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ORIGINAL ARTICLE

Histopathological Study of Incidental Neoplastic Lesions in Autopsy Cases: A Retrospective Observational Study in a Tertiary Care Centre

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ABSTRACT

Context: Autopsy remains an invaluable tool in the advancement of pathological knowledge, particularly through the identification of rare or incidental neoplastic and non neoplastic lesions that may otherwise remain undetected during life. Many such findings are asymptomatic and cause no significant functional impairment. This study aims to underscore the significance of the incidental neoplastic lesions in pathological medicolegal autopsies.

Aim: To determine the spectrum of histopathological findings in neoplastic lesions identified during autopsy, whether or not they were related to the cause of death.

Materials and Methods: A retrospective review of medicolegal autopsies conducted over a period of one year at a tertiary care center was performed. Histopathological examinations were carried out and the findings were analyzed to identify neoplastic lesions.

Results: The present study consisted of a series of 303 autopsy cases from Department of Pathology in a tertiary care hospital conducted over a period of one year. The internal organs of total of 303 autopsies were sent for histopathological examination. Neoplastic lesions were identified in 4.95% of cases.

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Conclusion: This study has added valuable insights to the repository of rare incidental neoplastic lesions. Autopsy studies remain crucial for uncovering clinically silent yet potentially significant pathological conditions, some of which could have impacted patient management if identified antemortem.

KEYWORDS

• Autopsy • Histopathological • Incidental • Malignancy

INTRODUCTION

Autopsy can provide significant insight into disease progression and treatment efficacy, and establishing an accurate cause of death ensures that reliable mortality statistics are available for public health planning. Despite advances in antemortem diagnostic techniques and postmortem imaging, clinicopathological discrepancies have remained high.[1,2,3,4] Certain pathological features are only visible microscopically and gross examination of organs is fallible. Histopathology can improve the quality of autopsy reports and information available to families, clinicians, coroners and public health services.[5,6,7] A medicolegal autopsy serves as an important tool that forms the basis for opinions presented in clinical trials, depositions, wrongful death claims, medical malpractice suits or administrative hearings.[8] Medicolegal autopsy is performed by a forensic pathologist to know the exact cause and manner of death and also to document injuries, trauma, diagnose potentially infectious diseases and malignant lesions and report them to the appropriate agencies.[9] The present study explores the incidence of clinically undiagnosed neoplastic lesions revealed by hospital autopsy in children and adults.

MATERIALS AND METHODS

A retrospective descriptive study of autopsies and viscera received from medicolegal postmortems and MLC cases at autopsy section for a period of one year from 1st February 2024 to 31st January 2025 was conducted in the Department of Pathology in a tertiary care hospital. A total number of 303 cases were sent for histopathological examination and organs relevant to the case concerned were sent in 10% formalin. In most of the cases, heart, liver, spleen, kidneys, brain and lungs were sent for histopathological examination. Representative sections from the concerned organs were processed in a routine manner. All sections were stained with Haematoxylin and Eosin (H & E) stains. Gross and histopathologic findings were noted and the salient features were studied. We performed a retrospective analysis of the autopsies in which the primary cause of death was related to undiagnosed malignancy. The detailed autopsy report, clinical records, and relevant laboratory results from laboratory and hospital databases were reviewed.

RESULTS

The present study consisted of a series of 303 autopsy cases from the Department of Pathology in a tertiary care hospital conducted over a period of one year. The internal organs of a total of 303 autopsies were sent for histopathological examination out of which neoplastic lesions were incidentally identified in 15 cases (4.9%).

