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Study of Spectrum of Adrenal Changes Autopsied at J.L.N. Hospital Ajmer

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Abstract

Background- Adrenal glands are the least studied organ.

Aim and Objectives- 1. To analyse gross and microscopic morphology of adrenals in posmortem cases and their correlation if any with the cause of death.

2. To compare the adrenal changes in various layers along with sudden natural death.

3. To compare the adrenal changes in person dying due to debilitated condition like TB, CANCER.

4. To compare the adrenal changes in chronic hypertensive and end stage renal disease.

5. Death in corona pandemic due to COVID-19.

6. Death due to poisoning.

Material and Methods- This observational cross section study will be carried out in the department of forensic medicine and toxicology on 100 cases in JLN Medical college and attached hospitals with cooperation from the department of pathology after obtaining due permission from the institutional ethical committee.

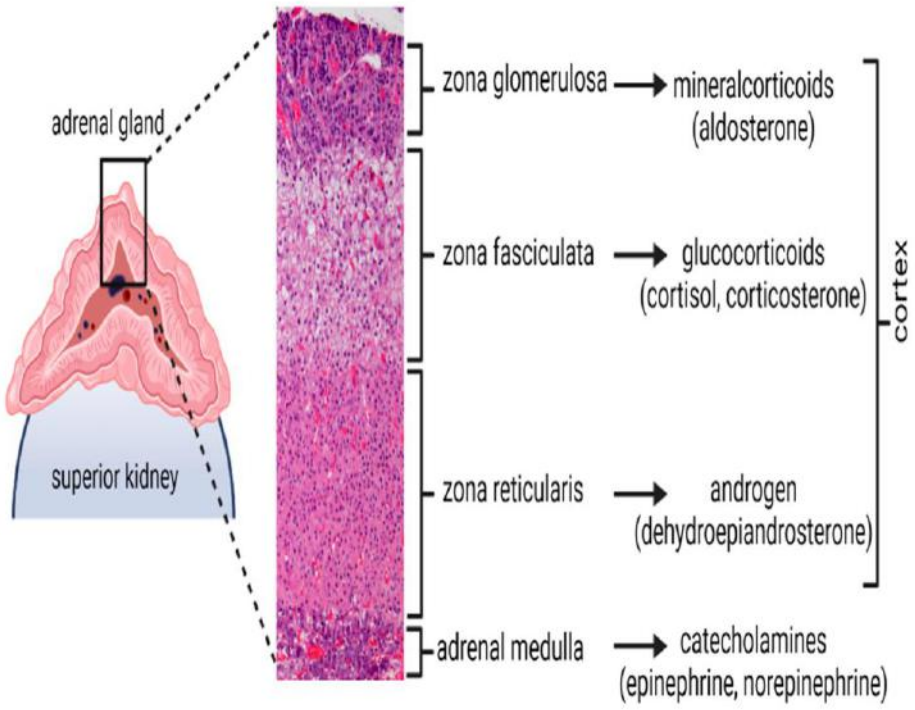
Conclusion- Adrenal lesion can present in various forms at autopsy. Non-neoplastic Lesions should be given equal importance as neoplastic. An enlarged adrenal does not always indicate malignancy. There are many clinical conditions in which adrenals are affected as secondary phenomenon. Gross and histo-morphological examination of the tissue can diagnose the adrenal lesions with great accuracy and is beneficial for patient's further survival, in setups where facilities to perform adrenal biopsies are available. Adrenals should be investigated as a part of routine autopsy procedure in all post-mortem cases.

Keywords*— *Autopsy, adrenal gland, histo-morphological.

I. INTRODUCTION

The adrenal glands in human are paired endocrine organs, composed of cortex and medulla, which have distinctly different embryogenesis, structure and function.

As correctly adrenals are called as Adrenal glands are involved in each and every stress related condition, including both neoplastic and non neoplastic conditions. These glands secrete variety of hormones to control the stress. With the advent of advanced radiological techniques, more and more of lesions are picked up. With increased number of C T guided biopsies, the pathologists are challenged to give the diagnosis on a small amount of tissue. The clinical spectrum of these conditions is varied. Some of the patients present with excess hormone secretion and others with adrenal insufficiency but a large number of the patients are asymptomatic.



II. MATERIAL AND METHODS

Study design: This observational cross section study will be carried out in the department of forensic medicine and toxicology, JLN Medical college and attached hospitals with cooperation from the department of pathology after obtaining due permission from the institutional ethical committee.

Study duration: The study will be conducted during March 2020 to Feb 2021.

