



## HISTOPATHOLOGICAL FINDINGS IN AUTOPSIES – EMPHASISING THE INTERESTING AND INCIDENTAL FINDINGS: A 3 YEAR STUDY

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**ABSTRACT** Autopsies help to expand our knowledge of histopathology by unmasking various incidental and interesting lesions which are a source of learning from a pathologists' perspective. Any death of unnatural manner (homicide, suicide, accident), suspicious deaths and deaths associated with medical or surgical treatment where medical negligence is alleged are subjected to autopsy. Some of the lesions identified during autopsy may contribute to the death of a person while some are totally unrelated to the cause of death. Some lesions do not cause any functional derangement and hence are diagnosed only at autopsy. Complete autopsy examination involves assessing the clinical, radiological, anatomical, gross and microscopic findings, toxicological analysis and laboratory investigations. This study tabulates various histopathological lesions seen at autopsy and emphasizes the incidental and interesting lesions noticed during gross and microscopic examination of the organs sent for autopsy which otherwise would have been unnoticed during the lifetime of a person.

**KEYWORDS :** Autopsy, Histopathology, Incidental

### INTRODUCTION

The term autopsy is derived from the Greek word autopsia which means to see for oneself; autos means self and opis means eye. (3)

Autopsy, or a post mortem examination is carried out by examination and dissection of a dead body to determine the cause and manner of death, to observe the effects of any disease or injury that may be present and to understand the mechanism of disease processes which could have contributed to death. Any death of unnatural manner (homicide, suicide, accident), suspicious deaths and deaths associated with medical or surgical treatment where medical negligence is alleged are subjected to autopsy.

Complete autopsy examination involves assessing the clinical, radiological, anatomical, histopathological findings, toxicological analysis and laboratory investigations. If primary pathology is known histopathological examination is considered the gold standard to decipher how they relate to the terminal event.

Medicolegal autopsies not only provide the liberty to study medically diagnosed and treated neoplasms, but also the natural evolution of neoplasms when left untreated.

Autopsy also helps in the diagnosis of undiagnosed or misdiagnosed malignant tumors besides understanding the underlying cause of death which may or may not be related to the malignancy.

Many incidental findings have been highlighted on histopathological examinations which have proven to be great learning tools for the pathologists and forensic experts.

Histopathological examination is also important for assessing statistics of mortality which are essential for public health and health service planning.

### MATERIALS AND METHODS:

A retrospective descriptive study of medicolegal autopsies for 3 years from August 2020 to August 2023 was conducted in the Department of Pathology in Goa Medical College, a tertiary care center.

A total number of 232 medicolegal cases were sent for

histopathological examination study during this 3 year period, where the internal organs were sent for histopathological examination. All 232 cases were included in our study.

The organs relevant to the case concerned were sent in 10% formalin.

In most of the cases they comprised of heart, liver, spleen, kidney, brain, pancreas and lungs. Representative bits from the concerned organs were processed in a routine manner.

All sections were stained with Haematoxylin and Eosin stain.

Gross and histopathological findings were noted and the salient features were studied.

### Inclusion criteria:

All histopathological specimens of medicolegal cases sent to the Department of Pathology at Goa medical college for histopathological examination and reported during August 2020 to August 2023.

### Exclusion criteria:

All medicolegal cases sent during the above period but unreported.

### Data collection and statistical analysis:

It was an observational study-descriptive type.

The data was collected from the requisition forms of histopathology department.

The histopathology reports and slides were retrieved from the records of pathology department.

The data was tabulated and analyzed with reference to variables like age and sex distribution and the spectrum of histopathological findings was noted. The incidental and interesting findings were emphasized.

No legal or confidential information related to the cases was included in the study.

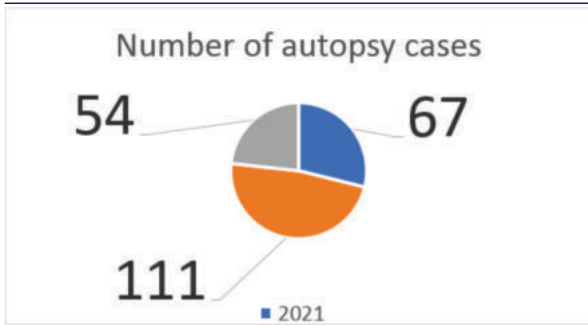


Fig 1:

Out of the total 232 cases of medicolegal autopsies studied over 3 years, 139 (60%) cases were males and 93(40%) cases were females.