Table 1: Age Wise Distribution of cases showing neoplastic lesions

Age Group (Years)	Number of Cases	Percentage
21-30	1	6.7%
31-40	3	20%
41-50	3	20%
51-60	3	20%
61-70	4	26.7%
71-80	1	6.7%

In the present study, the age group most commonly involved was 61-70 years (4 cases, 26.7%) followed by 31-40 years, 41-50 years and 51-60 years age group each with 3 cases (20%). The least commonly involved group in present study was 21-30 years and 71-80 years age group each with 1 case (6.7%). (Table 1)

Table 2: Sex Wise Distribution of cases showing neoplastic lesions

Male	10	66.7%
Female	5	33.3%

In the present study, 66.7% neoplastic lesions were seen in males and 33.3% in females, indicating a male preponderance. (Table 2)

Table 3: Neoplastic lesions encountered:

Malignant Lesions Observed	Number of Cases	Percentage
Diffuse large B-cell lymphoma	1	6.7%
Glioblastoma	2	13.3%
Adenocarcinoma of uterus	1	6.7%
Seminoma testis	1	6.7%
Well differentiated squamous cell carcinoma of lung	1	6.7%
Hepatocellular carcinoma	2	13.3%
Renal cell carcinoma	1	6.7%
Intestinal adenocarcinoma	1	6.7%
Benign Lesions Observed		
Leiomyoma	2	13.3%
Cavernous hemangioma	2	13.3%
Lipoma	1	6.7%

In our study, the total number of malignancies encountered were 10 (66.7%) and benign lesions encountered were 5 (33.3%). The most common benign lesion observed was cavernous hemangioma and leiomyoma with 2 cases each (13.3%) and the most common malignancy seen was Glioblastoma and hepatocellular carcinoma with 2 cases each (13.3%). (Table 3)

Gross examination:

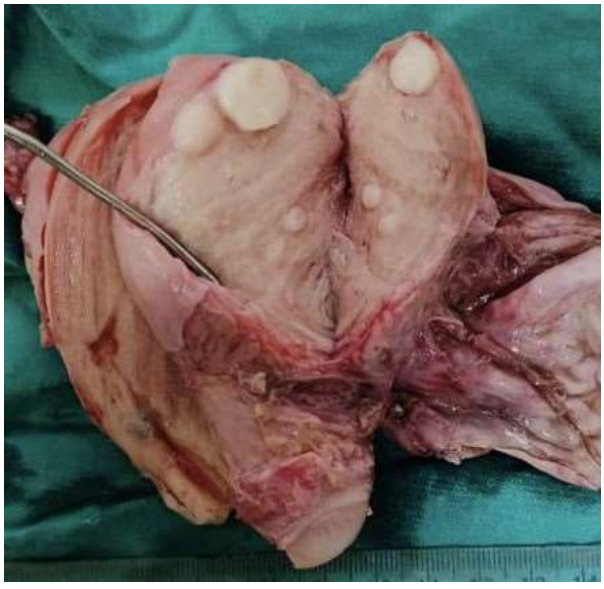

Figure 1: Leiomyoma: Well-circumscribed, firm, grey-white whorled mass in the uterus

Figure 2: Renal cell carcinoma: Well-circumscribed with expansile pushing margins, grey-white solid mass with areas of hemorrhage and necrosis in right kidney

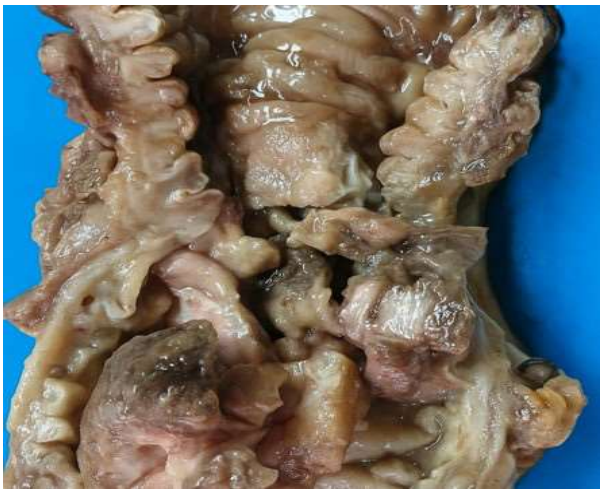

Figure 3: Adenocarcinoma of intestine: Irregular, infiltrative, ulcerated grey-white mass involving the intestinal wall

