

Hepatic Neoplasm Seen On Autopsy

Dr. Shivanand Gundalli¹, Dr. Rutuja Kolekar², Dr. Amit Kolekar³,
Dr. Vikrant Nandurkar⁴, Dr. Kaveri pai⁵, Dr. Vijaylaxmi Gundalli⁶

Assistant professor, Department of pathology SNMC Bagalkot¹

Senior resident Department of obstetrics and gynaecology SNMC Bagalkot²

Assistant professor, Department of surgery ABVRH Sawangi³

Assistant professor, Department of surgery sdurms kolar⁴

Assistant professor, Department of anaesthesia ABVRH Sawangi⁵

Medical officer, Department of veterinary medicine muttagi bagewadi.⁶

1. INTRODUCTION

Autopsy literally means "*see for yourself*".³ It is a special surgical operation, performed by specially-trained physicians, on a dead body. Its main purpose is to learn the truth about the person's health during life, and how the person really died.³

Knowledge of pathological anatomy gained from dissection can be traced to the time of Sargon I of Babylon almost 3500 BC back, who examined the liver and other organs of sacrificed animals in the attempt to predict the future, called *Hepatoscopy* or *haruspicy*.²

Hippocrates (468-377 BC)² emphasised that disease resulted from 'natural cause' and was not due to divine or supernatural origine. Autopsy became a force in pathology after 800 years of Hippocrate's "natural theory".²

Uses of autopsy^{1,4} :-

- 1) **Benefits to clinicians and hospitals** :- The autopsy procedure can be useful in the post-mortem diagnoses of diseases which had atypical presentation or inconclusive antemortem investigation reports and thus were missed before death. Such information may help the clinician in similar cases in future.
- 2) **Educational / Research benefits** :- Autopsy is a valuable educational tool. The autopsy findings can be used to educate physicians, residents, nurses and medical students, thereby contributing to an improved quality of care. Autopsies are also helpful to know the effects of new drugs and treatment, and also provide the sufficient tissue material to study. The collected data can be used for comparative studies with current cases.
- 3) **Benefits to families** :- For families, the autopsy has both tangible and psychological benefits.
- 4) **Benefits to society** :- it is very helpful to recognize new diseases, and to evaluate new diagnostic tests and therapeutic intervention. It helps in genetic counselling of the parents of stillborn or with congenital abnormalities. It also provides different organs for transplantation.

This is especially true for disease of an organ like liver which is the largest organ in the body and one of the organ working without resting phase. It suffers from various disorders. But it has enormous reserve and regenerative capacity. When the remaining parenchyma is normal, patients have survived with resection of about 80% of the liver.⁵

Many liver diseases do not cause symptoms and may not be detected on routine examinations; hence any estimate of their incidence is likely to be fallacious. The morphological spectrum of liver diseases is variable and may be non-specific. Biochemical abnormalities may not reflect the extent and severity of liver damage and are not always helpful in pointing towards the nature of the lesion. During life, biopsy remains the helpful diagnostic tool to understand and estimate the nature of liver disease while the autopsy may provide similar important knowledge about the disease after death.⁴

The last few years have seen tremendous advances in the diagnosis and management of patients with liver diseases with emergence of *Hepatology* as a separate branch of internal medicine.

The main purpose in undertaking the present work on autopsy study of liver is to study the various patterns of liver diseases reflected in the autopsies.

This being an autopsy study may not reflect the true incidence of various liver diseases in our population, but will definitely help us in understanding their patterns as reflected in autopsies

AIMS AND OBJECTIVES:

- 1) To analyse the pattern of liver diseases that are reflected in histology of the liver at autopsy.
- 2) To study clinico-pathological correlation in hepatic lesions.
- 3) To correlate the liver pathology with the cause of death given as final autopsy diagnosis.

2. MATERIALS AND METHODS

The present study was carried out in the department of pathology in a tertiary care centre.

This study included 275 cases of clinical autopsies performed at tertiary care centre. This hospital does the clinical autopsies at the rate of 5.18 %.

