ISSN: 0975-3583,0976-2833 VOL13, ISSUE 02, 2022

ORIGINAL RESEARCH

Spectrum Of Incidental Histopathologic Findings In Autopsies: An Observational Study In A Tertiary Care Centre In Western Rajasthan

[1]Priyanka Rani, [2]Kishore Khatri, [3]Shekhar Baweja, [4]Apoorvi Dubey, [5]S.R.Negi

[1,4]Senior Demonstrator, [2]Associate Professor, [5]Senior Professor, Department of Pathology, Dr S. N. Medical College, Jodhpur, Rajasthan, India
[3]Senior Resident, Urology Department, Dr. S. N. Medical College, Jodhpur, Rajasthan, India

Correspondence:
Apoorvi Dubey
Senior Demonstrator, Department of Pathology, Dr S. N. Medical College, Jodhpur, Rajasthan, India

Abstract
The main purpose of autopsy is to provide information about the cause and mode of death. Sometimes, the autopsy information results in coming up of such incidental findings which are not related to death but provide the statistical and academic information. The aim of this study was to look for the incidental findings in autopsies which may or may not be the cause of death. This prospective as well as retrospective study done in tertiary care hospital from March 2018 to March 2019. A total of 280cases were taken. The individual lesions are described in number and incidence in percentages. A total of 1180 organ system were examined, 44.8% organ showed normal histology. Chronic venous congestion was the most common finding. 35.7% liver examined showed fatty change. Coronary at her osclerosis of various grades seen in 32.6% heart examined. A total of 16 neoplastic lesions were found out of which 9 were malignant and 7 were benign. A case of neutrophilic vasculitis of coronary artery were also found. We found a quite higher incidence of coronary atherosclerosis andmany unexpected findings which were asymptomatic in life long. These observations add in the statistics related to such diseases in population and also important in era of organ donation where these asymptomatic and undiagnosed disease may be added in donor pool.
Keywords-Autopsy; atherosclerosis; incidental; neoplastic

Introduction
The main motive of autopsy examination is to provide information about the cause and mode of death of person. It helps the investigating officer by providing a valuable information regarding the cause of death. It becomes further more useful in case off orgery **(1-5)** but many of the times, this autopsy examination results in coming up of such incidental findings which are not related to cause of death but it provides a statistical and academic information about the various lesions and hence provides prevalence of various lesions in a particular region.**(6-8)** It provides basic information to plan and execute the various community health programmes. This study is a
retrospective as well as prospective observational study to look for the incidental findings in autopsies which may or may not be related to cause of death.

Materials and methods
The prospective as well as retrospective study is done in Dr. S.N. Medical College, Jodhpur, Department of Pathology, atertiary care hospital in Western Rajasthan from March 2018 to March 2019 (one year). A total of 280 cases were taken but true number of reported cases are

ISSN: 0975-3583,0976-2833 VOL13, ISSUE 02, 2022

229. 51 cases being autolysed and hence not suitable for reporting.
Most of the samples comprised of whole heart, pieces of liver, spleen, kidneys, lungs and brain. In few cases, only whole heart or whole lungs are sent for histopathological examination depending upon the history and gross findings during autopsy examination.
In the gross room, the sealed jar opened, names of present staff noted on paper and all pieces of organs are counted and matched with the requisition form. Then pieces are measured, weighed, their external appearances and cut surfaces examined and noted on gross examination formats. There presentative tissue taken and put in plastic cassettes which are premarked with autopsy number and block number. Then tissues are processed in automated tissue processor overnight. Paraffin blocks are made and sections cut at 4-5 um thickness by automatic microtome. Sections are stained with hematoxylin andeos in stain and special stains are done as and when required.

Statistical Analysis
Being an observational study, individual lesions were described in number and incidence in percentage.

Results
The total cases received during period were 280, out of which 51cases were autolysed and not suitable for reporting. So total 229 cases were analyzed and statistical calculations are made from this number.
Maximum 32.1% cases were in 21-30 year age group followed by 31-40 years(21.7% cases). The highest male and female distribution is seen in 21-30 years age group. The age and sex incidence of all post-mortem cases are shown in table1.