Sample size: A total of 100 cases (in age group of 1 year to 74 years)

Inclusion criteria:

• Cases brought for post mortem which will fresh non-decomposed within 24 hours of death reported will be only included in this study

III. METHODOLOGY

All other information regarding age, sex, history, date and time of incidence and death, and cause of death will be recorded from the accompanying police papers. particulars attend in designed proforma.

In this study, Letulle (enmusse) and Virchow's individual 5 organ) method will be equally utilized for dissection to obtain the adrenals intact. On gross examination, laterality, colour, nodularity, atrophy, hypertrophy will be noted.

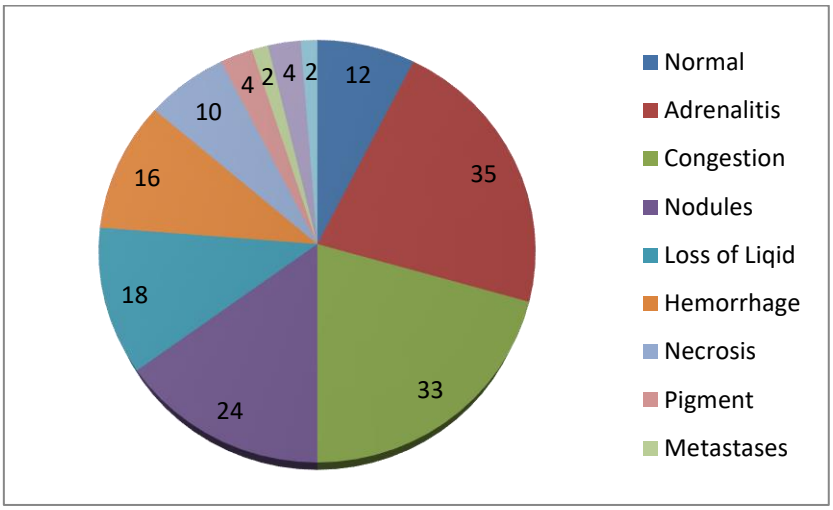
IV. RESULT

Table 1. Total number of autopsies

Categories	Male (%)	Female (%)	Total (%)
Adrenal lesions	54 (84.38%)	30 (83.33%)	84 (84%)
Normal	7 (10.94%)	5(13.89%)	12 (12%)
Mixed	3(4.68%)	1(2.78%)	4 (4%)
Total	64 (100%)	36 (100%)	100 (100%)

Table 2: Age-wise Distribution of Autopsy findings

Age Group	Normal	Adrenalitis	Congestion	Nodules	Loss of Liqid	Hemorrhage	Necrosis	Pigment	Metastases	Atrophy	Hypertrophy
0-20	3	8	10	5	3	4	2	0	0	0	0
21-40	5	14	12	8	7	7	5	2	1	1	2
41-60	3	9	7	7	6	3	2	1	0	1	0
61-80	1	3	3	2	1	2	1	0	1	1	0
>80	0	1	1	2	1	0	0	1	0	1	0
Total	12	35	33	24	18	16	10	4	2	4	2