Four year autopsies were taken as a study group from July 2009 to July 2013 i.e. 4 years (prospective only). Total numbers of clinical autopsies done were 298. Of these, 275 were taken as a study group which were complete autopsies. Rest of the autopsies were either partial, restricted only to thorax and cranium or showed advanced autolytic changes so that the liver morphology couldn't be studied.

Relevant clinical history, age, sex, chief complaints and investigations were noted, particularly whether patients presented with symptoms suggestive of liver diseases during life [as per proforma (Annexure)].

The autopsies were done as per standard procedure (Current Methods of Autopsy Practice, Ludwig, 1979). Liver and other organs were examined grossly in situ. The organs were removed by Virchow's method. The liver was examined in terms of weight, size, colour, external surface and lymph node in porta hepatis.

After fixation in 10% formalin and processing (Carleton's histological technique 1980), paraffin blocks were made. Routinely two blocks were prepared from grossly normal liver and sections were cut out at 5 microns. If gross examination showed pathological lesion, representative blocks were made and multiple sections were obtained.

The sections were stained with H & E and other special stains wherever necessary like –

- 1) Masson trichrome stain,
- 2) Reticulin stain,
- 3) Periodic acid Schiff stain,
- 4) Ziehl-Neelsen stain,
- 5) Orcein stain

After studying these sections, reporting was done. The findings were correlated with clinical presentation before giving the final diagnosis.

In the present study, various lesions were studied in the following order –

- A. Hepatitis :
 - a. Acute hepatitis,
 - b. Massive / submassive necrosis,
 - c. Acute hepatitis with interface hepatitis,
 - d. Acute hepatitis with confluent / bridging necrosis,

- e. Alcoholic and non-alcoholic liver disease,
- B. Granulomatous lesions,
- C. Cirrhosis,
- D. Vascular disorders
 - a. Chronic venous congestion,
 - b. Acute sinusoidal congestion,
- E. Liver involvement in systemic diseases like, infections, storage diseases,
- F. Liver disorders in pregnancy like, toxemia of pregnancy,
- G. Primary hepatic neoplasms e.g. haemangioma, HCC,
- H. Secondaries / metastasis to liver,

If the pathological examination revealed normal liver, it was reported as “No specific pathology”. After this data was analysed and results were obtained.

3. RESULTS

Table No. 1 Distribution of total autopsies during the study period (Five year)

Autopsies	Number of Cases	Percentage
Complete	275	91.67 %
Partial	20	07.52 %
Autolyzed	3	0.81 %
TOTAL	298	100.00 %

The above table shows that, total number of autopsies done over 5 years study period were 492, out of which 451 (91.86%) were complete autopsies. The remaining 41 autopsies were either partial [i.e. 37 (7.52 %)] or showed advanced autolytic changes [i.e. 4 (0.81 %)], so these autopsies could not be included in our study.

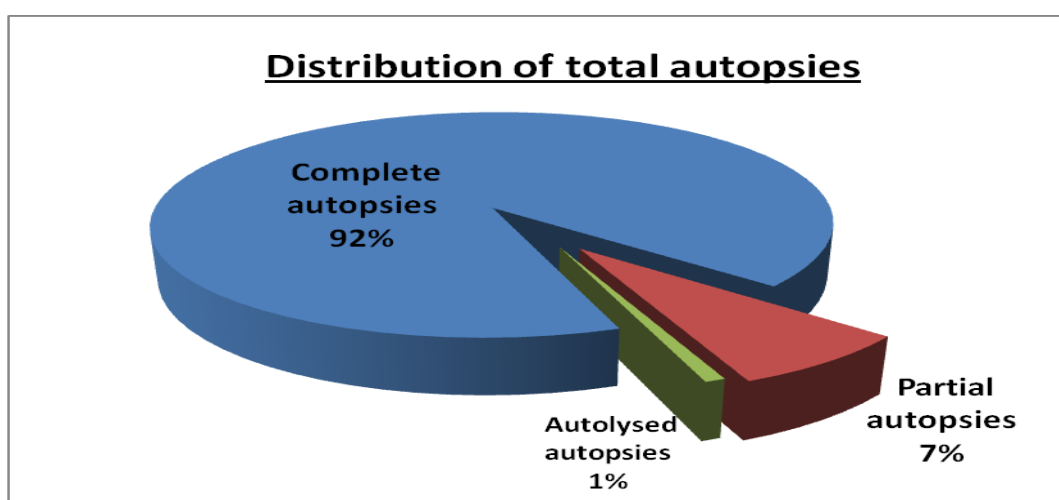


Table No. 2 Distribution of total autopsies during the study period (Five years)

Autopsies	Number of Cases	Percentage
Males	145	51.66 %
Females	130	48.34 %
TOTAL	275	100 %

Out of total 275 cases, 145 (51.66 %) were males and 130(48.34%) were females with M:F ratio of 1.07:1.

