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Histomorphological Study of Medicolegal Autopsy Cases

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ABSTRACT: Introduction:-Histopathological examination of medicolegal autopsies provides an opportunity for studying not only medically diagnosed and treated cases but also the natural evaluation of untreated diseases. It provides valuable information which serves as an eye opener to the infrequent lesions which are unnoticed when the person is alive.

Aims and objectives-

1. To study histopathological findings and their gender wise and age wise distribution in medicolegal autopsy specimens.
2. To analyze incidental histopathological lesions in medicolegal specimens.

Material and methods- This was retrospective study of 319 cases of medicolegal autopsies received in the department of pathology during the period of one year. The pieces of organs were thoroughly examined grossly and fixed in 10% formalin. Representative sections were taken and processed and stained as per standard protocol and examined. The findings were analyzed accordingly.

Results- Out of total 319 cases of medicolegal autopsies, 19 cases showed autolytic changes which were excluded. The male to female ratio was 1:1. In histopathological examination of 300 cases showed maximum cases of pulmonary edema (43%), pulmonary hemorrhages(38.6%), atherosclerosis (37%), pneumonia (33%), acute tubular necrosis (33%), meningeal congestion (52%) and rare findings of aspergillosis and pulmonary cryptococcosis were seen in 0.3% cases each. A single case each of metastasis of round cell tumor in liver and splenic cryptococcosis was reported.

Conclusion- The study highlights various common as well as incidental unexpected rare findings in medicolegal autopsies which are imperative in academic and research purposes.

Keywords – Histopathology, medicolegal autopsy.

I. INTRODUCTION

The word autopsy is derived from ancient Greek word "Autopsia" to see for oneself [1]. Autopsy helps to determine the cause and manner of death in clinical as well as medicolegal cases. Histopathological examination of medicolegal autopsies provides an opportunity for studying not only medically diagnosed and treated cases but also to evaluate the natural course of untreated diseases. It provides valuable information which serves as an eye opener to the infrequent lesions which remain unnoticed when the person is alive. Many incidental findings have been noticed during histopathological examination which are proven to be a great learning tool for pathologists as well as forensic experts. The present study aimed to analyse histopathological findings, to evaluate incidental histopathological lesions and also to study gender wise and age wise distribution of histopathological findings in medicolegal autopsies.

II. MATERIALS AND METHODS

This is retrospective study of 319 cases of medicolegal autopsies received in the department of pathology during the period of one year. The gross specimens in 19 medicolegal autopsy cases were completely autolysed so they were excluded from the study. The organs/ pieces of organs received were thoroughly examined grossly and fixed in 10% formalin. Representative sections were taken and processed with paraffin embedding. Sections were stained with H and E. Special stain like PAS was applied wherever necessary. The data was analysed according to histopathological findings.

III. RESULTS

The present study comprised of 300 medicolegal autopsy cases received in the department of pathology.

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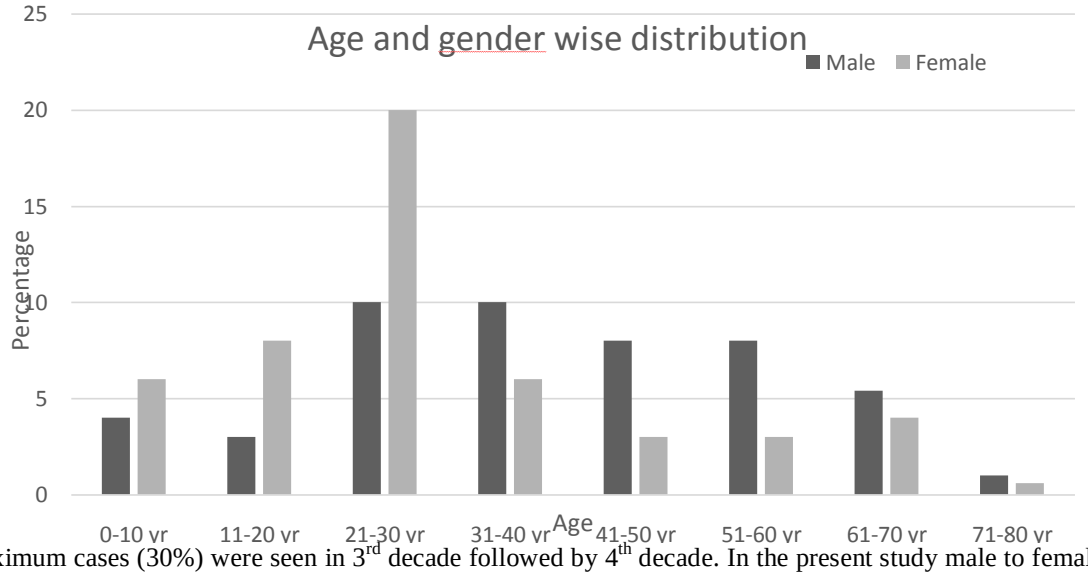

