disease was identified which is showing higher incidence of associated tuberculosis compared to the present study.

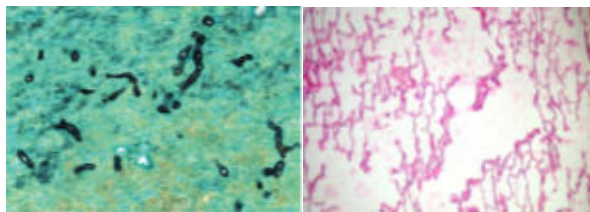
Emphysema cases were 3 (7%) in the present study which were mainly seen in the age group of 21-30 years, mainly presenting with cough, dyspnea. The involvement mainly upper lobe which is comparable with Paul Vaughan et al study where in, all were upper lobectomies⁹.

Lung abscess were 2 cases (4%) encountered in the present study in patients aged >40 years and all were males. Both cases showed involvement of lower lobes and one case is associated with Aspergilliosis. This can be comparable with the Kharkar et al, where the lung abscess patients were in 4th and 5th decade of life with male preponderance¹⁰. They presented with cough, fever, dyspnea, weight loss and clubbing..



1. Bronchiectasis 40x

2. T.B, ZN stain 10x



3. Aspergilliosis GMS 40x

4. Emphysema 10x

CONCLUSION

Chronic respiratory diseases are the major cause of morbidity and mortality affecting many individuals within primary care. By the time patients develop symptoms usually 50% of lung function capacity has been affected, with much of the lung damage being irreparable. The increasing incidence is because of change in the life style, smoking, industrialization, environmental changes, poor socioeconomic status. A proper approach for chronic respiratory disease is always necessary as they typically present with characteristic symptoms. A detailed history regarding the nature of present symptoms, past medical, family and social history, careful physical examination and appropriate diagnostic tests helps to narrow down the differential, so that a diagnosis can be made and plan for therapy to be initiated. The present study is an observational study to know the incidence of chronic respiratory diseases in lobectomy specimens. Of total 50 cases, bronchiectasis were more commonly (52%) seen followed by Tuberculosis (14%), Hydatid cysts (14%), Aspergilloma(10%), Emphysema (6%), and the least were Lung abscess (2%). In this study, majority were in the younger age group between 21-40 years. So there is a need to identify the disease in early stage and prevent the progression of disease by appropriate therapy. Although surgery is rarely used to treat chronic non neoplastic respiratory diseases, it is considered for people who present with severe symptoms, not improved with medication therapy.

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