Original Research Article

Histomorphological spectrum of renal lesion in autopsy: A 2 year study in tertiary care hospital

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Abstract

Introduction: Histologic evaluation of autopsy kidneys may be the first opportunity to identify renal lesions at microscopic level. The objective of this study was to identify renal diseases by correlating the gross and microscopic examination which often go undiagnosed during lifetime of the subject as well as to determine the prevalence of kidney diseases among medicolegal autopsy cases**. Material and Methods:** The present study was conduct on 800 kidney specimen received in Department of Pathology, MGMMC and MY Hospital, Indore from June 2019 to July 2021 for autopsy to find out frequency of various renal lesions Then all sections were examined microscopically and finding were recorded. **Results:** 620 cases out of 800 showed renal lesion. Remaining 180 cases was close to normal morphology. Out of 800 cases 720 cases were males and 80 cases were females. M : F ratio being 2:1. Renal pathology was seen in 620 cases. In 180 (22.5%) cases, the microscopic morphology was close to normal histology. Remaining 620 (77.5%) cases had a nephron pathological findings**. Conclusion:** Our study provided satisfactory data in respect to morphological spectrum of various renal lesions in an autopsy study however it does not reflect the actual incidence of renal lesions in a population.

Keywords: histomorphological, spectrum, renal lesion& autopsy.

Study Design: Observational Study

Introduction

To determining the cause of death when death occurred unexpectedly, is an important part of forensic autopsy practice. Renal autopsy help to discover new disease and evaluate toxic effects of drugs and therapies. Autopsy is an essential legal procedure in all medicolegal deaths and is regarded as the gold standard for [1]. Histological evaluation of autopsy kidneys may be the first opportunity to identify renal lesions at microscopic level that tend to be asymptomatic and often go undiagnosed. We have encountered a wide spectrum of renal pathology in autopsies including hypertensive nephropathy, glomerulonephritis, Renal dysplasia, Adenocarcinoma, Chronic Pylonephritis and acute tubular necrosis [2].

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The objective of this study was to identify renal diseases by correlating the gross and microscopic examination which often go undiagnosed during lifetime of the subject as well as to determine the prevalence of kidney diseases among medicolegal autopsy cases.

Aims and objective

The main aim of this study was to analyze the findings of renal lesions by the histopathological examination to determine underlying disease and comorbidity in autopsy specimens.

Material and methods

The present study was conduct on 800 kidney specimen received in Department of Pathology, MGMMC and MY Hospital, Indore from June 2019 to July 2021 for autopsy to find out frequency of various renal lesions. The kidneys of medico legal autopsies performed during these years were subjected to our study. The thorough gross examination including measurements, weight and colour were recorded and then tissue was fixed in 10% neutral buffered formalin. The formalin fixed tissues were sampled, each sample included the cortico medullary region then were further processed by automatic processor. The three micrometer thick sections were obtained from paraffin embedded tissue samples and all sections were histo

chemically stained with haematoxylin and eosin. Then all sections were examined microscopically and finding were recorded.

Result

Table 1: Comparison of percentage of normal histology in various studies

S. No.	Study	Cases
1	Vaneet et al (2017)	27 out of 120 cases (22.5%)
2	Utsa et al (2014)	23 out of 55 cases (41%)
3	Present study (2021)	200 out of 800 cases (25%)

In current analysis in 200 (25%) cases the microscopic findings were close to normalhistology. This is in concordance with study conducted by Vaneet et al. [13] On 120 renal autopsy in which 27 cases (22.5%) exhibited almost normal histology. The microscopic morphology was close to normal histology in only 23 cases (41%) out of 55 cases and 23 cases had glomerular alterations in a study done by Usta et al[9] as shown in table 1.

Table 2: Comparison of percentage of Glomerular lesions in various studies

S. No.	Study	Cases
1	Monga et al (1997)	25 cases out of 120 (20%)
2	Hailemariam S et al (2001)	67 cases out of 237 (28%)
3	Present study (2021)	136 out of 800 cases (17%)

Glomerular changes were present in 25 cases (20) % by Mongaetal.which is in concordance with our study in which glomerular changes were seen in 17% of cases. Study conducted by Hailemariam S et al[8] on 237 autopsies observed presence of glomerular or vascular pathology in 28% as shown in table 2.