Maximum cases (30%) were seen in 3rd decade followed by 4th decade. In the present study male to female ratio was 1:1.

Table 1- Histopathological findings in various organs (n=300 cases)

Sr.No	Organs received	Histopathological findings	Percentage (%)
1.	Lungs	Oedema	43
		Hemorrhages	38.6
		Pneumonia	33.3
		Hyaline membrane disease	5.3
		Pulmonary thromboembolism	1.3
		Pulmonary aspergillosis	0.3
		Pulmonary cryptococcosis	0.3
		Pulmonary tuberculosis	0.3
2.	Heart	Atherosclerosis	37
		Acute myocardial infarction	5.3
		Old healed infarct	6
		Myocarditis	6
		Pericarditis	4.6
		Infective endocarditis	0.3
3.	Liver	Fatty change	24
		Congestion	12.3
		Hepatitis	5
		Cirrhosis	1
		Necrosis	7.3
		Hepatocellular carcinoma	0.3
		Metastasis	0.3
4.	Kidney	Cloudy change	35
		Acute tubular necrosis	33
		Benign nephrosclerosis	15.3
		Pyelonephritis	9.3
5.	Spleen	Congestion	53.6
		Cryptococcosis	0.3
6.	Brain	Congestion	52
		Meningitis	12.6
		Edema	3.6
		Meningoencephalitis	1.3
		Cryptococcosis	0.3
		Infarct	1

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		Glioblastoma	0.3

In the present study, the commonest lesion in lungs was oedema (43%) followed by haemorrhages (38.6%) and pneumonia (33.3%). Atherosclerosis (37%) followed by myocardial infarction (5.3%) were the pathological lesions in heart. Fatty change (24%) and congestion (12.3%) were seen as the prominent pathological findings in liver.

Lesions in the kidney show acute tubular necrosis as the most common cause of death (33%). The most common finding in spleen was congestion (53.6%) in the present study. The histopathological findings in brain were cerebral congestion followed by meningitis. A case of glioblastoma multiforme (Grade IV) was rare histopathological finding in a case of 45 years female (Fig.1). Two fungal infections were the incidental findings found in our study– One case revealed Cryptococcosis in lungs (Fig.2), spleen and brain while the other case showed Aspergillosis in lung (Fig.3). The fungi were highlighted by PAS stain. Metastasis of round cell tumour in liver (Fig.4) was demonstrated in a case of 24 years female.