Table1: Shows the age and sex incidence of all post-mortem cases

Age group	Male (%)	Female (%)	Total (%)
0-10	0	2	02(0.71%)
11-20	23	21	44(15.71%)
21-30	58	32	90(32.14%)
31-40	50	11	61(21.78%)
41-50	35	4	39(13.92%)
51-60	25	4	29(10.35%)
61-70	10	1	11(3.92%)
71-80	3	0	3(1.07%)
>81	0	1	1(0.35%)
Total	204(72.85%)	76(27.14%)	280(100%)

Whole heart received in highest number, followed by lungs. Liver, spleen and kidney each being equal. In 4 cases, only lungs are received and in 12 cases only whole heart is received. The organ wise distribution of cases are shown in table2.

Table2: Organ wise distribution of post-mortem cases

Nature of specimen received	No. of post-mortem cases
Liver	196
Spleen	196
Kidney	196
Lungs	200
Heart	208
Brain	180
Larynx	01

ISSN: 0975-3583,0976-2833 VOL13, ISSUE 02, 2022

Uterus	19
Femur	01
Skinbiopsy	22

As more than one finding are noted in different organs in single post-mortem sample, we have calculated the various lesions based on total number of organs examined and not just the number of post-mortems. A total of 1180 organ systems examined and found that 44.8%(529) organs showed normal histology, followed by 13%(154)showing chronic venous congestion in liver, spleen and kidney. 7.5%(89) organs showed only congestion. Fatty change in liver seen in 70 cases(35.7%) out of 196livers examined. Coronary atherosclerosis of various grades seen in 68 out of 208hearts examined (32.6%) which is quite a good number. Changes of myocardial infarction seen in 16.3% (34/208). We found total 16 neoplastic cases in all organ systems, out of which 9 (0.76%) were malignant and 0.59% were benign tumors. A wide variety of diagnosis found in varying percentage is given in table3.

Table3: Shows the histopathological findings in various organ systems

Normal histology	**529(44.8%)**
Chronic venous congestion	**154(13%)**
Congestion	**89(7.5%)**
Fatty change liver	70/196(35.7%)
Atherosclerosis	68/208(32.6%)
Lobar pneumonia	46/200(23%)
MI	34/208(16.3%)
Chronic pyelo nephritis	33/196(16.8%)
Pulmonary edema	31/200(15.6%)
Emphysema	22/200(11%)
Cloudy changes in kidney	21/196(10.7)%
Chronic glomerulo nephritis	18/196(9.1%)
Acute tubular necrosis	16/196(8.1%)
Neoplastic Malignant Benign	16 /1180(1.3%) 9/1180(0.76%) 7/1180(0.59%)
Hepatitis	12/196(6.1%)
Snakebite	10/22(45.4%)
Cirrhosis liver	10/196(5.1%)
Abscess	9/1180(0.9%)
Tuberculosis	07/200(3.5%)
Interstitial pneumonia	05/200(2.5%)
Pneumoconiosis	04/200(2.0%)
Xantho granulomatouspyelo nephritis	03/196(1.5%)
Metastasis	02/772(0.25%)
Aspiration pneumonia	02/200(1%)
Vasculitis	01/208(0.96%)
Placenta accrete	01/19 (5.2%)
Decidual tissue	01/19 (5.2%)

We found an interesting case of neutrophilic inflammation in coronary walls and intima with necrotic changes in wall.