Table 3: Age wise and gender distribution of cases

Gender	0-20	21-40	41-60	>60
Males	54	254	108	94
Females	08	45	30	23

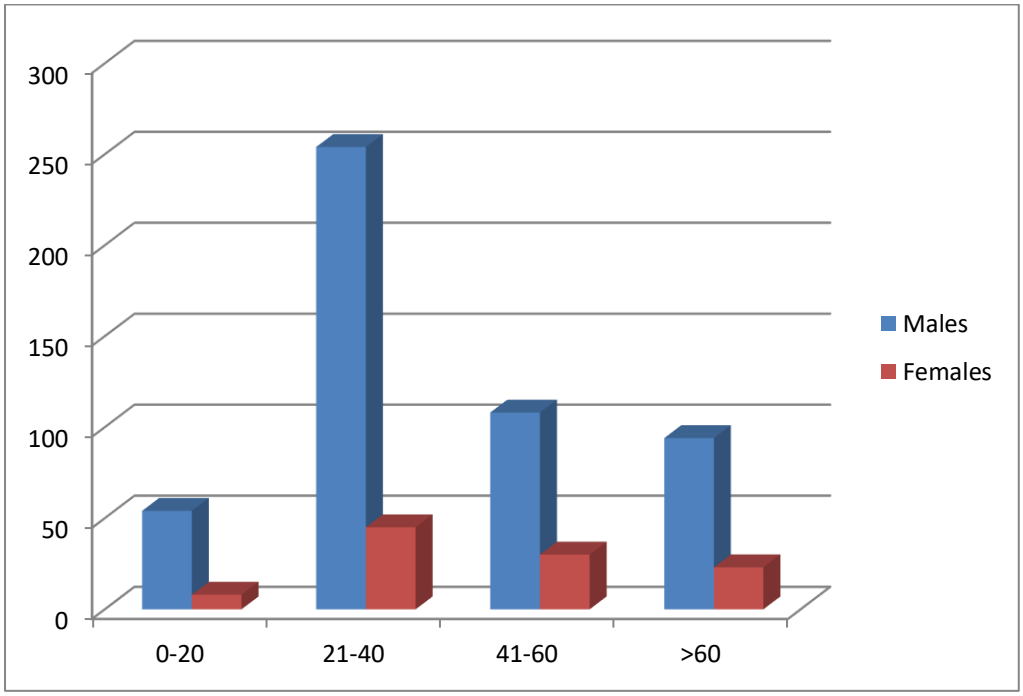


Figure 1: Age wise and gender distribution of cases

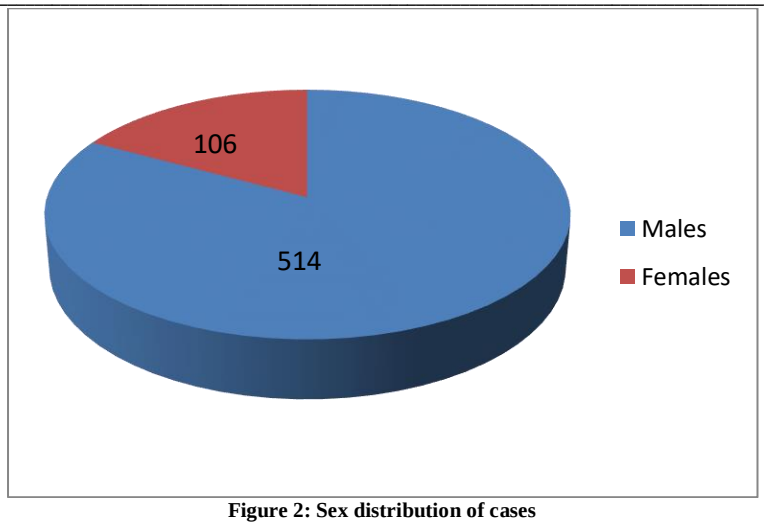
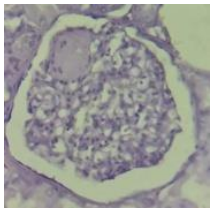


Figure 2: Sex distribution of cases

Table 4: No. of cases of Histopathological finding

Histopathological finding	No. of cases
Glomerular lesions (16%)	126
Non glomerular nephropathies (60.8%)	
Tubular and interestium lesions (34.16%)	271
Renal arteriosclerosis (25%)	178
Renal Carcinoma (1.6%)	45
Normal Histology (22.5%)	180



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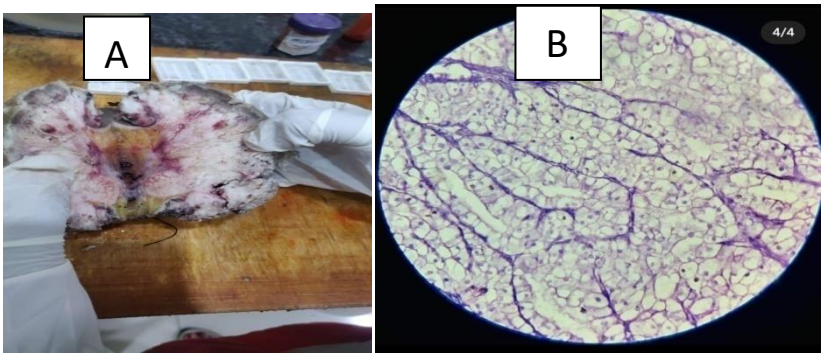

