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RESEARCH ARTICLE

PULMONARY PATHOLOGY IN MEDICOLEGAL AUTOPSIES

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ABSTRACT

Primary involvement of lungs is seen in various types of infections, neoplasms and autoimmune diseases. But secondary involvement of lungs is common and it is seen in almost all terminal diseases. Clinical features and imaging studies are sometimes nonspecific and clueless. Autopsy study of lung is of great value to know the pulmonary alterations and disease processes. Present study comprised of 475 medicolegal autopsy cases received in the Department of Pathology for histopathological reporting during a period from January 2014 to December 2015. Lung specimens were examined thoroughly and processesed for routine paraffine embedding, H & E staining. Detailed microscopic examination was done. Present study observed that lung diseases were more common in males. Commonest pathological lesion was acute pulmonary congestion (58.95%) followed by pneumonia (41.47%). Rare lesion like pulmonary hypertension (2.32%) and atelectasis (0.84%) were also encounterd. Malignancies were observed in 1.05% of cases.

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INTRODUCTION

'Mantui Vivas Docueran' means let the dead teach the living (Ohya, 1994). An Autopsy is a medical procedure where detailed examination of the deceased is carried out by opening the body to know the cause, manner and mechanism of death. There are two types of autopsies-clinical and medicolegal. Though there is a procedural difference both serve the same purpose (Pathak, 2008). Apart from knowing the cause of death, autopsy has many benefits. It eliminates suspicion, constructs the better defense, facilitates law enforcement and jurisprudence, maintains the public health issues, provides information for insurance purposes, aids medical education, research and discovery (Bal, 2008). Aveill A. Liebow in the III[rd] edition of his book in 'Pathology of Lung' by Spencer quoted in the foreward that, 'At first glance the lungs may seem uncomplicated, but a wise man has gone astray in there labyrinths.' He further added that ' A man's medical history and the traces of his habits and his trade are often inscribed upon The lungs for him who can read it (Ohya, 1994). Lungs have primary pathology spanning from infection to neoplasm or autoimmune diseases[5] but secondary involvement of lung is seen in almost all terminal diseases. Amongst infections pneumonia still remains the captain of men of death, (Chauhan, 2015 and Hjorth *et al*., 1995).

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Clinical findings and imaging studies in lung diseases are non-specific in many parenchymal diseases which put the clinicians sometimes underdiagnose the patient. Dual pulmonary pathology poses a diagnostic challenge due to complexity of the clinical presentation (Tahir, 2013). Hence there is a need to do a thorough diagnostic work up. Sudden death, minimal symptoms or rapid progression of disease give no time for workup. In this situation detailed histopathological examination of lung at autopsy is of great help in knowing the cause of death which provides inputs for clinicians to deal such cases in future. The present study was aimed at knowing the epidemiological aspects and various histomorphological patterns in medicolegal autopsies.

MATERIAL AND METHODS

The present retrospective, non interventional, observational study includes 475 cases of lung specimens of medico-legal autopsies received in the Department of Pathology of tertiary care centre for histopathological reporting from Jan. 2014 to Dec. 2015. Permission of Institutional ethics committee was sought before conducting the study.

Selection of cases

Inclusion criteria: All lung specimens of medicolegal autopsies received.

Exclusion criteria: Partial autopsies in which lungs were not included and autolysed specimens. Information regarding epidemiological aspects was obtained from the case records.

Study Protocol

The detailed gross examination of received specimen of the lungs was done. Status of pleura, external surface and cut surface was noted for presence of pathological lesions like fibrosis, necrosis, consolidation, edema, congestion, bullae, millets, tumor, infarction, abscesses etc. Representative bits from pathological and non pathological areas were submitted for routine paraffin embedding and H & E staining. Special stains were employed as per the merit of the case. Detailed microscopic examination was done and findings were recorded. The data of pulmonary pathology in the said period were analysed with respect to epidemiological aspects and histopathological patterns of pulmonary pathology.

RESULTS AND DISCUSSION

Present study constitutes histomorphological study of lungs in 475 cases. In the present study males 55.79 % outnumbered the females i.e. 44.21% of cases.