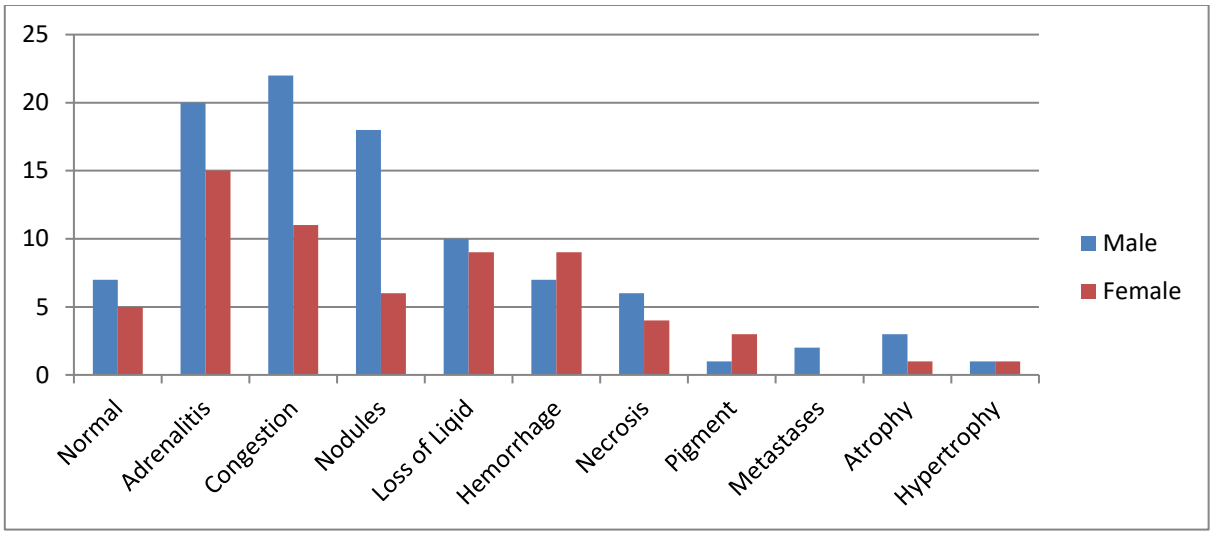


Table 3: Hemorrhage

Sr .No	Cause of Death	No. of cases	%
1	COVID-19	3	18.8%
2	IPH	4	25.0%
3	Septicemia	3	18.8%

4	Hypovolumic shock	2	12.5%
6	Pneumonia	1	6.3%
7	Adrenal Hemorrhage	1	6.3%
8	Raised ICT	1	6.3%
9	Poisoning	1	6.3%

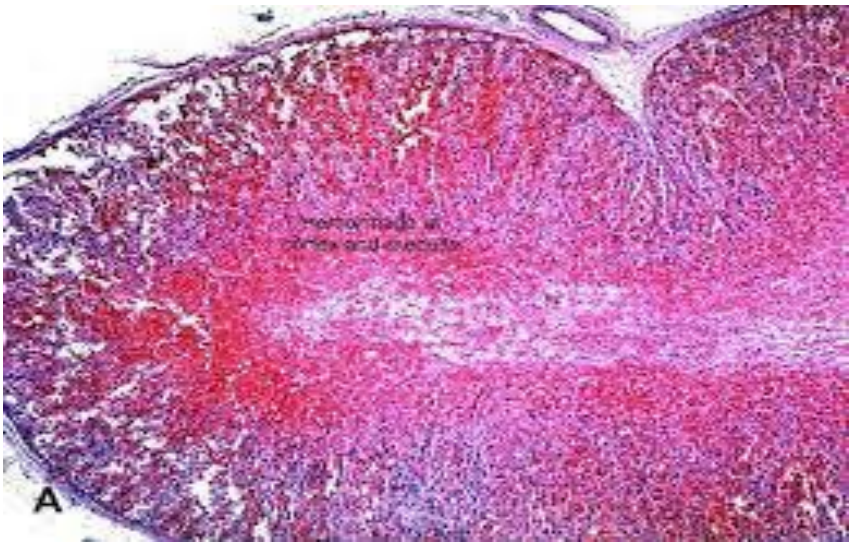


Table 4: Adrenalitis

Sr .No	Cause of Death	No. of cases	%
1	COVID-19	7	20.0%
2	IPH	10	28.6%
3	Septicemia	6	17.1%
4	Hypovolumic Shock	3	8.6%
5	Cardiac Failure	4	11.4%
6	Raised ICT	1	2.9%
7	TB	3	8.6%
8	Poisoning	1	2.9%