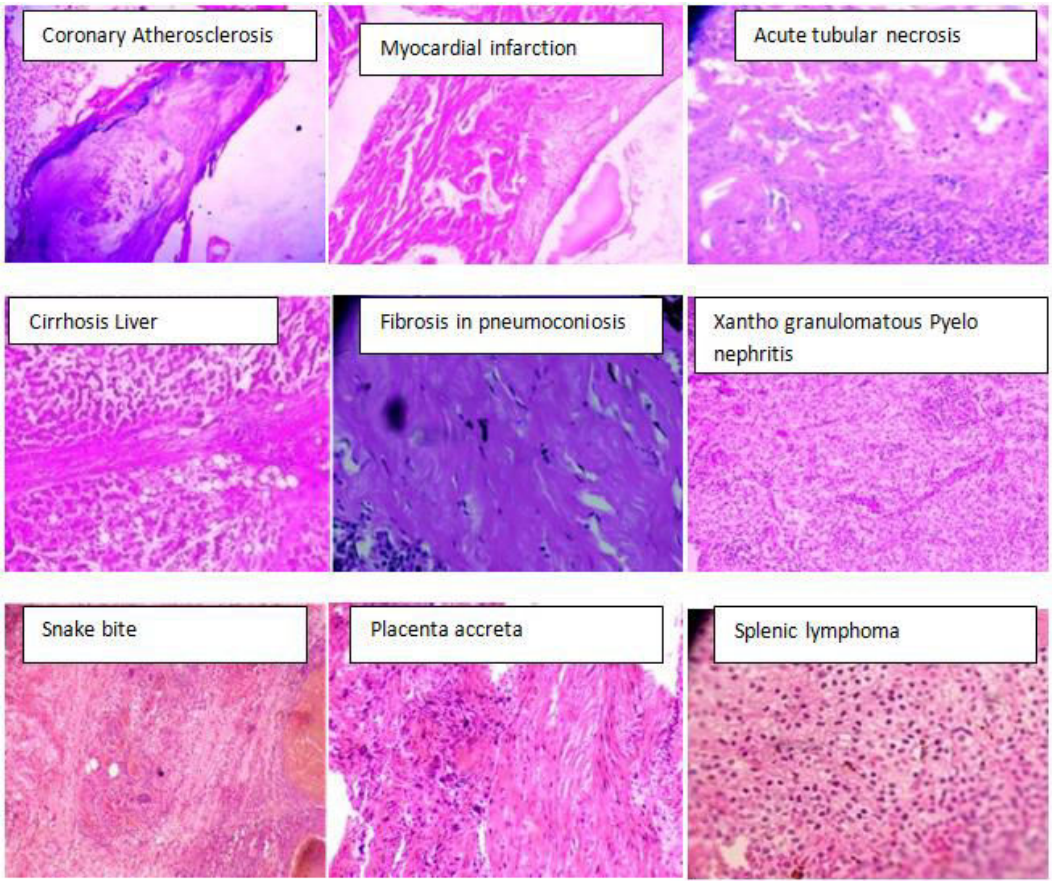
A 30 year old male patient allegedly died due to unknown cause of fever was found to have

ISSN: 0975-3583,0976-2833 VOL13, ISSUE 02, 2022

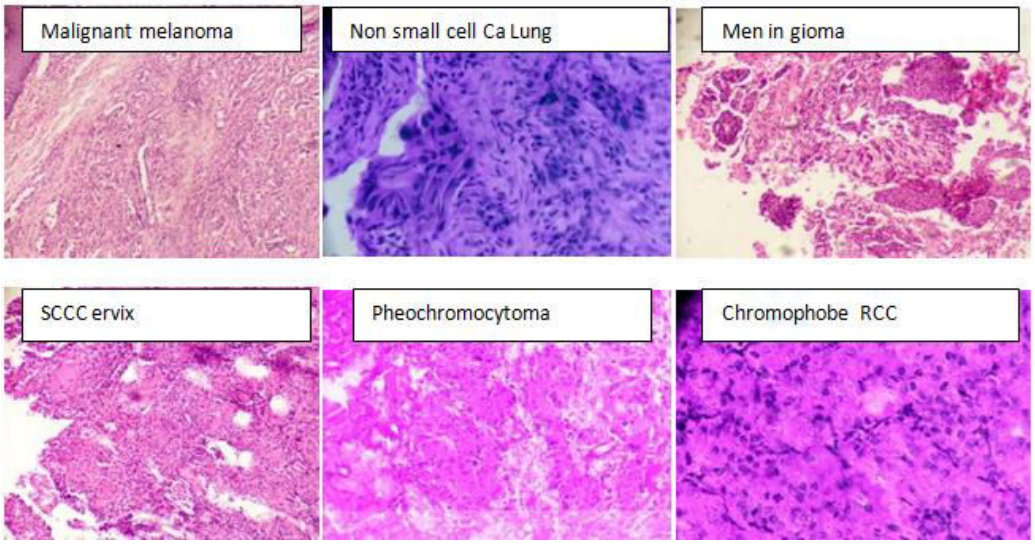
splenicn on- hodgk in lymphoma(fig1). A 60 yr male and 70 yr female of? suicidal/ ? poisoning death were found to have liver metastasis. A 35 yr male known to be died due to drowning was found to have malignant melanoma of skin(fig 2). A32 yr old male died in RTA found to have clear cell carcinoma of kidney. Four patients of 60, 58, 40 and 53 year age of labour class died in RTA were found to have pneumoconiosis. Likewise a 65 year old female died because of poisoning found to have squamous cell carcinoma cervix. Two females of 22 and 30 yr age of burn and a female 28 yr age died due to hanging were found to have adenomyos is uterus. A post-partum female of 25yr age died of hanging was found to have placenta accreta. A wide variety of Interesting incidental findings observed during the examination are shown in Table4.