Table 1: Age distribution of autopsy cases:

Age group(years)	No. of cases
0-20	17
21-40	73
41-60	83
61-80	53
>80	6
Total	232

The majority of cases were between 41-60 years, constituting 83 (36%) of the total cases.

Table 2: Spectrum of histopathological findings noted at autopsy:

Serial no.	Histopathological finding	No. of cases (Percentage)
1	Pulmonary edema	53
2	Atherosclerosis	43
3	Fatty liver	25
4	Acute tubular necrosis	17
5	Myocardial infarction	17
6	Cirrhosis	13
7	Pneumonia	12
8	Neoplastic lesions	7
9	Uterus -leiomyoma	7
10	Pancreatitis	4
11	Chronic venous congestion of spleen or liver or lung	2 (lung)
12	Meningitis	1
13	Tuberculosis	1
14	Erosive gastritis	0
15	Infarction intestine	0
16	Other incidental and interesting findings	11
17.	Autolyzed	19

Table 3: Incidental and interesting findings in autopsy:

Serial no.	Age/sex	History/indication of autopsy	Histopathological findings
1	54/M	Diagnosed as case of liver abscess rupture with viscus perforation in sepsis at private hospital and referred to GMC in shock post laparotomy and lavage.	Gross- cut section of liver showed a focal hemorrhagic lesion measuring 7x3x3cm. Microscopy -revealed cavernous hemangioma.
2	28/F	Collapsed while getting into her car.( sudden death)	Gross -Yellowish bit of tissue measuring 9x6x2cm. An unencapsulated well circumscribed yellowish brown mass measuring 4x3x3cm. Microscopy -Pheochromocytoma of adrenal gland.
3	55/M	(lying in bathroom)Sudden death	Gross- mitral valve showed fishmouth appearance and the valve leaflets were thickened. Microscopy -sections from the wall of the heart (left and right ventricle)showed pancarditis with presence of Aschoff bodies- Acute Rheumatic carditis.
4	27/F	Case of CML with intracranial bleeding.	Sections from lungs,brain,heart, liver and spleen showed leukemic infiltration within its blood vessels.

Serial no.	Age/sex	History/indication of autopsy	Histopathological findings
5	11/F	Diagnosed as a case of lobar pneumonia in sepsis.	Gross- brain measuring 10x6x3cm showed a whitish tumoral mass measuring 4x3x2cm. Microscopy revealed Pilocytic astrocytoma.
6	4month /F	Sudden death . Post mortem Xray revealed mediastinal mass.	Gross- thymus measuring 5x5x3.5cm. Cut section of thymus - whitish. Microscopy -revealed thymic follicular hyperplasia
7	70/M	Diagnosed as case of chronic organic psychosis with Right pneumonia with acute atrial fibrillation with left ventricular failure in cardiogenic shock.	Cut section of liver revealed whitish fibrotic areas. Microscopy revealed infiltration by hyperchromatic cells arranged as acini with marked desmoplastic reaction in surrounding stroma. Metastasis to liver from moderately differentiated adenocarcinoma.

Serial no.	Age/sex	History/indication of autopsy	Histopathological findings
8	61/F	Hanging (inquiry revealed patient was depressed after being diagnosed with cancer).	Cut section of urinary bladder revealed greyish white tumoral mass measuring 3x2.5x2.5cm. Sections from the urinary bladder revealed papillary variant of transitional cell carcinoma.
9	67/M	Brought dead to casualty after a fall at home while getting up from bed.	Sections from the liver revealed hepatocellular carcinoma.
10.	40/F	Case of hemoperitoneum with profound shock. (Dowry death)	Sections from Right fallopian tube revealed tubal ectopic pregnancy.
11.	4/F	Case of pyogenic meningitis with lobar pneumonia in sepsis.	Gross- left ovary showed a solid cystic mass containing hair and sebaceous material. Sections from the left ovary showed mature cystic teratoma.

Besides these, focal segmental glomerulosclerosis, hepatitis, subarachnoid hemorrhage of brain, Arias- Stella reaction, panniculitis, and chronic pyelonephritis were the other incidental findings. Another interesting case was of 21y /M with sickle cell anemia in hemolytic crisis- liver and spleen were seen to be distended with sickled RBCs.