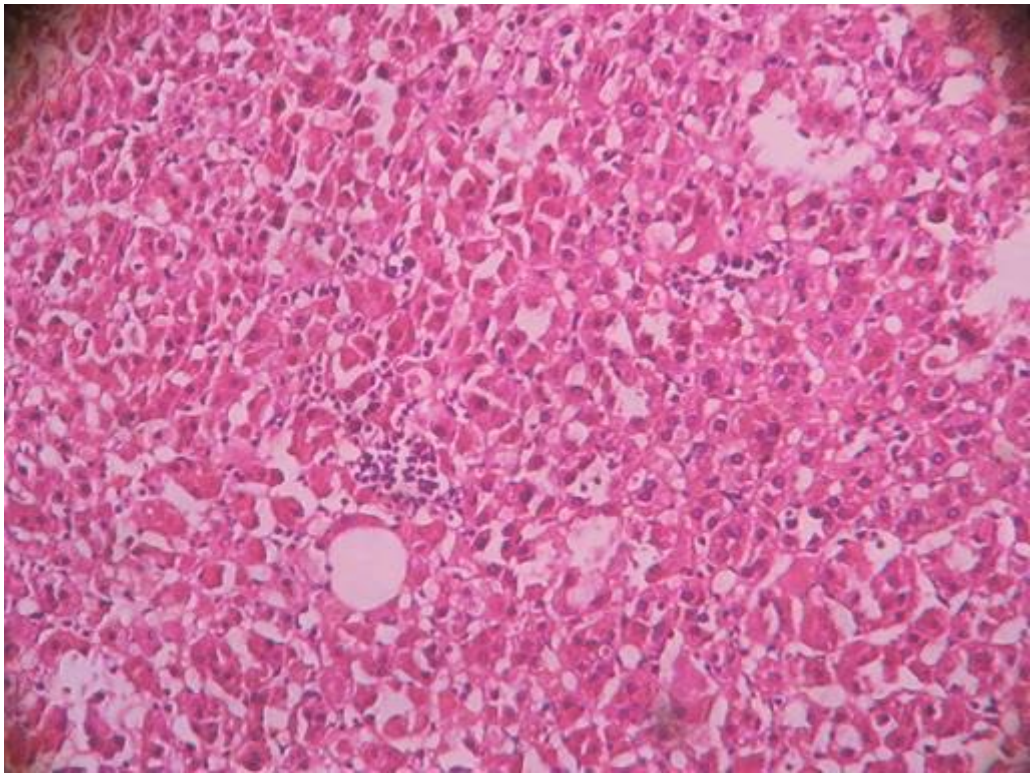


Table 5: Congestion

Sr .No	Cause of Death	No. of cases	%
1	COVID-19	7	21.2%
1	Septicemia	5	15.2%
2	IPH	6	18.2%
3	Hypovolumic Shock	2	6.1%
4	Cardiac Failure	3	9.1%
5	Raised ICT	3	9.1%
6	TB Bronchopneumonia	2	6.1%
7	Cachexia (Malignancy)	1	3.0%
8	Lobar pneumonia	2	6.1%
8	Poisoning	2	6.1%

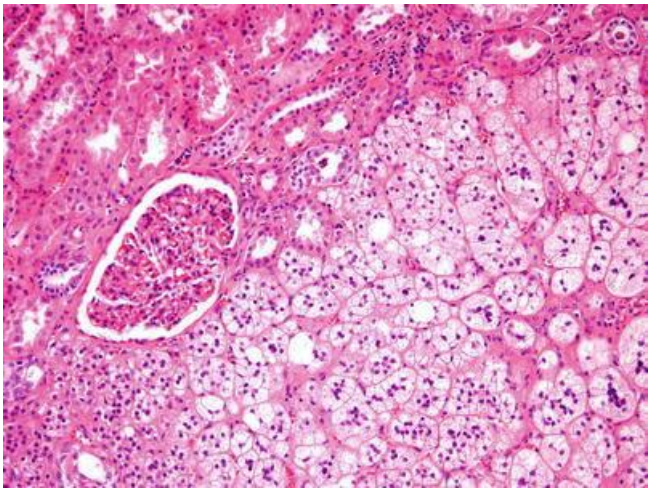


Table 6: Nodules

Sr .No	Cause of Death	No. of cases	%
1	COVID-19	5	20.8%
2	Septicemia	3	12.5%
3	Cardiac Failure	4	16.7%
4	TB Bronchopneumonia	6	25.0%
5	Renal Failure	2	8.3%
6	Hypovolumic Shock	3	12.5%
7	Raised ICT	1	4.2%

Table 7: Loss of Lipid

Sr .No	Cause of Death	No. of cases	%
1	COVID-19	3	15.8%
2	Septicemia	5	26.3%
3	Cardiac	4	21.1%
4	Raised ICT	1	5.3%
5	Lung Cancer	2	10.5%
6	Hypovolumic Shock	1	5.3%
7	IPH	1	5.3%
8	Poisoning	2	10.5%

