

Histopathological Study of MLC and Autopsy Cases in Our Hospital

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Abstract

Objectives: To study the histopathological findings in MLC and autopsy cases. **Material and Methods:** This study was undertaken in department of Pathology, Dr SCGMC, Nanded for a period of year Jan 2017 to Dec 2017 to determine the histopathological findings in MLC and autopsy cases. **Results:** Out of 220 cases, 200 cases were studied, in which 85.5% of cases were of lungs, 73% kidney, 68% heart, 67.5% liver, 59% spleen and 47.5% brain. **Conclusion:** The most common organ involved is lung in which the most common Pathology observed is pulmonary oedema. Autopsy examination of the organs and histology helps to arrive at the final cause of death.

Keywords: Autopsy; MLC; Histopathology.

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Introduction

The term "autopsy" is derived from the Ancient Greek word "autopsia", means "to see for oneself", autos ("oneself") and opsis ("eye") [1,2]. Autopsy as a word means self-study of dead body. It is an important way to find out the condition of internal organs, to evaluate disease or injury that could explain the cause and manner of person's death [3]. In a broadest sense, a medicolegal autopsies generates an evidentiary document that forms a basis for opinions rendered in a clinical

trial, deposition, wrongful death civil suit, medical malpractice civil suit, administrative hearing, or workmen's compensation hearing [4]. Medical autopsies are performed at the request of and with the consent of the next of kin of a decedent and are often requested to determine the extent of a disease process or to evaluate therapy [5]. In contrast, medicolegal autopsies are performed by a forensic pathologist primarily to determine cause and manner of death but also to document trauma, diagnose potentially infectious diseases and report them to the appropriate agencies, provide information to families about potentially inheritable diseases, provide information to family members and investigative agencies, and testify in court [5]. A handful of histopathological findings unrelated to the cause of death are noticed in routine histopathological examination of medicolegal autopsies. These findings have proved to be of great academic value and serve as an eye opener to the infrequent lesions which go unnoticed when a person is alive [6]. The medicolegal autopsy provides an opportunity for studying not only medically diagnosed and treated neoplasms, but also the natural evolution of untreated disease [6]. This study emphasizes the

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various incidental lesions which otherwise would have been unnoticed during a person's life.

Postmortem Examination [7,8,9,10]

Medico-Legal Post-mortem

Autopsy is being requested by Investigative Agencies

-Police under Section 174 Cr PC and /or Magistrate under section 176 Cr P C with following objectives:

1. To find out cause of death
2. To find factual, objective, medical information for law enforcing agencies and court.
3. To allow proper recovery and preservation evidence
4. To document injuries and disease
5. To determine manner of death
6. To know time of death
7. To reconstruct Crime Scene
8. To provide correlation of facts and circumstances related to the death
9. To help in identification of victim, etc.

Materials and Methods

A retrospective descriptive study of autopsies and MLC for one year from 1st Jan 2017 to 31st Dec 2017 was conducted in the Department of Pathology, Dr Shankarrao Chavan Govt Medical College, Vishnupuri, Nanded. A total number of 220 cases were sent for histopathological examination out of which 200 cases were included in our study, where the internal organs were sent and 20 cases (10 autolysed, 6 hanging, 4 electrocution) were excluded. The organs relevant to the case concerned were sent in 10% formalin. In most of the cases they comprised of heart, liver, spleen, kidneys, brain and lungs. Representative bits from the concerned organs were processed in a routine manner. All sections were stained with Haematoxylin and Eosin (H & E) stain. Gross and histopathologic findings were noted and the salient features were studied.

Results

The present study consisted of a series of 200 autopsy cases from Department of Pathology, Dr. Shankarrao Chavan Govt Medical College, Vishnupuri, Nanded conducted over a period of one year. The internal organs of total of 200 autopsies were sent for histopathological examination. [Table

1] displays the spectrum of lesions noted at autopsy.