Figure 4: Seminoma testis: Well-circumscribed, homogenous, grey-white lobulated mass replacing the testicular parenchyma

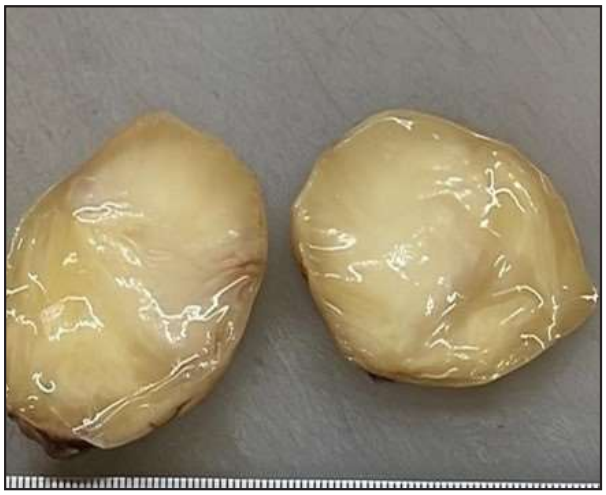

Figure 5: Lipoma: Well-circumscribed, soft, yellow, greasy mass on left side of back

Microscopic examination:

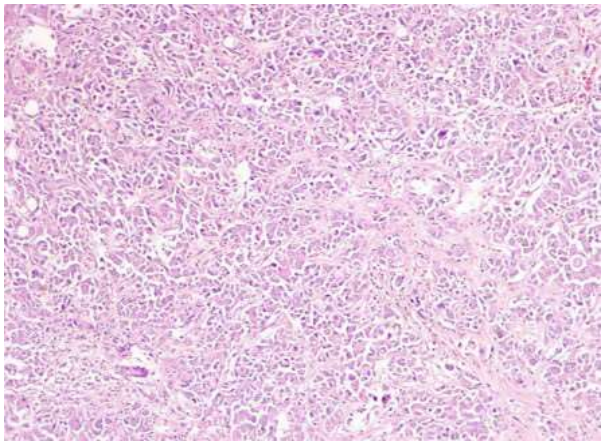

Figure 6: 20x: Hepatocellular carcinoma: Tumour arranged in cords and trabeculae. Individual tumour cells are polygonal, abundant eosinophilic cytoplasm, pleomorphic hyperchromatic nuclei and prominent nucleoli

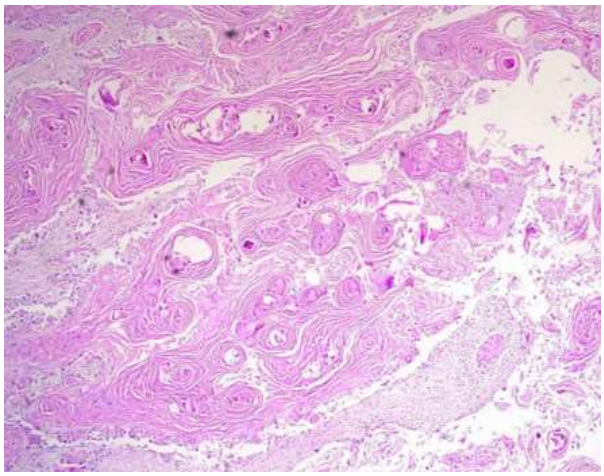

Figure 7: 20x: Well differentiated squamous cell carcinoma lung: Showing keratin pearls