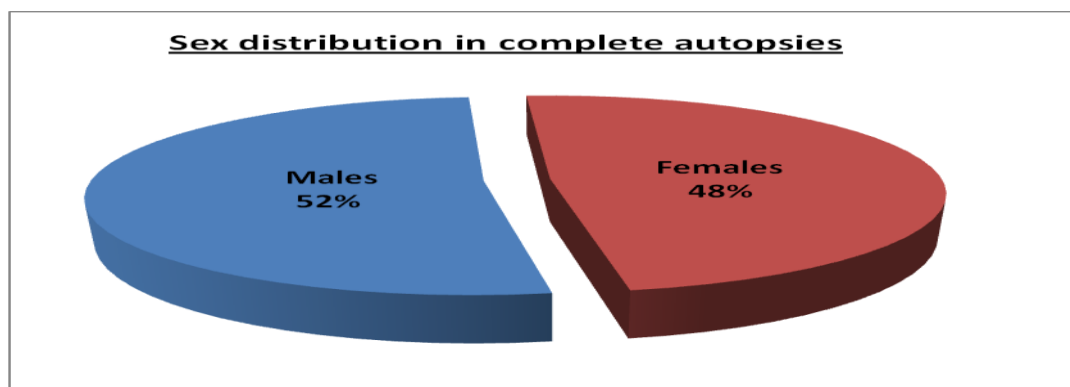


Table No. 3 Age distribution of 275 complete autopsies

Age	Number of Cases	Percentage
IUD / Stillborn	08	3.77 %
Neonate (< 1 month)	39	17.29 %
1 month – 1 year	22	9.76 %
1 year – 10 years	29	12.86 %
10 years – 20 years	20	9.09 %
20 years – 30 years	25	11.09 %
30 years – 40 years	29	12.86 %
40 years – 50 years	25	11.09 %
50 years – 60 years	33	15.29 %
60 years – 70 years	38	17.29 %
> 70 years	7	2.88 %
TOTAL	275	100.00 %

The above table shows that, out of 275 autopsies studied, most of the cases were from paediatric age group (up to 10 years), maximum being neonatal autopsies, comprising 39 cases (17.29 %). As the age advances (above 50 years), the number of autopsies were declined, least number being above 70 years with 7 (2.88%) cases. While in the remaining (middle) age groups, the numbers of cases were almost equally distributed.

Table No. 4 Distribution of liver pathologies in 298 autopsy cases

Type of hepatic lesion	Number of Cases (n = 298)	Percentage
Steatosis	73	16.18 %
Hepatitis	24	21.29 %
Circulatory disorders (CVC / Acute sinusoidal congestion)	65	29.05 %
Granulomatous hepatitis	07	3.10 %
Cirrhosis	10	4.43 %
Metabolic disorders	2	0.44 %
Liver disorders in pregnancy	3	0.67 %
Abscesses	4	0.89 %
Liver in systemic diseases (Malaria)	1	0.22 %
Neoplasms (Primary / Metastatic)	13	2.88 %
No specific pathology	48	21.51 %

Above table shows the spectrum of various liver diseases studied in 298 autopsy cases. The most common pathology observed was circulatory disorders like chronic venous congestion and acute sinusoidal congestion found in 65 (29.05%) cases. Hepatitis of various morphology and etiologies were 24 (21.29%). Steatosis was present in 73 cases (16.18%) while cirrhosis in 10 cases (4.43%).