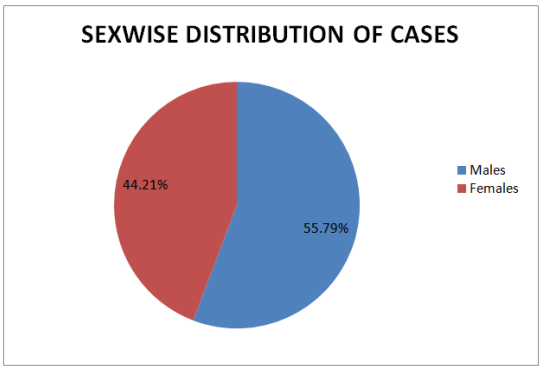

Table 1. Sex wise pulmonary lesions - Distribution of cases

Lesions	Male		Female		Total	
	N	(%)	N	(%)	N	(%)
Acute Pulmonary Congestion	160	33.68	120	25.26	280	58.95
Pulmonary Oedema	74	15.58	62	13.05	136	28.63
Chronic Venous Congestion	25	05.26	09	1.89	34	7.16
Pneumonia	90	18.95	107	22.53	197	41.47
Tuberculosis	14	02.95	03	0.63	17	03.58
Tumors	03	0.63	02	0.42	05	01.05
Emphysema	02	0.42	02	0.42	04	0.84
Acute Respiratory Distress Syndrome	05	1.05	08	1.68	13	02.74
Atelectasis	03	0.63	01	0.21	04	0.84
Bronchiectasis	01	0.21	00	00	01	0.21
Bronchitis/Bronchiolitis	03	0.63	06	1.26	09	01.89
Pulmonary Hypertension/Thrombi in blood vessels	07	1.42	04	0.84	11	02.32
Unremarkable	02	0.42	10	2.1	12	02.53
Total	389		334		723	

N – Number of cases
Total number of cases outscores the number of autopsies encountered, .as few cases had more than 1 finding*.

Table 2. Age wise pulmonary lesion - Distribution of cases

Lesion	0-10yrs	11-20yrs	21-30yrs	31-40yrs	41-50yrs	51-60yrs	61 and above yrs	Total
Acute Pulmonary Congestion	21(4.42%)	22(4.63%)	95(20%)	45(9.47%)	31(6.53%)	32(6.74%)	34(7.16%)	280
Pneumonia	25(5.26%)	30(6.32%)	65(13.68%)	26(5.47%)	16(3.37%)	11(2.31%)	24(5.05%)	197
Tuberculosis	01(0.21%)	02(.42%)	05(1.05%)	03(0.63%)	02(0.42%)	02(0.42%)	02(0.42%)	17
Oedema	09(1.89%)	16(3.37%)	46(9.68%)	23(4.84%)	08(1.68%)	20(4.21%)	14(2.95%)	136
CVC	0	0	05	07(1.47%)	06(0.84%)	4(0.84%)	12(2.53%)	34
Tumors	0	0	0	01(0.21%)	0	02(0.42%)	02(0.42%)	05
Emphysema	0	0	0	0	0	02(0.42%)	02(0.42%)	04
ARDS	01(0.21%)	03(0.63%)	6(1.26%)	0	01(.21%)	0	02(0.42%)	13
Atelectasis	03(0.63%)	0	0	0	0	0	01(0.21%)	04
Bronchiactasis	0	0	0	00	01(0.21%)	0	0	01
Bronchitis/bronc-hiolitis	02(0.42%)	02(0.42%)	03(0.63%)	01(0.21%)	0	0	01(0.21%)	09
Pulmonary Hypertension	0	0	04(0.84%)	02(0.42%)	03(0.63%)	01(0.21%)	01(0.21%)	11
Unremarkable	0	03(0.63%)	02(.042%)	03(0.63%)	0	01(0.21%)	03(0.63%)	12

Table 3. Concomittant Pulmonary Lesions

Concomittant Lesion	N	%
Oedema with Acute Pulmonary Congestion	79	16.63
edema with Pneumonia	22	4.63
Oedema with Tuberculosis	01	0.21
Pneumonia with Emphysema	01	0.21
Pneumonia with Acute Pulmonary Congestion with Oedema	13	2.74
Pneumonia with Acute Pulmonary Congestion	28	5.89
Pneumonia with Bronchitis	09	1.89
Pneumonia with Abcess	02	0.42
Total	155	32.63

N – Number of cases

Table 4. Showing Comparative Studies

Lesions	Hjorth etal[7]1995	Bal et al[3] 2008	Tariq M T et al[8] 2013	Udyashankar et al[4] 2013	Hanmante R D et al [5] 2014	Chauhan G et al[6] 2015	Present study 2016
Pneumonia	23%	18%	4%	31.81%	39%	14.62%	41.47%
Tuberculosis	1%	8.67%	42.96%	22.72%	1.7%	6.26%	3.58%
Tumour	-	1.33%	-	-	-	2.1%	1.05%
ARDS	-	1.3%	-	9.09%	-	-	-