Table4: Interesting incidental findings observed during the examination of various organs

S. no	Age/sex	Indication of autopsy	Incidental finding
1	30/M	Unknown cause c/of ever	Splenic lymphoma
2	60/M,70/F	?Suicidal,? Poisioning	Metastasis liver
3	35/M	Drowning	Malignant melanoma skin
4	32/M	Road traffic accident	Clearcell RCC
5	45/F	Unknown cause	Chromophobe RCC
6	30/F	Head injury	Pheochromocytoma
7	60/M,58/M,40/F, 53/M	RTA	Pnemoconiosis
8	60/M	Unknown cause	Non small cell of lung
9	45/M,28/F	Hanging	Men in gioma
10	65/F	Poisioning	SCCC x
11	22/F,30/F,28/F	Burning, Hanging	Adenomyosis
12	25/F	Hanging	Placenta Accreta



ISSN: 0975-3583,0976-2833 VOL13, ISSUE 02, 2022



Discussion

Histological examination is a part of post-mortem examination to find the cause of death in undiagnosed death where the cause is not obvious in gross post-mortem examination by forensic expert. The viscer as are sent to know the pathogenesis of disease, ante-mortem versus post-mortem cause or sometimes with additional findings which are not obvious grossly. It is also important for assessing statistics of mortality which are helpful in public health and service planning **(9)** and to know the condition of internal visceral organs.**(10)**

Liver being the custodian of milieu interior and being vulnerable to variety of metabolic, toxic, microbial and circulatory insults sent in all cases of autopsies. Various lesion reported in different autopsy series include fatty change (most common),**(11)** chronic venous congestion, cirrhosis, malignancy, hepatitis and abscesses etc.

Congestion was the most common finding in spleen which is also reported by kaur etal**.(12)** The incidence of splenic lymphoma diagnosed in autopsy was 1.09% in study of Sar of Setal which is slightly higher than our study.**(13)**

The incidence of renal cell carcinoma was <1% in a study by Shah V B et al [(14)] in their study of 650 cases, while Jonss on A et al reported 0.71% incidence of renal carcinoma [(15)]

The malignancies in lungs were reported around 0.5-0.6% in a study by Manser RLet al [(16)] where they found 167 cases of lung cancer in a total 24,708 autopsy reports. This finding is quite similar to our finding.

Nakasu S et al[(17)] reported 231 cases of meningoma at Monte frore medical centre during the period of 1950-1982 which is quite similar to our study.

Squamous cell carcinoma of cervix was reported in 116 cases by Jack T et al[(18)] in their study of 10 years. Their number appeared to be large because they included cases from surgical pathology and autopsy both.

Adenomyosis uterus being a common finding in hysterectomy specimens now days, the prevalence ranging from 5-70% [(19).] Although adenomyosis is not a cause of death but an important cause of morbidity.

Marry Ann sens et al[(20)] reported a 7% incidence of neoplasia at autopsy, which raises the concern for the potential introduction of neoplastic tissue in the donor pool. This incidence is quite higher than our study.

Tuberculosis has been regarded as global emergency by WHO and it is the major concern of mortality and morbidity worldwide, specially to developing and under developed countries including India. Sapna et al [(21)] reported incidence of tuberculosis of lung on autopsies to be 3.46% while in Garg et al [(22)] reported are latively higher incidence of 8.7%. Our results are

ISSN: 0975-3583,0976-2833 VOL13, ISSUE 02, 2022

similar to Sapnaetal.
KoichiHonma et al [23] reported 9 cases of pneumoconiosis in 1217 japanese autopsy cases (0.74%). Our incidence was 2% which is quite high but explains the importance of present day exposure of patients to dust in mining as well as other domestic workers because of use of high speed revolving tools used frequently.

Conclusion
Our study concludes that histopathological examination of viscera may sometimes give the cause of death or pathogenesis related to cause of death. Sometimes we get such an important and incidental findings that are not related to cause of death but that adds the figures in statistics. At the same time findings of unexpected neoplastic lesion raise the concerns for organs and tissue donation.

Acknowledgment
We are thankful to staff of department of forensic medicine and toxicology for referring the autopsy cases for histopathological examination.

