

## Study of Incidental Histopathological Findings in Medico Legal Autopsies

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### Abstract

**Background:** Autopsy literally means to see for one self. Medico legal autopsy are performed to identify the cause of death, time of death, determine or confirm medical diagnosis that remained unknown or unclear prior to the patient's death. Various histopathological finding not related to the cause of death are observed in the routine histopathological examination of medico legal autopsies. These findings are important learning tools for the pathologist and forensic expert and have immense academic and research value.

**Method:** This retrospective descriptive study was conducted on medico legal autopsies for ten years from 2007-2017 in the department of pathology. A total of 425 cases were included in the study. In each case available clinical details (age, sex, clinical diagnosis, cause of death, post mortem findings), gross and microscopic findings noted from autopsy records and analyzed. Available Gross specimens and slides were reviewed.

**Results:** Out of 425 cases, 310 (72.9%) were males and 115 (27.05%) were females. Commonest age group was 21-30 (22.11%) followed by 31- 40 (19.05%). Normal histopathological changes were seen in 110 (25.88%) cases. The most common significant histopathological findings was pulmonary edema (13.41%) followed by atherosclerosis (12.23%), lobar pneumonia (6.11%), and acute tubular necrosis (7.52%). Interesting incidental histopathological findings accounted to 20.23%, varied from granulomatous inflammation to malignancy.

**Conclusions:** Incidental histopathological findings may not contribute to the cause of death, but they are of academic interest. We found various rare incidental findings (20.23%), neoplastic lesions were less compared to non-neoplastic lesions.

**Keywords:** Autopsy; Incidental Findings; Histopathology; Medico Legal.

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### Introduction

Autopsy literally means to see for one self. Medico legal autopsy are performed to identify the cause of death, time of death, determine or confirm medical diagnosis that remained unknown or unclear prior to the patient's death [1-4]. Autopsy remains

a valuable contributor to medical education in understanding limitations of medicine and serves as an important quality assurance indicator of clinical and diagnostic and therapeutic services [5-8]. In spite of advances in medical diagnosis, there is still a high discrepancy rate between the clinical and autopsy diagnosis. Various histopathological finding not related to the cause of death are observed in the routine histopathological examination of medico legal autopsies [9,10]. These findings are important leaning tools for the pathologist and forensic expert and have immense academic and research value and help in the understanding the limitations of medicine [2,3,6].

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### Material and Methods

After collecting ethical clearance from the

institutional ethical committee, this retrospective descriptive study was conducted on medico legal autopsies for ten years from January 2007-December 2017 in the department of pathology, Sri Devaraj Urs Medical College, attached to SDUAHER. A total of 425 cases were included in the study. In each case available clinical details (age, sex, clinical diagnosis, cause of death, post mortem findings) were collected from hospital records. Gross and microscopic findings were noted from autopsy records, tabulated and analyzed. Available gross and microscopic slides were reviewed.

*Inclusion criteria:* all medico legal autopsies

*Exclusion criteria:* autolysed specimens

## Results

This study included 425 medico legal autopsies where histopathological findings were available. Out of 425 cases, 310 (72.9%) were males and 115 (27.05%) were females with male to female ratio of 2.6:1. Commonest age group was 21-30 years (22.11%), followed by 31-40 years (19.05%) and 41-50 (15.05%). Table 1, shows age distribution of medico legal autopsies.

**Table 1:** age distribution of medico legal autopsies

Age group	No of cases	Percentage
0-10	34	8%
11-20	53	12.47%
21-30	94	22.11%
31-40	81	19.05%
41-50	64	15.05%
51-60	60	14.11%
61-70	30	7.05%
71 and above	09	2.11%

Detailed analyses of gross and microscopic features of medico legal autopsies were done. Normal histopathological changes were seen in 110 (25.88%) cases. The significant incidental histopathological findings were grouped into most common, common and rare findings. The most common histopathological finding was pulmonary edema (13.41%), followed by atherosclerosis (12.23%), lobar pneumonia (6.11%), and acute tubular necrosis (7.52%). Table 2 shows various histopathological findings observed in medico legal autopsies.

**Table 2:** various histopathological findings observed in medico legal autopsies (most common and common incidental findings)

Histopathological findings	Number of cases	Percentage
Normal histopathology	110	25.88
Pulmonary edema	57	13.41
Atherosclerosis	52	12.23
Acute tubular necrosis	32	7.52
Lobar pneumonia	26	6.11
Myocardial infarction	17	4.00
Cirrhosis	15	3.52
Chronic hepatitis	14	3.29
CVC lung	13	3.05
Chronic pyelonephritis	10	2.35
CVC Spleen	10	2.35
Bronchiectasis	10	2.35
bronchitis	9	2.11
Kidney cyst	9	2.11
Tuberculosis lesion	8	1.88
Fatty liver	8	1.88
Miscellaneous	25	5.88

Common and rare incidental findings observed in this study accounted to 20.23%. Table 3 explains the details of rare incidental findings