The other lesions were granulomatous hepatitis, metabolic disorders, liver disease in pregnancy and various systemic diseases, abscesses and neoplasms comprising 14 (3.10%), 2 (0.44 %), 3 (0.67 %), 1 (0.22 %), 4 (0.89 %) and 13 (2.88 %), respectively.

The liver was histologically normal in 97 cases (21.51 %).

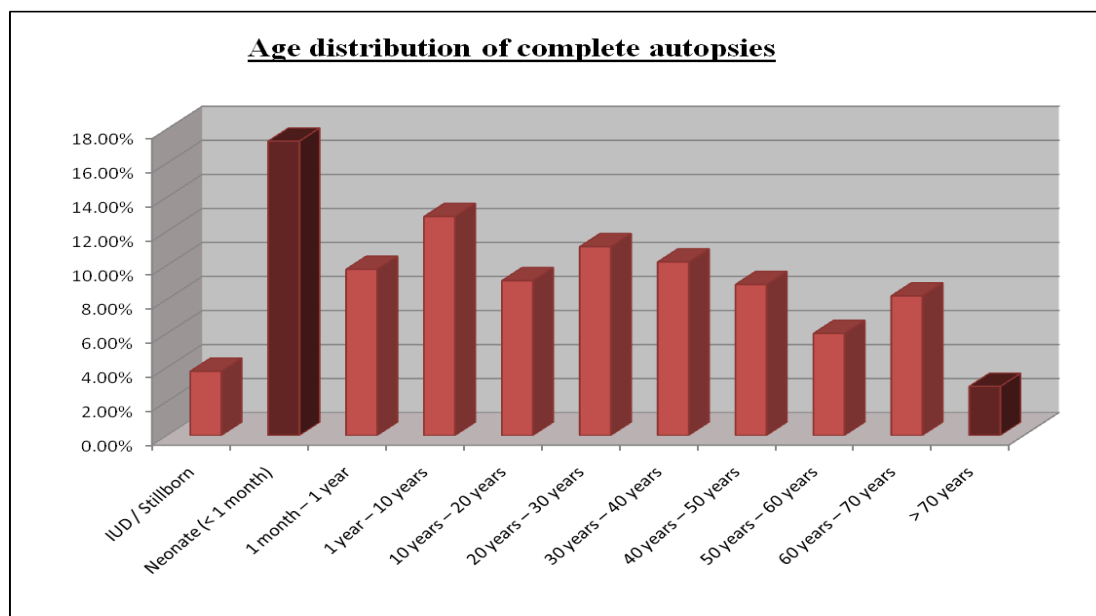


Table No. 19 Distribution of hepatic neoplasms

Neoplasms	Number of Cases		Total	Percentage
	M	F		
Primary,				
▪ Benign (Haemangioma)	1	5	6	1.33%
▪ Malignant (Hepatocellular carcinoma)	0	5	5	1.11 %
	1	0	1	0.22 %
Metastasis / Secondaries	4	3	7	1.55 %
TOTAL	5	8	13	2.88%

The above table shows that, metastasis to liver were more common than its primary tumours. The metastasis was seen in 7 (1.55%) cases while primary neoplasms were noted in six (1.33%) cases.

Among the primary neoplasms, the benign tumours were far more common than malignant, seen in five (1.1%) cases. All benign tumours were haemangiomas, all of them were seen in female patients.

A single case (0.22%) of hepatocellular carcinoma was noted in a 65 years old male. The tumour was multicentric in origin along with cirrhosis.

Table No. 20 Type of malignancies metastasizing to the liver

Metastasis	Number of Cases		Total	Percentage
	M	F		
Haemato-lymphoid malignancies	3	2	5	1.11 %
Other malignancies	1	1	2	0.44 %
TOTAL	4	3	7	1.55 %

As per above the table, five (1.11%) out of seven malignancies, metastasizing to liver, were of haemato-lymphoid in origin, while remaining two (0.44%) were from solid organ.