Table 1: Distribution of Cases According to Organs Involved

Organs Involved	Number of Cases	Percentage
Heart	136	68%
Lungs	171	85.5%
Kidney	146	73%
Liver	135	67.5%
Spleen	118	59%
Brain	95	47.5%

Out of 200 cases 136 (68%) cases shows involvement of heart, 171 (85.5%) cases shows involvement of lung, 146 (73%) cases shows involvement of kidney, 135 (67.5%) cases shows involvement of liver, 118 (59%) cases shows involvement of spleen, 95 (47.5%) cases shows involvement of brain (Table 1).

Table 2: Lung - Distribution of Cases According to Pathology Observed

Pathology Observed	Number of Cases	Percentage
Pulmonary Edema	117	68.42%
Pneumonia	112	65.49%
Emphysema	39	22.8%
CVC	23	13.45%

The most common organ involved is lung. The pathology observed is 117 (68.4%) cases of pulmonary oedema, 112 (65.49%) cases of pneumonia, 39 (22.8%) cases of emphysema, 23 (13.45%) cases of CVC lung. We noted a case of pulmonary tuberculosis and miliary tuberculosis in all organs. Also noted a case of respired lung in 24-48 hrs old baby (Table 2).

Table 3: Heart - Distribution of Cases According to Pathology Observed

Pathology Observed	Number of Cases	Percentage
Myocardial Infarction	50	36.23%
Atherosclerosis	80	58%
Myocarditis	10	7.25%
Ventricular Hypertrophy	82	59.42%

The pathology observed is 50 (36.23%) cases of myocardial infarction, 80 (58%) cases of atherosclerosis, 10 (7.25%) cases of myocarditis, 82 (59.42%) cases of ventricular hypertrophy. The most common incidental finding is atherosclerosis. Along with this we noted a case of pericarditis and myocarditis in 15 year old female (Table 3).

History: A 15 yr old female was brought by relatives with chief complaints of

Pedal oedema

Abdominal Distension

Facial Puffiness

Since 2 Days

Heart on Gross Examination: Gross-wt. 450 gms. Dilated, enlarged, Right ventricular wall: 0.4 cm, Left ventricular wall: 1.5 cm; externally: Lung adherent to the heart. Also seen, Sheath encasing lung and the heart, fixed to the heart (Fig.1).



Fig. 1: Gross Examination- Heart

Microscopic Examination: Sections reveal myocardial fibres cut across in various planes showing hypertrophy of the muscle fibres with the collection of inflammatory cells at places, granuloma composed of langhan's giant cells, lymphocytes and epithelioid cells. Also seen, areas of caseation necrosis. Surrounding pericardium seen which is thickened with fibro collagenous tissue with necrosis with inflammatory infiltrate composed of lymphocytes, epithelioid cells and langhan's giant cells.

Impression: Tuberculous Granulomatous Inflammatory Lesion with Tuberculous Pericarditis

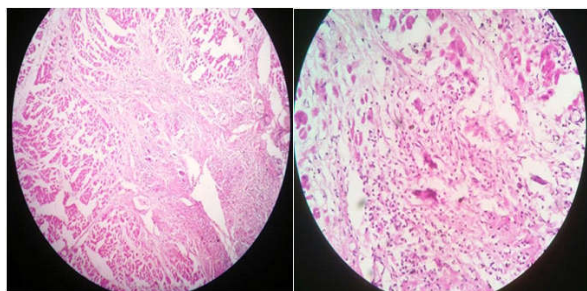


Fig. 2: Low Power View 10X **Fig. 3:** High Power View 40X

Table 4: Heart-Distribution of Cases According to Age and Pathology Observed

Age (Years)	Pathology observed			
	Myocardial Infarction	Atherosclerosis	Myocarditis	Ventricular Hypertrophy
1-20	1 (2%)	3 (3.75%)	1 (10%)	5 (6%)
21-40	13 (26%)	22 (27.5%)	3 (30%)	22 (26.8%)
41-60	20 (40%)	30 (37.5%)	4 (40%)	30 (36.5%)
61-80	11 (22%)	18 (22.5%)	1 (10%)	18 (21.9%)
81-100	5 (10%)	7 (8.75%)	1 (10%)	7 (8.5%)