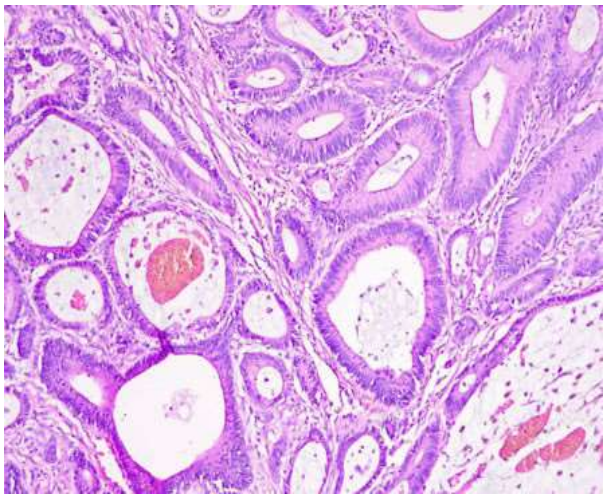

Figure 8: 20x: Adenocarcinoma of intestine: Tumour arranged in back to back glandular arrangement. Individual tumour cells are cuboidal to columnar with mucinous cytoplasm, pleomorphic, hyperchromatic nuclei with prominent nucleoli

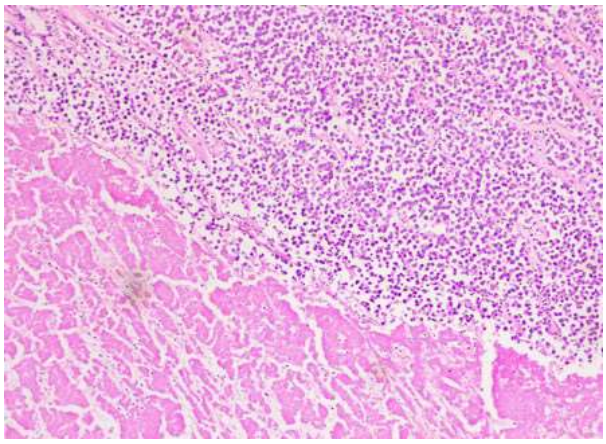

Figure 9: 20x: Seminoma testis: Sheets of pale tumour cells divided into poorly demarcated lobules by delicate septa.

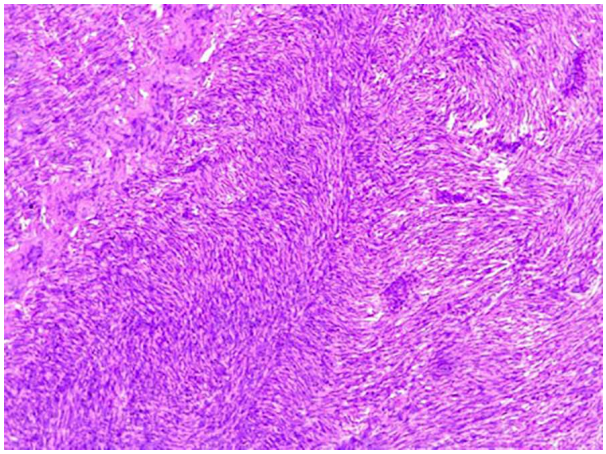

Figure 10: 20x: Leiomyoma uterus: Tumour cells are elongated, spindle-shaped with eosinophilic cytoplasm and blunt-ended cigar-shaped nuclei, arranged in interlacing fascicles.