Photomicrographs of histopathological findings :

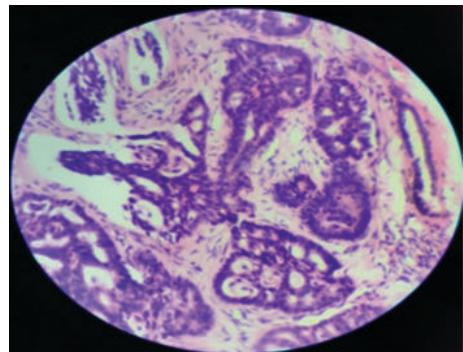
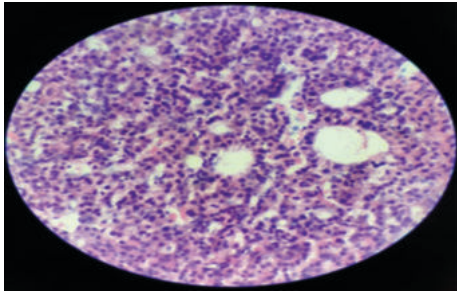
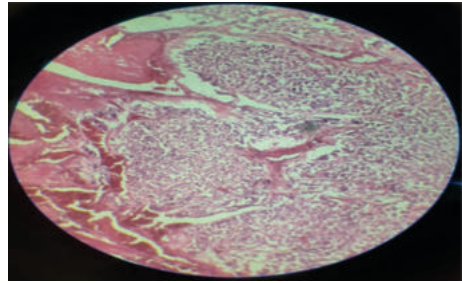


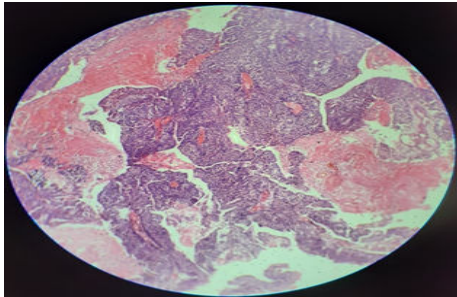
Fig 2: Metastasis from moderately differentiated adenocarcinoma to liver: Microscopy revealed infiltration by hyperchromatic cells arranged as acini with marked desmoplastic reaction in surrounding stroma.



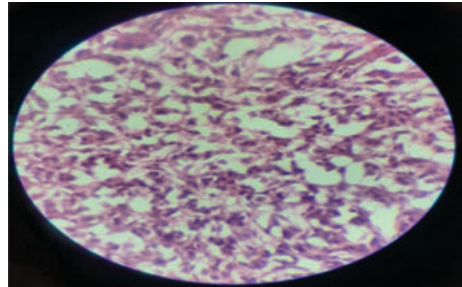
**Fig 3:** Hepatocellular carcinoma (moderately differentiated) showing hyperchromatic cells arranged in pseudoacinar and solid pattern.



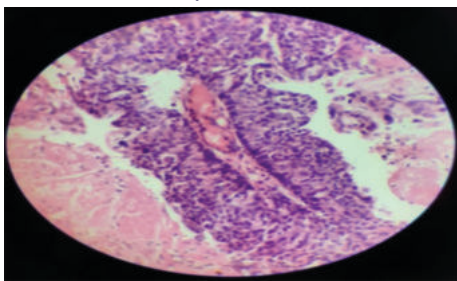
**Fig 8:** Pheochromocytoma of adrenal gland showing Zellballen (nested) pattern. Nests of cells separated by thin fibrous strands. Adjacent area shows necrosis.



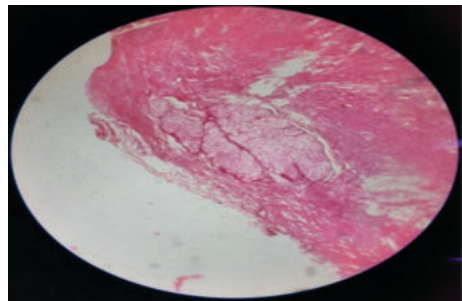
**Fig 4:** Low-grade transitional cell carcinoma (Non-invasive papillary, low grade urothelial carcinoma) showing neoplastic transitional cells (urothelium) with high nuclear cytoplasmic ratio lining fibrovascular core in layers.



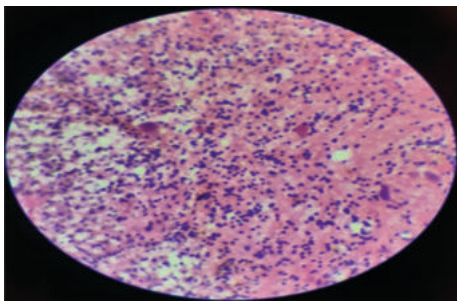
**Fig 9:** Cells show abundant fine granular cytoplasm, nuclei are round to oval with prominent nucleoli; salt and pepper chromatin seen within the nucleus of neoplastic cells.