Table 5: Kidney - Distribution of Cases According to Pathology Observed

Pathology Observed	Number of Cases	Percentage
Cloudy Change	102	69.86%
Pyelonephritis	31	21.23%
Glomerulonephritis	7	4.79%
Tubular Necrosis	4	2.73%

The pathology observed is 102 (69.86%) cases of cloudy change, 31 (21.23%) cases of Pyelonephritis, 7 (4.79%) cases of glomerulonephritis, 4 (2.73%) cases of tubular necrosis (Table 5).

Table 6: Brain - Distribution of Cases According to Pathology Observed

Pathology Observed	Number of Cases	Percentage
Brain Edema	38	40%
Congestion	38	40%
Encephalitis	15	15.78%

The pathology observed is 38 (40%) cases of cerebral oedema, 38 (40%) cases of congestion, 15 (15.78%) cases of encephalitis. Also noted a case of fibroblastic meningioma in 24 years old female, a case of pyogenic meningitis in 19 year old male (Table 6).

Table 7: Spleen - Distribution of Cases According to Pathology Observed

Pathology Observed	Number of Cases	Percentage
CVC	83	70.33%
Congestion	35	29.66%

The pathology observed is 83 (70.33%) cases of CVC spleen, 35 (29.66%) cases of congestion (Table 7).

Table 8: Liver - Distribution of Cases According to Pathology Observed

Pathology Observed	Number of Cases	Percentage
Fatty Change	33	24%
Portal Triditis	40	29.62%
CVC	48	35.55%
Cirrhosis	20	14.81%
Hepatitis	22	16.30%

The pathology observed is 33 (24%) cases of fatty change, 40 (29.62%) cases of portal triditis, 48 (35.55%) cases of CVC liver, 20 (14.81%) cases of cirrhosis, 22 (16.30%) cases of hepatitis (Table 8).

We also noted a case of *Sickle Cell Disease*.

History: A 21 yrs male, brought by relatives with chief complaints of 2 episodes of convulsions

Altered sensorium

Generalised weakness & severe backache

On Examination:

1) Heart:

On microscopy-

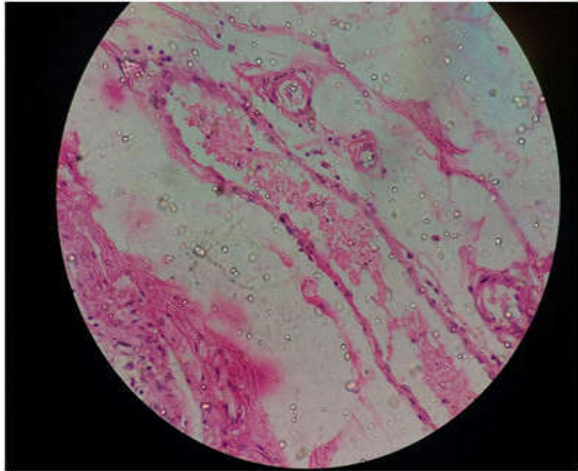


Fig. 4: Low Power View 10X

Section from right ventricle shows presence of myocardial fibres shows congested capillaries, blocked by sickle RBCs.

2) Kidney:

On gross:



Fig. 5: Gross Examination- Kidney (C/S)

Ext- Capsule easily stripped off, mildly granular, slightly lobulated, b/l enlarged kidneys with congestion, petechial haemorrhages over surface. C/S: -corticomedullary differentiation

not possible.

On microscopy:

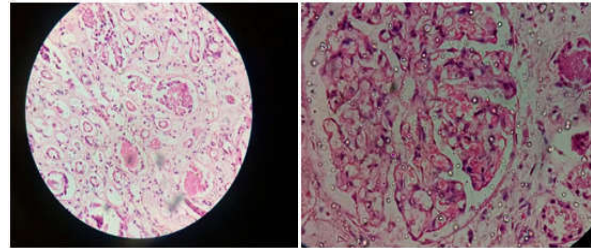


Fig. 6: Low Power View 10X High Power View 40X

Section shows enlarged glomeruli with duplication of basement membrane with blockage of capillaries by sickled RBCs. Also seen haemorrhages.