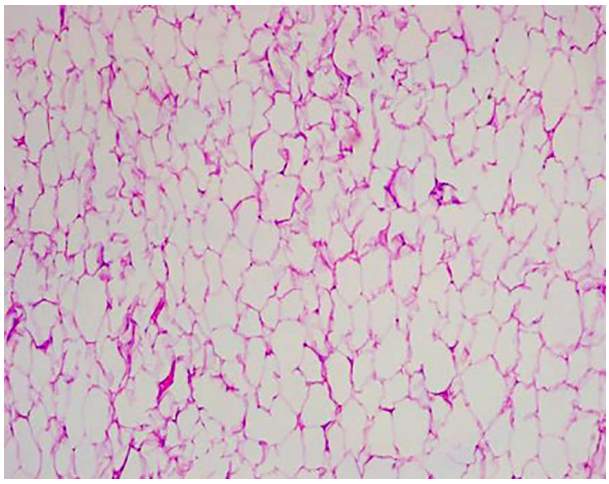

Figure 11: 20x: Lipoma: Mature adipocytes with eccentrically placed nuclei

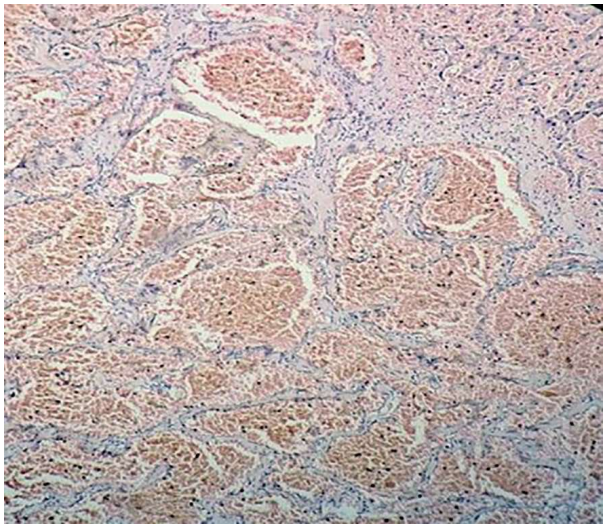

Figure 12: 20x: Cavernous hemangioma: Blood filled vascular channels separated by dense fibrous stroma

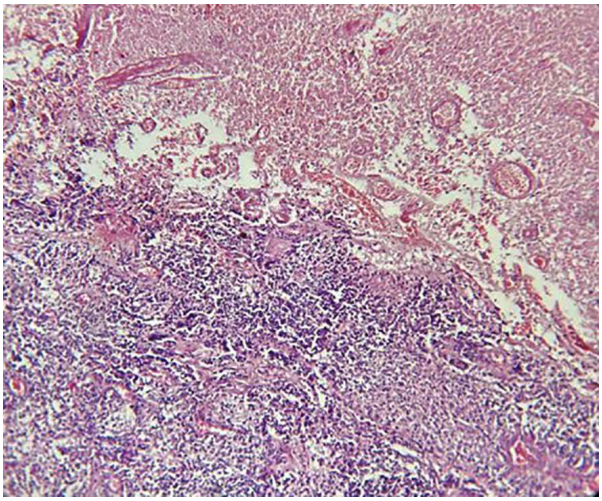

Figure 13: 20x: Glioblastoma: Highly cellular astrocytic tumour with marked pleomorphism, nuclear atypia, brisk mitosis and palisading necrosis

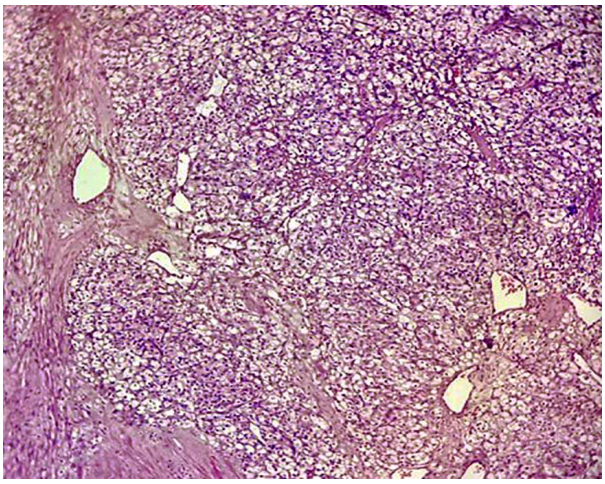

Figure 14: 20x: Renal cell carcinoma: Tumour shows solid masses and acini of uniform appearing tumour. Clear cells predominate in the tumour while stroma is composed of fine and delicate fibrous tissue