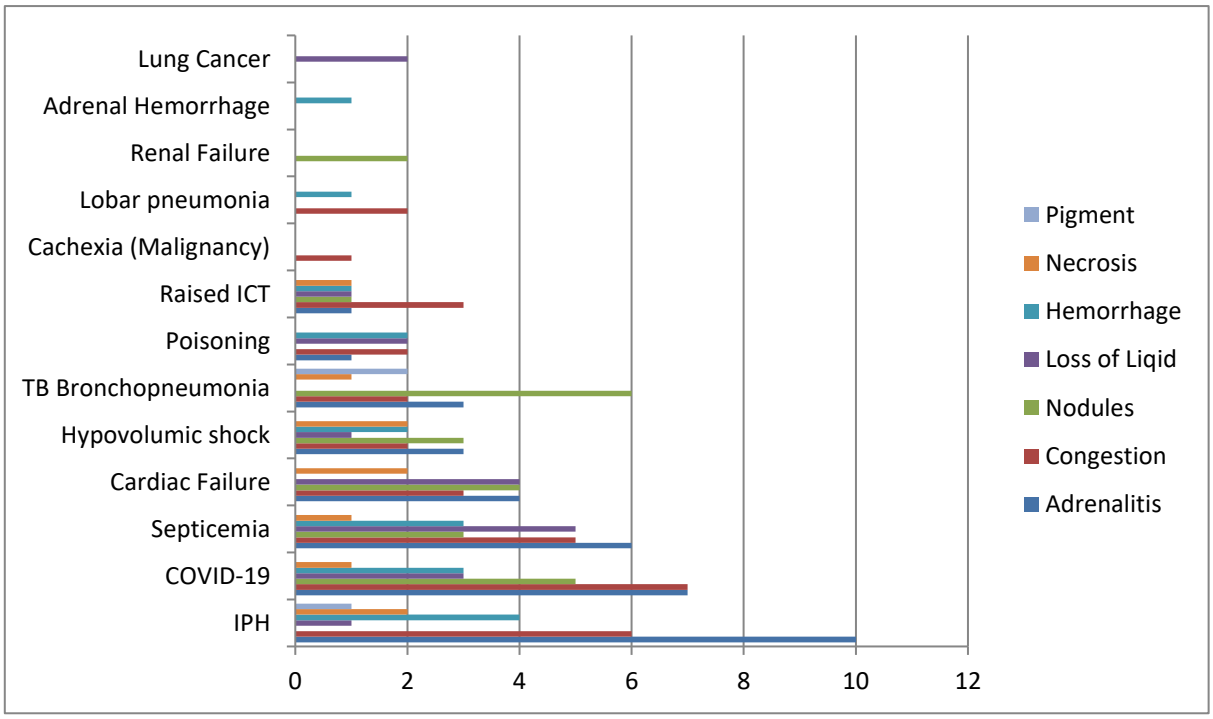
Table 8: Necrosis

Sr .No	Cause of Death	No. of cases	%
1	COVID-19	1	10.0%
2	Hypovolumic Shock	2	20.0%

3	Cardiac Failure	2	20.0%
4	Septicemia	1	10.0%
5	IPH	2	20.0%
6	Tuberculosis	1	10.0%
7	Raised ICT	1	10.0%

Table 9: Pigment

Sr .No	Cause of Death	No. of cases	%
1	IPH(AFI)	2	50.0%
2	TB(AFI)	1	25.0%
3	Bronchopneumonia	1	25.0%



V. DISCUSSION

In my study 100 cases are taken for histo-morphological analysis in which adrenal lesions found in 84% cases with male dominancy. 12% cases are normal no lesions found , 4% cases have mixed result with no clear remark Between normal and adrenal lesions.

Age wise distribution of adrenal changes are not significant, but advancement of age with co-morbidity is more significant.

Involvement of adrenal glands by neoplastic conditions are relatively rare, but the non-neoplastic conditions are quite common. Same was observed in our study. In our autopsy study of adrenals in 100 cases, 96.11% cases showed pathological changes, with only 4.89 % appearing normal.

For understanding of the pathophysiology and its association with the clinical presentations, adrenal lesions are classified into various types. In our study there is predominance of non-neoplastic 96.3% adrenal lesions with neoplastic conditions comprising 3.7 %. The non-neoplastic lesions comprised of --

Adrenal inflammation (adrenalitis) 35 %, Hemorrhage 16. %, Nodules 24.07%, Loss of lipid 18.44 %, Necrosis10%, Pigment 4%, Congestion 33 %, Atrophy 2.78 %, Hypertrophy 1.85 %, Metastasis 2% .

In our study the lesions predominantly occurred bilaterally, including adrenalitis, hemorrhage, nodules, loss of lipid, necrosis, pigment, hypertrophy, atrophy. Unilateral involvement was seen in cases of metastasis

VI. CONCLUSION

Adrenal lesion can present in various forms at autopsy. Nonneoplastic lesions should be given equal importance as neoplastic. An enlarged adrenal does not always indicate malignancy. There are many clinical conditions in which adrenals are affected as secondary phenomenon. Gross and histomorphological examination of the tissue can diagnose the adrenal lesions with great accuracy and is beneficial for patients further survival, in setups where facilities to perform adrenal biopsies is available. Adrenals should be investigated as a part of routine autopsy procedure in all postmortem cases.

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