3) Spleen: On gross-



Fig. 7: Gross Examination- Spleen

Weight: 10 gms, dimensions 2x1x1 cms, E/S & on c/s : greyish white, congested, & firm(fibrotic). -Auto splenectomy specimen.

On microscopy:

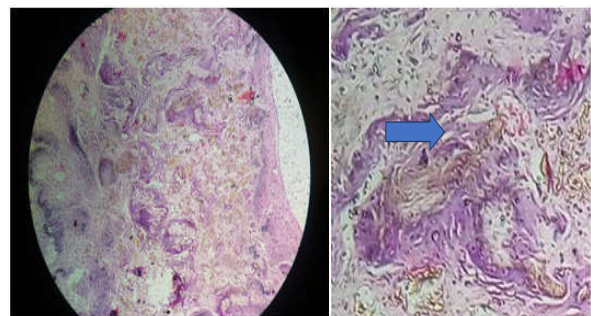


Fig. 8: Low Power View 10X High Power View 40X

Section shows loss of normal parenchyma showing fibrosis with calcification intense pigment deposition showing gamnagandy bodies. Few are bamboo like seen. And areas of haemorrhages present.

4) Intestine: On microscopy

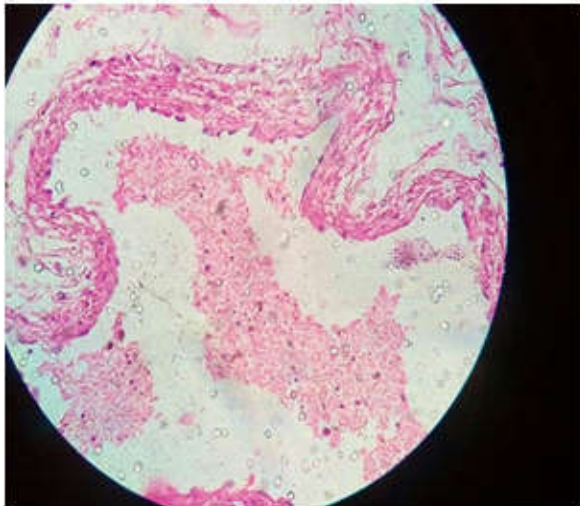


Fig. 9: Low Power View 10X

Section studied shows loss of normal mucosa at places with plenty of inflammatory cells in mucosa. The submucosa shows congested blood vessels and blockage by sickled RBCs.

Discussion

It has been reported that autopsy is the most accurate method used to confirm causes of death, clinical diagnoses [11]. In our study the most common organ involved is lung (85.5%), followed by kidney (73%), heart (68%), liver (67.5%), spleen (59%) and brain (47.5%). However study done by Nada Chettian Kandy et al. shows that in maximum cases pathology was detected in cardiovascular system (78.43%) followed by respiratory system (74.50%) [12]. The most common cause of death observed in our study is pulmonary edema (68.42%), this finding is in concordance with study done by P. Arunalatha et al., A. Sangeetha et al. [13]. this is followed by pneumonia (65.49%), emphysema (22.8%), CVC (13.45%) in lung pathology in our study. The study by Pratima Khare et al., Renu Gupta et al. on Prevalence of Lung Lesions at Autopsy: A Histopathological Study shows commonest being oedema and congestion (28.5%) followed by changes in interstitium (11.9%). There were 9.5% cases of granulomatous inflammation

and 5.9% cases each of acute pneumonia and emphysema. There were 1.2% cases each of Hyaline Membrane Disease (HMD), Meconium Aspiration Syndrome (MAS) and Acute Respiratory Distress Syndrome (ARDS) in the series in their studies [14]. Zaitoun AM et al., Fernandez C et al. in their study says the most common causes of death not suspected clinically were pulmonary embolism (23%), bronchopneumonia (22%), ischemic heart disease (13%) and malignancies (10%). The clinical sensitivity of antemortem diagnoses was 25% for peritonitis and 24% for pulmonary embolism [15].