DISCUSSION

In our study, incidental neoplastic lesions were identified in autopsy specimens across a diverse histopathological range, including diffuse large B-cell lymphoma (DLBCL), glioblastoma, seminoma, adenocarcinomas, hepatocellular carcinoma, renal cell carcinoma, leiomyoma, cavernous hemangioma, and lipoma. This underscores the silent burden of both benign and malignant tumors undiagnosed during life. Our incidental tumor detection rate of 4.9% aligns closely with several tertiary-centre and medico-legal autopsy series including the one by Patel *et al.* with a rate of 2.47% in a 269-case series.[10] The mean age of the study population was 40.5 ± 23.38 years with the highest incidence of deaths observed in the 61-70 year age group (26.7%). Similar findings were observed in the study done by Patel et al. in which the mean age was around 62-64 years for unsuspected malignancies.[10] In our study, a higher incidence of malignant lesions was noted (66.7%) as compared to benign lesions (33.3%) which correlates with the study done by Mohan *et al*.[11]

Two cases of hepatocellular carcinoma were identified, including a 52 year old male and a 64 year male, both having a long standing history of alcoholism. This fits the typical risk profile for HCC - middle aged male with alcohol exposure, suggesting an undiagnosed chronic liver injury progressing to HCC.[13] In our study, there were two cases of glioblastoma, identified in a 60-year-old male and a 53-year-

old male. Glioblastoma is most commonly seen in adults aged 50–70 years, with a modest male predominance.[14] The 60-year-old male experienced progressive headaches and focal neurological deficits but did not seek medical attention, while the 53-year-old male had presented with seizures and underwent surgical removal of the tumour; however, residual tumour was left behind, which was subsequently identified at autopsy.

In the present study, we observed a case of clear-cell renal cell carcinoma in a 40-year-old male. Autopsy studies such as Patel et al. noted about 1.98% incidental renal masses (~2/202 cases).[10] Incidental clear-cell RCC in a 40-year-old male is an unusual finding, but it aligns with rare reports of early-onset RCC detected incidentally, often with lower grade and stage.[12]

We also observed a case of squamous cell carcinoma of lung in a 71 year old male patient with a history of smoking. Squamous cell carcinoma of the lung primarily affects older adults, with the highest incidence in the 60-70 year age range and a male preponderance, with up to 80-90% of SCC cases attributable to cigarette smoking.[15]

Seminoma predominantly occurs in males aged 35-39 years, aligning well with our 38-year-old patient. It typically presents as a painless testicular mass, but smaller tumors can remain asymptomatic and may occasionally be discovered incidentally, such as during imaging or post-mortem examinations.[16] Uterine adenocarcinoma diagnosed incidentally in a postmortem 70-year-old female focuses on the need for effective postmenopausal gynecologic screening, as silent endometrial cancers are reported infrequently in autopsies.

In autopsy series, benign neoplasms such as leiomyomas, cavernous hemangiomas, and lipomas are routinely encountered and typically exceed malignant tumors in prevalence. Leiomyomas usually occur in women in their 30s and 40s and often remain clinically silent, although small, asymptomatic lesions are frequently found at postmortem examination. In the study conducted by Lanjewar at al., it was reported that 7% of cases showed tumours, among which 39.1% were benign and leiomyoma was the most frequently encountered benign neoplasm in females.[17]

CONCLUSION

This study underscores the diagnostic value of autopsy-based histopathological examination in identifying incidental neoplastic lesions, many of which remained clinically undetected during life. The detection of both benign and malignant tumors in various organ systems reveals a significant reservoir of subclinical pathology that may otherwise go unrecognized. Furthermore, the results emphasize the role of autopsy not only as a tool for postmortem confirmation but also as a means to bridge gaps in antemortem diagnosis. These findings highlight the critical role of postmortem analysis in understanding disease patterns, guiding clinical practice, and formulating preventive health strategies.

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