Fig.1 Glioblastoma multiforme

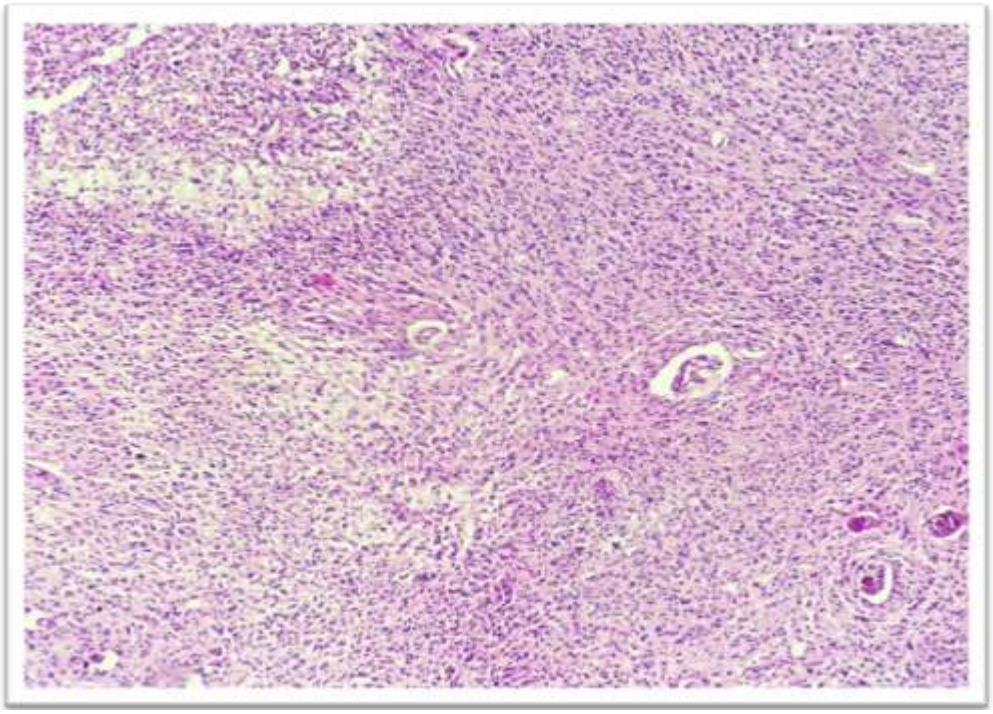

Fig.2 - Cryptococcosis in lungs (H&E and PAS stain)

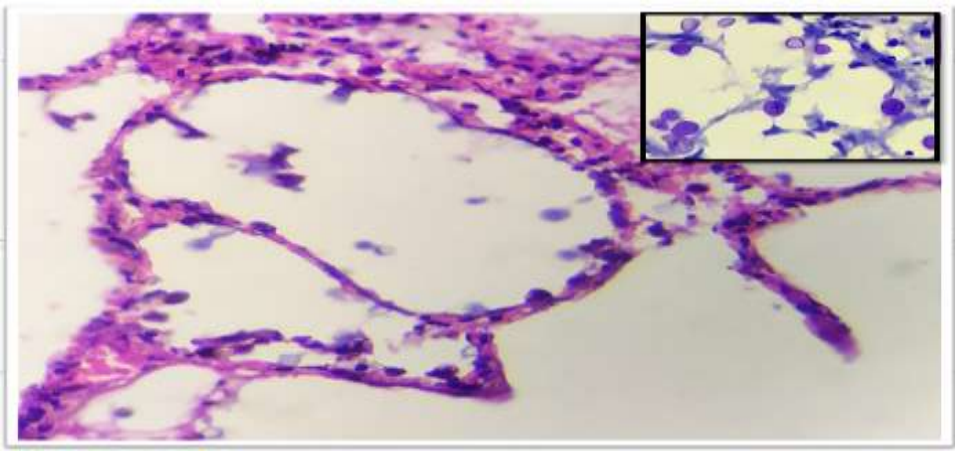

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Fig.3 – Aspergillosis in lung