Figure 3: Renal cell carcinoma. (A) Gross image showing enlarge kidney with grey white necrotic mass. (B) Microphotograph 40 x showing of (Clear cell type) showing tumor cells with clear cytoplasm and distinct membrane, nuclei is hyperchromatic

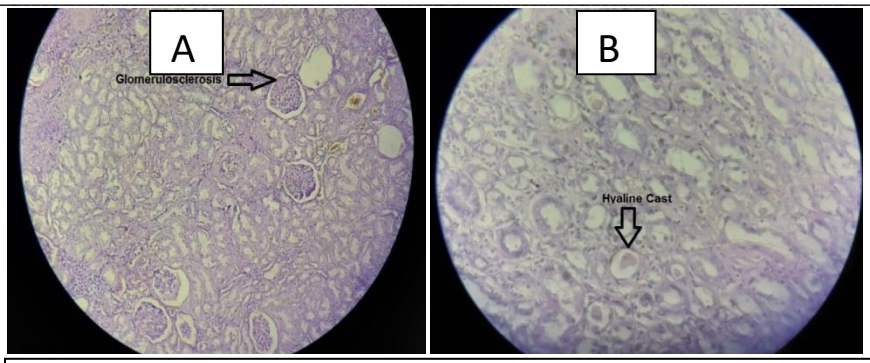

Figure 4: Nephrosclerosis (A) Microscopic image of H & E sectioned section on scanner view- showing changes of glomerulosclerosis.
(B) Microscopic image of H & E section on 10x showTubulesshow Hylaine cast.

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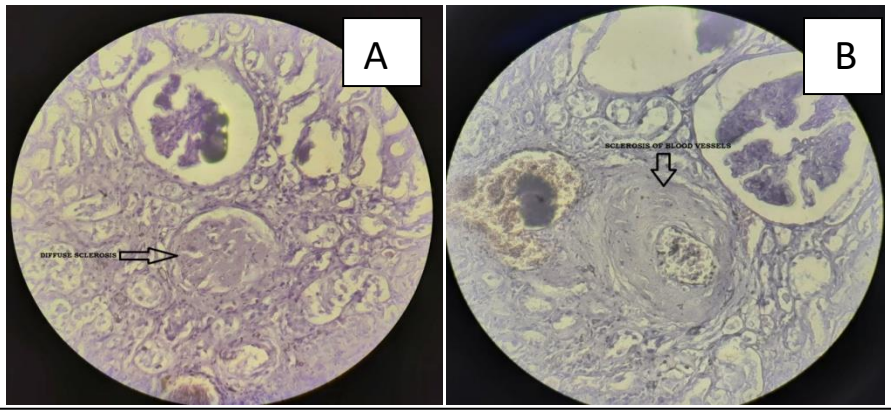

Figure 5: (A) Microscopic image of H & E sectioned section 10x of Glomeruli - showing diffuse glomerulosclerosis
(B) Microscopic image of H & E sectioned sectio 40x of
Vessels showing sclerosis.

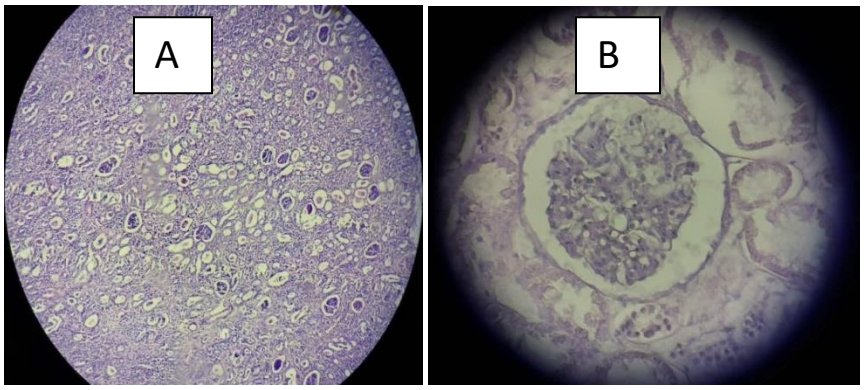

Figure 6: Acute Tubular Injury
(A & B) Microscopic image of H & E sectioned section on 10x & 40x showing Glomeruli -hypercellular