Source of funding
Nil

Source of interest
Nil

References
1. Chen K. The coroner's necropsy: an epidemiological treasure trove. J ClinPathol1996;49(9):698-9.
2. O'Sullivan JP. The coroner's necropsy in sudden death: an under-used source of epidemiology information .JClin Pathol1996;49(9):737-40.
3. NemetezPN, Ludwig J, Kurkland LT. Assessing the autopsy. AmJ Pathol1987;128(2):362-79.
4. Escoffery CT, Shirley SE. Autopsy rates at the university hospital of the WestIndies, 1968-1997. West Indian Med J2000;49(2):164-8.
5. Escoffery CT, Shirley SE. Causes of sudden natural death in Jamaica: amedicolegal (coroner's) autopsy study from the university hospital of the West Indies. Forensic SciInt2002;129(2):116-21.
6. Sulegaon R, Kulkarni D, Chulki S. Medicolegal autopsies Interesting and incidental findings. IntJ Forensic Sci Pathol.2015;3(8):156-60.
7. Burton EC, Troxclair DA, Newman WP. Autopsy diagnoses of malignant neoplasms: How often are clinical diagnoses incorrect? JAMA.1998;280(14):1245-48.
8. Devi M, Myrthong BG, Meera, Nabachandra H. Pathological findings of liver inautopsy cases. A study at Imphal. J Indian Acad Forensic Med.2013;35(3):206-10.
9. Jhajj KK, Nibhoria S, Sandhu SK, Bamra NS, Padda P. A study of histopathological examination in medico-legalautopsies. IJFMT;7(1):254-87.
10. Selvin RT, Selvan V, Subramanium PM. Common silent disease in liver in and around of salem population. Anautopsy study. JClin Diagn Res 2012;6(2):207-10.
11. Bal MS, Singh SP, Bodal VK, Oberoi SS, Surinder K. Pathological findings in liver autopsy. J Indian AcadForensic Med.2004;26(2):55-57.
12. Kaur A, Singh H, Garg P, Kundal R K. Histopathological findings in spleen onautopsy-A study of 100cases. AnnInt.Med.Des.Res.2018;4(3):706-708.
13. Sarat S, Naphade N, Kalgutkar A. An analysis of autopsy cases of non-hodgkin

ISSN: 0975-3583,0976-2833 VOL13, ISSUE 02, 2022

lymphomas with special reference to those masquerading as acute febrile illness. Journal of cancer research and therapeutics.2016;12(2):763-764.
14. Shah V B, Deokar MS. Spectrum of incidental renal masses detected atautopsy. BombayHospJ.2009;51(4):432-436.
15. Jonsson A, Hardarson S, Petursdottir V, Palsdottir HB, Jonsson E,Sigurdsson MI et al. Renal cell carcinoma diagnosed at autopsy in Iceland1971-2005.Laeknabladid.2008;94(12):807-812.
16. Manser RL, Dodd M, Brynes G, Irvins LB, Campbell DA. Incidental lungcancers identified at coronial autopsy: implications for overdiagnosis of lung cancers by screening. RespirMed.2005;99(4):501-507.
17. Nakasu S, Hirano A, Shimure T, Liena JF. Incidental meningioma in autopsystudy. Surg Neurol.1987;27(14):319-322.
18. Jack T. Lasersohn, Louis B. Thomas, Robert R. Smith, John S. Carcinoma ofuterine cervix. A study of surgical pathological and autopsy findings. Cancer1964;17(3):338-342.
19. Azziz R. Adenomyosis: current perspectives. Obstet Gynecol Clin North Am1989;16:221-235.
20. Mary Ann Sens, Xu Dong Zhou, Timothy Weiland and A. Marvin Cooley.Unexpected neoplasia in autopsy: Potential implications for tissue and organsafety.ArchPatholLabMed:2009;133(12):1923-1931.
21. Patel S, Rajalakshmi B R, Manjunath G V. Histologic findings in autopsieswith emphesis of interesting and incidental findings. A pathologists perspective. Journal of Clinical and Diagnostic Research: JCDR2016;10(11):EC08-EC12.
22. Garg M, Aggarwal AD, Singh S, Kataria SP. Tuberculouslesions at autopsy.JIndAcadForensicMed2011;33:39-42.
23. Koichi Honma, Val Vallyathan. Rheumatoid Pneumoconiosis: A comparativeStudy of autopsy cases between japan and north America. Ann Occup. Hyg2002;46(1):265-267.