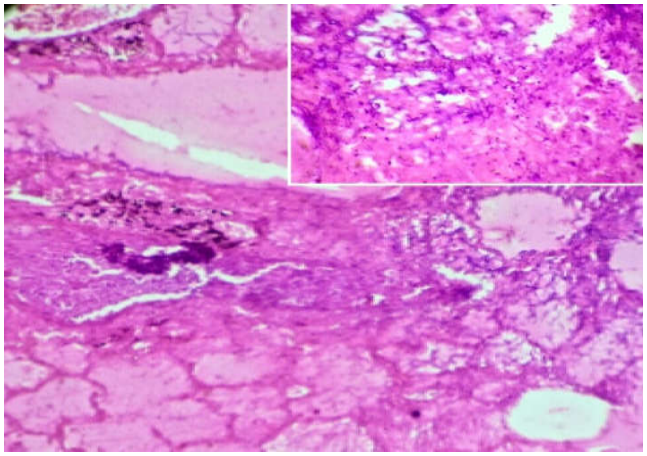

Figure 1A. Aspergillous pneumonia with surrounding pulmonary oedema. Inset shows fungal hyphae

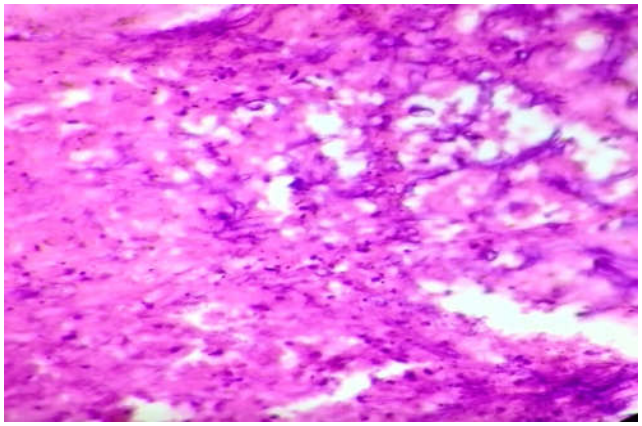

Figure 1B. High power view of aspergillous fungal hyphae

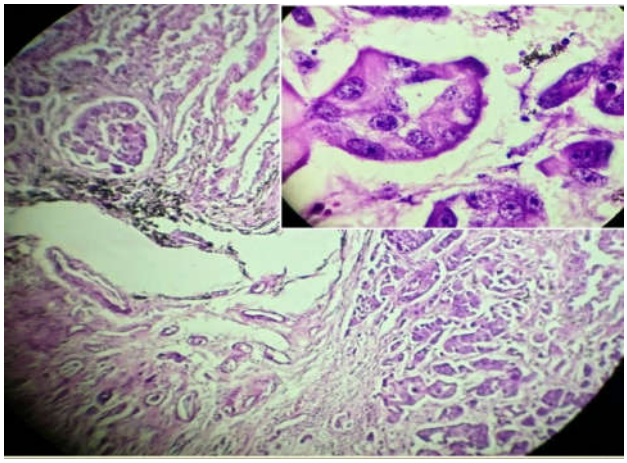

Figure 2. Metastasis from carcinoma of breast in lung, Inset shows glandular arrangement of malignant cells

Similar observations were made by Chauhan *et al.* (2015), Bal *et al.* (2008), Udayashankar *et al.* (2013). In the present study dominant lesion found was acute pulmonary congestion to the tune of 58.95% followed by pneumonia 41.47%. Occasionally cases of special types like aspergillous pneumonia was found in 2 cases (Figure 1 A and B). Third commonest pathology was pulmonary oedema constituting 28.63% of cases. Chronic venous congestion was seen in 7.16% of cases. Tuberculosis was at a lower trend encompassing 3.58% of cases showing various morphological patterns. Rare lesions like pulmonary hypertension were also observed in 2.32 % of cases. Lesions like ARDS (2.74%) bronchitis (1.89%), tumors (1.05%) (Figure 2), emphysema (0.84%), and atelectasis (0.84%) were also encountered. Lungs were unremarkable in 2.53% of cases. Overall all lesions were common in males except pneumonia, ARDS and bronchitis. In the present study maximum lesions were found in the age group 21 to 40 years. Neoplasms were encountered in the 6th decade obviously.

In the present study; 32.63 % of cases were found to have concomitant lesions. The commonest combination of acute pulmonary congestion and oedema (terminal events) was found in 16.63% of cases. Chauhan *et al.* (2015), Bal *et al.* (2008) showed similar observations. In the present study pneumonia constituted 41.47% of cases. These observations are comparable to Chauhan *et al.* (2015), Hanmante *et al.* (2014). Tuberculosis though common in India, study showed a lower trend as against the observations made by Udayshankar *et al.* (2013) (22.72%) and Bal *et al.* (2008) (8.67%). In present study tumour comprised of only 1.05% of cases comparable with other studies.

Conclusion

Histopathological examination of lung in medicolegal autopsy cases shows various histopathological patterns, which may be a direct or contributory cause of death. In the autopsy one may encounter unexpected disease or unexpected course of the disease. Thus autopsy study may be of great value in providing the vision for clinical assessment and diagnostic work up. It continues to enjoin as an educational tool for better understanding of disease processes.

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