**Table 3:** Clinical details of rare incidental findings

S. No.	Age and sex	Indication for Autopsy	Incidental findings
1	57/M	Sudden death	Cardiomyopathy
2	43/M	Accidental fall	Lung infarction
3	60/M	Collapsed in ICU	Bronchoalveolar carcinoma
4	34/M	OP poisoning	Gas gangrene
5	35/M	Vomited blood	Congestive splenomegaly with esophageal varices with thrombi
6	45/M	RTA	Meningothelialiomatus meningioma mixed
7	42/M	Sudden death	Penetrating ulcer found on the greater curvature with a bleeding vessel, ulcer measured 2.5cm
8	19/M	assault	Diffuse infiltration of atypical lymphocytes in lymph nodes, spleen, liver-ALL

**Table 4:** comparison of present study histopathological findings with other studies

Histopathological findings	Present study	Arunalatha et al. [10]	Kanwardeep et al. [1]	Puri A et al. [9]	Patel S et al. [3]
Normal histopathology	25.88%				
Pulmonary edema	13.41%	17%		16%	12.37%
Atherosclerosis	12.23%	18%	3.20%	24.8%	27%
Acute tubular necrosis	7.52%	7%	22%	12%	10.89%
Lobar pneumonia	6.11%	5%	4.80%	4.8%	3.46%
Myocardial infarction	4.00%	5%	8.8%		
Cirrhosis	3.52%	5%	5.6%	4%	2.97%
Chronic hepatitis	3.29%	2%	5%		
CVC lung	2.58%	10%			
Chronic pyelonephritis	2.35%	5%	0.8%		
CVC Spleen	2.35%	4%			0.46%
Bronchiectasis	2.35%				
bronchitis	2.11%				
Kidney cyst	2.11%				
Tuberculosis lesion	1.88%	1%	1.60%	4.8%	3.46%
Fatty liver	1.88%	24%		22.4%	19%
Miscellaneous	5.88%	15%			2.97%

## Discussion

Autopsy remains a valuable contributor to medical education in understanding limitations of medicine and serves as an important quality assurance indicator of clinical and diagnostic and therapeutic services. Despite intensive recent diagnostic tools, autopsy has revealed major antemortem diagnostic errors in 30% of cases [11, 12]. Histopathological examination of autopsy has enormous value in improving clinical assessment, and has helped in identifying etiology of more than 80 diseases [13,14]. It also a useful tool to assess the mortality statistics which play a role in health and treatment planning [15].

Present retrospective study was done on medico legal autopsies to find out previously undiagnosed medical conditions, where histopathological findings are available. Out of 425 cases, 310 (72.9%) were males and 115 (27.05%) were females. Male to female ratio was 2.6:1. This finding was similar to study done by Arunalatha P et al. [10] Most of the deceased were from the 3rd decade followed by 4th decade, similar to other studies [2-4]. Jhaji et al. reported highest incidence in 4th decade. Table 4 compares the present study histopathological findings with other studies.

From our study we found that maximum incidental findings were noted in the in the

cardiovascular system, most common incidental finding was atherosclerosis (12.23%). This correlates with study done by Sulegaon R et al., Arunalatha et al., Patel S et al. and Puri et al. the second most common incidental finding was myocardial infarction (4%). In other studies percentage varies from 5-8.8%. [1,4]. We had 3 cases of cardiomyopathy, other studies have reported 2 to 3 cases. Individuals with cardiomyopathy are usually asymptomatic and diagnosis may be incidental or identified during investigation for other diseases [10].

In respiratory system the most common incidental finding was pulmonary edema (13.41%). In other studies incidence varied from 12.37-17%. [3,9,10,15]. Next common incidental finding was lobar pneumonia (6.11%). Incidence in other studies varied from 3.46-5%. Most important rare incidental finding was bronchoalveolar carcinoma in a 60 year male who admitted with history of breathlessness and collapsed in the ICU and one case of fibrocavitary tuberculosis in 52 year male.

In renal system the most common incidental finding was acute tubular necrosis accounting to 7.52%. In other studies incidence varies from 7-22% [1,3,9,10]. Next common incidental finding was chronic pyelonephritis accounted to 2.32%. In other studies it varied from 0.8 to 5% [1,10].

In hepatobiliary system, the most common

incidental finding was cirrhosis (3.52%) followed by chronic hepatitis similar to a study done by Selvam et al. [16] and Ratisiu V et al. [17]. Incidence of cirrhosis in other studies varied from 2.97 to 5.6% [1,3,9,10] chronic hepatitis accounted to 3.29%, in other studies it was 2% and 5%. Fatty liver finding was seen in 1.88%, which is in discordance with other studies [3,9,10].

Neoplastic incidental finding in our study was only 0.47% which is very low compared to other studies [3,18,19].

### Conclusion

Histopathological examination of autopsy is the gold standard to ascertain cause of death. It remains an important tool for quality assessment of clinical diagnosis. From present study we conclude that the most common incidental finding was pulmonary edema followed by atherosclerosis. Neoplastic lesions were less compared to non-neoplastic lesions. This study also highlights various rare incidental cases in medico legal autopsies which are of academic interest.

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*Conflicting Interest*

*(If present, give more details):* Nil

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