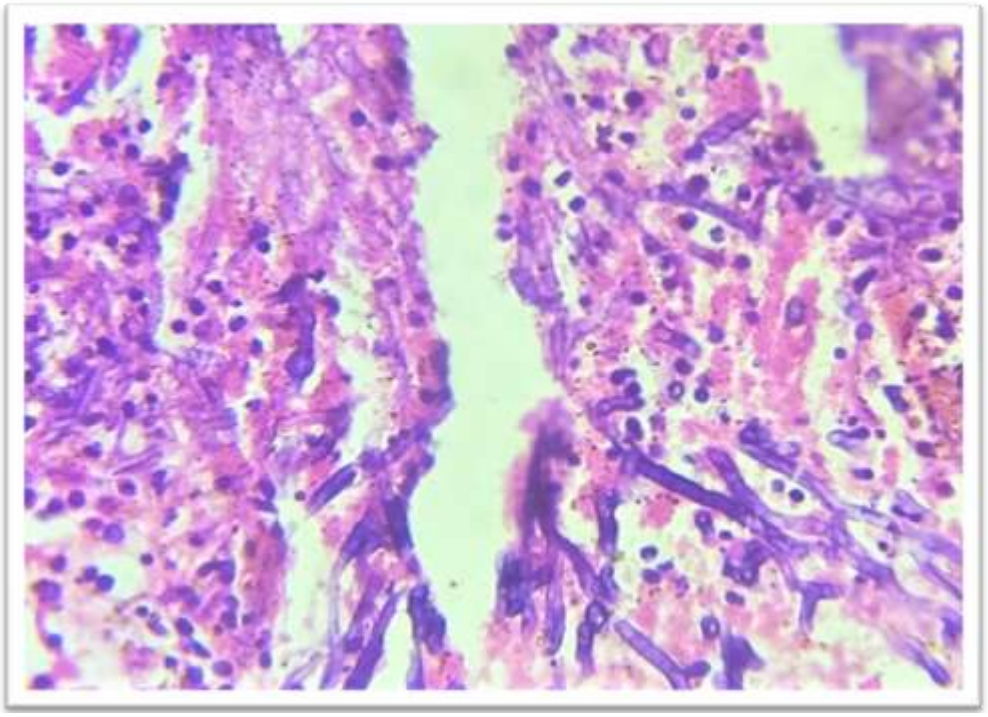
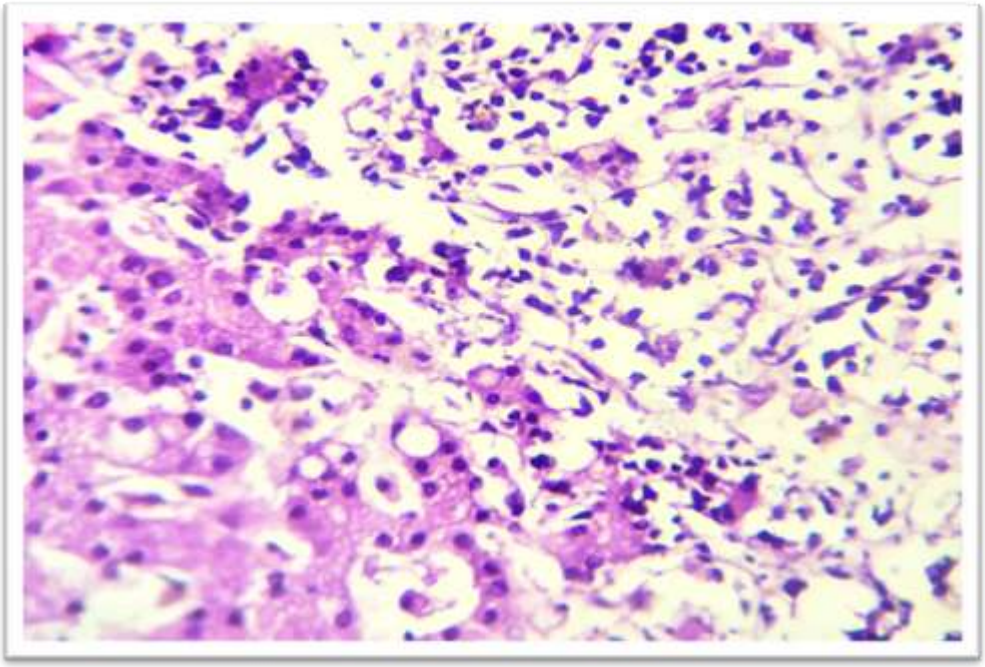


Fig.4 - Metastasis of round cell tumour in liver



IV. DISCUSSION

Histopathological examination of autopsies is of immense value in impraising the vision and diagnostic setup for clinical assessment. Roulson J et al[5] stated that autopsy gives the accurate mortality statistics which is essential for public health and health service planning. Royal college of pathologists in its guidelines 2002 recommended histopathological sampling of all major organs as a part of full autopsy.

The present study comprised of histopathological examination of 300 medicolegal autopsy cases received in the department of pathology during the period of a year. Maximum

cases (30%) were seen in 3rd decade followed by 4th decade which is in accordance with the studies done by Adil and Natraju et al [4]. Male to Female ratio was 1:1.