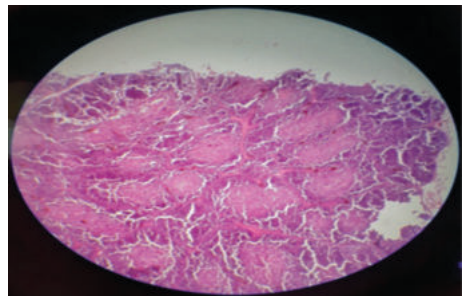
**Fig 5:** Higher magnification shows papillary architecture, loss of polarity and cellular pleomorphism.



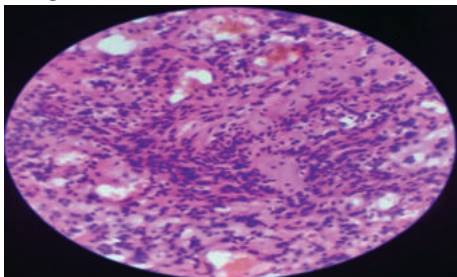
**Fig 10:** Mature cystic teratoma of ovary –sebaceous gland seen within ovarian stroma.



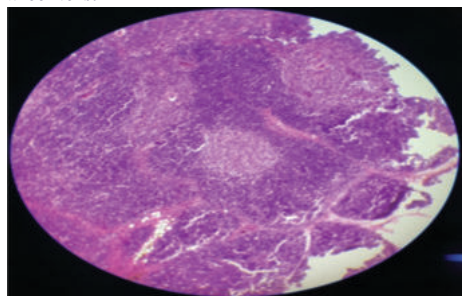
**Fig 6:** Pilocytic astrocytoma showing biphasic appearance; compact fibrillar portions and loose microcystic portions with eosinophilic granular bodies and occasional Rosenthal fibres.



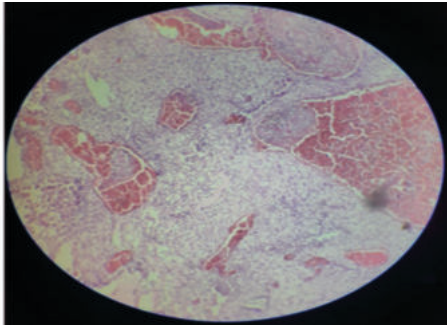
**Fig 11:** Thymic follicular hyperplasia with thymus showing appearance of lymph node architecture. Thymic tissue consisting of thymic epithelial cells and associated small mature lymphocytes in addition to occasional lymphoid follicles with prominent germinal centers.



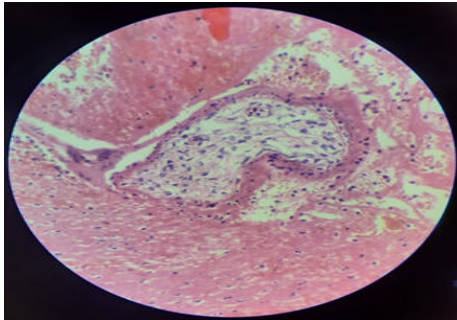
**Fig 7:** At higher magnification the biphasic pattern better appreciated. Compact fibrillar portions with elongated nuclei and loose microcystic portions with round to oval nuclei, cobweb-like processes.



**Fig 12:** Presence of germinal centres within thymus surrounded by lymphocytes.



**Fig 13: Sections from the left fallopian tube revealed ruptured tubal ectopic pregnancy showing presence of blood clots and chorionic villi in the lumen.**



**Fig 14: Chorionic villi with presence of cytotrophoblast, syncytiotrophoblast and extra embryonic mesoderm with hemorrhage around.**

#### DISCUSSION:

The commonest histopathological finding in our case was pulmonary edema. This correlates with the study conducted by Sulegoan. R. et. al. (1) and P.N Kadam et. al. (2)

The second most common finding was atherosclerosis which was the most common finding in the study conducted by Sapna et.al. (3) and P. Arunalatha et.al. (4)

The incidental masses in the study comprised of cavernous hemangioma of the liver, hepatocellular carcinoma of the liver, pheochromocytoma of the adrenal gland, transitional cell carcinoma of the urinary bladder, dermoid cyst of ovary and pilocytic astrocytoma of the brain.

#### CONCLUSION:

From our study we conclude that pulmonary edema is the most common histopathological finding found during autopsy.

We found that incidental findings may or may not contribute in identification of the cause of death but it reveals information regarding epidemiology of particular disease in a geographical area that help to take preventive measures.

Histopathological findings unrelated to the cause of death are often noticed in routine histopathological examination of medicolegal autopsies. These findings prove to be of academic value and serve as an eye opener to the infrequent lesions which go unnoticed when a person is alive.

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