In this study, the most common pathology observed in heart is ventricular hypertrophy (59.42%), followed by atherosclerosis (58%), myocardial infarction (36.23%), and myocarditis (7.25%). In study done by Nada Chettian Kandy et al. shows that The most common incidental histopathological finding was atherosclerosis of aorta [12]. In our study age wise distribution of cases in heart pathology shows the incidence of all four conditions myocardial infarction, atherosclerosis, ventricular hypertrophy, myocarditis is between 41 to 60 years of age. In study done by FDC Bernardi et al., P H N Saldiva et al. shows the heart, pancreas, and the brain were the organs with most frequent diagnostic agreement, and interestingly, with the least diagnostic refinements after histological examination. One possible explanation for these findings is that the heart and the brain are frequently affected by vascular disorders, leading to acute or chronic ischaemic or haemorrhagic changes that are usually obvious macroscopically [16].

The most common pathology observed in our study in kidney is cloudy change (69.86%), followed by pyelonephritis (21.23%), glomerulonephritis (4.79%), tubular necrosis (2.73%). According to study done by Amandeep Kaur et al., Vijay Kumar Bodal et al. In 25 (25%) cases, the microscopic morphology was close to normal histology. Remaining 75 (75%) cases had a pathological findings at autopsy. Non glomerular nephropathies (58%) were higher as compared to that of glomerular lesions (17%) [17]. In 17 cases of renal autopsies glomerular alterations were observed such as focal segmental glomerulosclerosis, nodular glomerulosclerosis and mesangial cell proliferation [17]. In the study done by Vaneet Kaur Sandhu et al., Arun Puri et al. the percentage of nonglomerular nephropathies (60.8%) was higher as compared to that of glomerular lesions (16%). 20 (16%) cases exhibited glomerular alterations such focal global glomerular sclerosis, segmental glomerular sclerosis, nodular mesangial sclerosis,

basement thickening and mesangial cellular proliferation. Tubular and interstitial lesions were observed in 34.16% which included acute tubular necrosis, chronic pyelonephritis and tubercular pyelonephritis. Renal arteriosclerosis was observed in 25% cases [18].

In our study the most common pathology observed in liver is Chronic venous congestion (35.55%), followed by portal triditis (29.62%), fatty change (24%), hepatitis (16.30%), cirrhosis (16.30%). But in studies done by Dr. M.S. Bal et al. - Maximum cases (39%) had fatty change liver followed by normal livers (30), cirrhosis (14), congestion (9), hepatitis (3), malignancy (3) [19]. Where as study done by Ph. Madhubala Devi et al., Barida Ginia Myrthong et al. Cirrhosis was the commonest liver disease (25%) followed by chronic hepatitis (22%). Hepatic steatosis accounted for 17% of the cases, portal triaditis for 15%, congestive liver and miscellaneous cases accounted for 5% each [20].

There is equal number of cases of brain oedema (40%) and brain congestion (40%) followed by encephalitis (15.78%) in our study. This is in concordance with the study done by Tanushri Mukherjee et al., Soma Mukherjee et al. that brain oedema was observed in 62 cases, Brain haemorrhage was seen in 14 patients, infarct in 10 cases, abscess in 03 cases in their study [21].

According to our study splenic pathology shows 70.33% shows chronic venous congestion and 29.66% show congestion. The most common pathological findings in this study done by Kayode A. Adelusola et al., Stephen A. Osasan et al. is haemorrhagic necrosis as a result of splenic laceration [22].

Conclusion

From our study we conclude that lungs are the most common organ involved. Pulmonary edema is the most common pathology observed in lung, can be a cause of death. The incidence of the heart disease is most common in age group of 41-60 years. The most frequently affected organs were lungs, heart, liver, kidney and brain. Autopsy examination of the organs and histology helps to arrive at the final cause of death.

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