Histopathological examination of lungs showed the commonest lesion as oedema (43%) followed by haemorrhages (38.6%) and pneumonia (33.3%) which are in comparison with study done by Minal and Rupali et al[2], P.Arunalatha et al, A. Sangeetha et al[6]. The study done by Pratima Khare et al[7] showed commonest lesion as oedema and congestion (28.5%) followed by changes in interstitium(11.9%).

In India, studies have reported increasing coronary heart disease prevalence over the last 60 years. Iscaemic heart disease is the leading cause of death worldwide for both men and women. Many times, gross pathology could not help to evaluate the cause of death, study of histology of heart gives conclusive opinion about involved cardiac pathology[20]. In present study, atherosclerosis (37%) followed by old healed myocardial infarction (6%) were the pathological lesions in heart. These findings are in accordance with the study done by Patel et al[3],Adil et al[4] and Minal et al[2]. Nanda Chettian Kandy et al[8] showed atherosclerosis of aorta as the most common histopathological finding in the study. The study done by Renuka Gahine et al[9] showed atherosclerosis in 57.8% of cases whereas study done by Chandrakala Joshi et al[10] showed atherosclerosis in 54.34% cases. The study done by Escoffery and Shirley et al[11] found only 7% cases of old healed infarct which is in accordance with the present study.

Quite rightly liver is called as "custodian of milieu interior" and is vulnerable to a variety of metabolic, toxic, microbial and circulatory insults. In all cases medicolegal autopsies, liver is studied to ascertain the cause of death and to know the variety of lesions. In the present study, liver specimens studied showed fatty change (24%) and congestion (12.3%) as the prominent pathological findings. Other findings are hepatitis, cirrhosis, hepatocellular carcinoma and metastasis. Algarsamy J et al[12] found in autopsy study of 50 cases fatty change, chronic venous congestion, cirrhosis of liver and hepatitis were the predominant findings. The findings of present study are comparable with the findings of the study done by Patel et al[3] and Adil et al[4]. The study done by Minal and Rupali et al[2] showed congestion in 35.55% cases and fatty change in 24% cases, but study done by M.S.Bal et al[13] showed maximum cases 39% of fatty change and 9% of congestion which are in accordance with the present study.

In the present study, the spectrum of lesions was seen in kidney which showed cloudy change in 35% and acute tubular necrosis in 33% cases followed by benign nephrosclerosis in 15.3% cases. The study done by Minal and Rupali et al[2] showed cloudy change in 69% cases, pyelonephritis in 21%, glomerulonephritis in 4.79% of cases and tubular necrosis in 2.73% cases. The findings in kidney are discordant due to difference in study samples.

The most common finding in spleen was congestion (53.6%) in the present study which is in accordance with study done by Minal and Rupali et al [2] (70.33%).

The histopathological findings in brain were cerebral congestion (52%) followed by meningitis (12.6%). The study done by Minal and Rupali et al[2] showed equal number of cases of brain oedema and brain congestion followed by encephalitis. However, study done by Tanushri Mukharjee et al[14] observed brain oedema in 62 cases and hemorrahge in 14 patients in their study.

In the present study, A case of glioblastoma multiforme (Grade IV) was rare histopathological finding in a case of 45 years female. A single case of 24 years female showed metastasis of round cell tumour in liver.This is unexpected and incidental finding during histopathological examination. In the study done by Sapna Patel et al[3] showed the overall incidence of unexpected neoplasia was 2% which was lower as compared to other studies by Burton EC and Sens et al[15,16].Histopathological study in autopsies is invaluable in the detection of unsuspected neoplasms and evaluating the cause of death, leading the true cancer incidence statistics.[3]

Two fungal infections were the incidental findings found in our study– One case revealed Cryptococcosis in lungs, spleen and brain while the other case showed Aspergillosis in lung. The fungi were highlighted by PAS stain. In the present study, incidental findings may not contribute in the cause of death but reveals information regarding epidemiology of particular disease in geographical area that helps to take preventive measures. These incidental and interesting findings during histopathological examination of autopsy have prime importance in academic and rsearch purpose.

V. CONCLUSION

The study highlights various common as well as incidental unexpected rare findings in medicolegal autopsies which are imperative in academic and research purposes. Histopathological examination in autopsy cases helps to define and improvise better strategies of appropriate

investigations and management of the patients so as to reduce morbidity and mortality in tertiary care hospital.

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