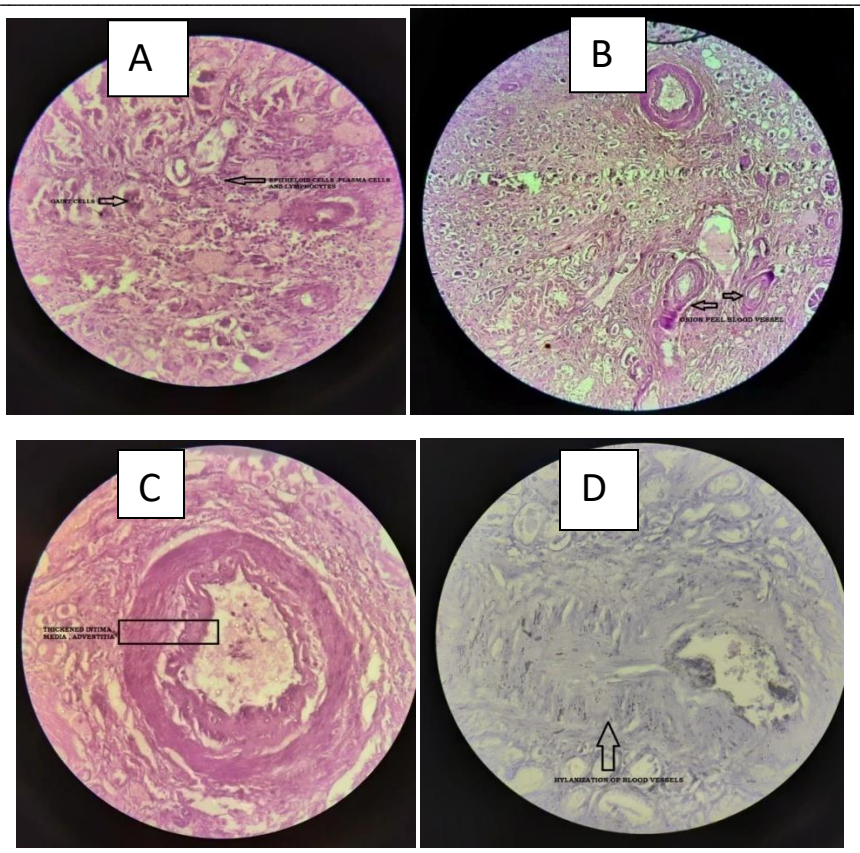

Figure 7: (A) Microscopic image of H & E section 10x showing (left arrow) Multinucledgaint cell & (right arrow) infiltrate of epitheiloid cell, plasma cells and lymphocytes seenin (Tubercular pyelonephritis). (B ,C& D) Microscopic image of H & E section 10x& 40x showing Onion peel blood vessels (C) thickening of initma, media and adventitia and (D)hyalinization of vessels seenin (Hypertensive nephropathy).

Discussion

Our series of 800 cases had 60.16% males and 39.86% females. Larsen et al. in their largest retrospective series on medico-legal autopsy in Denmark had 10,252 (68.39%) males and 4738 (31.61%) females [3]. The distribution of renal lesions vary with geographic area, age, gender, environmental, nutritional and genetic factors [4-5]. In current analysis in 200 cases the microscopic findings were close to normal histology. This is in concordance with study conducted by Usta et al [6]. We observed nephron pathological changes in 77.5% of renal autopsies .How ever slightly lower percentage of renal lesions were obtained by Monga et al.[7] and Martinez et al.[8] in their respective work on renal autopsies who found renal lesions in 68% and 59% cases respectively. The histopathologic findings in the present study revealed presence of non glomerular nephropathies in 73(60.8%) cases and glomerular lesions 20(16%) cases .A study conducted by Hailemariam S et al.[9] on 237 autopsies observed presence of glomerular or vascular pathology in 28% ,non glomerular lesion in 33% and 29% had combined lesions. Among present work tubular and interstitium changes were observed in 41 (34.16%) cases of which27 (22.5%) cases had acute tubular necrosis .This might be attributed to death due to intake of toxic substance, drugs over dose and snake bite. Renal tuberculosis and chronic pyelonephritis were observed in 6 (5%) and 8 (6.6%) of cases respectively in our work. Tuberculosis has been described as a global emergency by WHO and in developing countries it still remains as a major cause of morbidity and mortality. [10] Renal tuberculosis develops in approximately 5 % of patients with active tuberculosis. Renal tuberculosis usually remains clinically silent and often detected incidentally in autopsy studies [11]. Two (1.6%) cases of renal cell carcinoma (clear cell type) were observed during our study. KozlowskaJolanta et al. [12] in their work observed renal tumors in 2.76% cases in post mortem examination.

Conclusion

In the study autopsy of kidney revealed pathogenesis of disease, hazardous effects of toxic substance, therapies and drugs administered and lastly often reveal cause of death. Our study on autopsy provided satisfactory data in respect to morphological spectrum of various renal lesions followed by microscopic finding of various renal lesions. However it does not reflect the actual incidence of renal lesions in a population.

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