Table No. 21 Various haemato-lymphoid malignancies metastasizing to liver

Haemato-lymphoid malignancies	Number of Cases		Total	Percentage
	M	F		
Acute leukemias	2	1	3	0.66%
▪ AML (M 4 TYPE)	2	0	2	
▪ ALL (Burkits type)	0	1	1	
Chronic myeloid leukemia(CML)	0	1	1	0.22%
Lymphoma (NHL) small cell type	1	0	1	0.22%
TOTAL	3	2	5	1.1%

(AML- Acute myeloid leukemia, ALL- Acute lymphoid leukemia)

▪ Above table shows that, three (0.66%) cases of acute leukemias and one (0.22%) case of chronic myeloid leukemia had metastasized to liver. Out of two cases of acute leukemias, one was **ALL(Burkits type)** showing dense infiltration in the portal tracts. The second case was of **AML(M 4 TYPE)**, which also showed predominantly portal and mild sinusoidal infiltration. A single case of CML showed diffuse infiltration of liver parenchyma by malignant myeloid cells, predominantly in sinusoids.

Metastasis of lymphoma was noted in one (0.22%) case, which was **small cell type** non-Hodgkin's lymphoma, and showed nodular infiltrate in lobules as well as portal tracts.

Table No. 22 Various Non- haemato-lymphoid malignancies metastasizing to liver

Type of malignancies in final cause of death	Number of cases	Malignancies metastasizing to liver
Adenocarcinoma	3	1
▪ GI tract	2	1
▪ Pancreas	1	0
Squamous cell carcinoma (skin)	4	0
Lung carcinoma (Neuro-endocrine type)	1	1
Thyroid carcinoma	1	0
TOTAL	9	2

The above table shows the frequency of metastasis of other malignancies to the liver. Out of total nine cases of malignancies in our study, two (22.2%) showed metastasis to liver. The first case was of adenocarcinoma colon in a 65 years old male. The second was neuroendocrine carcinoma of lung in a 46 years old female. None, out of four, cases of squamous cell carcinoma and thyroid carcinoma metastasized to liver.

4. DISCUSSION

In the present study, liver was examined in 275 cases from clinical autopsies. Our hospital does the clinical autopsies at the rate of about 5.18% of total deaths. In a study period of five years from October 2009 to September 2013, the total number of autopsies done were 292, out of which 275 were complete autopsies while rest of the autopsies were either partial or showed autolytic changes and thus, not included in the study. The autopsy cases of all age groups admitted in all departments were included in the study. (Table 1)

The purpose of this study was to analyse different patterns of liver neoplasms that are reflected in the morphology of the liver at autopsy, to study the clinico-pathological correlation in various hepatic neoplasms and also to correlate the liver pathology with the cause of death. As it is the autopsy study and done as per clinicians interest in the case, the

observations may not reflect the true incidences of liver neoplasms but, can definitely give clue about the pattern of various liver diseases in the autopsy series.

Sex:

In our study, out of 451 cases, 233 (51.66 %) were males and 218 (48.34 %) were females. (Table 2)

❖ Age group :

The main bulk of study was neonates and children below 10 years. As per the table no. 3, the maximum numbers of autopsies were done in neonatal age group constituting 17.29% of total autopsies. As the age advanced, the rate of autopsies declined and the least number of autopsies were done in geriatric patients above 70 years constituting only 2.88%. The clinicians felt no urgency in finding true cause of death in geriatric age as death is expected event for those with advanced age and it is perceived as an essential natural course of aging.¹

In the present study, as per table no. 4, the pathological lesions were noted in 354 (78.49%) cases, while in remaining 97 (21.51%) cases, no specific pathology was seen. Out of these 354 cases, the circulatory disturbances in the form of chronic venous congestion and acute sinusoidal congestion was the most common lesion seen in 131 (29.05%) of cases, followed by hepatitis in 96 (21.29%), steatosis in 73 (16.18%), cirrhosis in 20 (4.43%), granulomatous hepatitis in 14 (3.10%) and various hepatic neoplasms in 13 (2.88%) cases. The other rare lesions, in the descending order of frequency, were hepatic abscesses (0.89%), liver disorders in pregnancy (0.67%), metabolic disorders (0.44%) and hepatic lesions in multisystem diseases like malaria (0.22%).

❖ Neoplasms :

Table no. 19, shows distribution of total 13 (2.88%) hepatic neoplasms in present study, the metastatic tumours are more common than the primary liver tumours. The metastasis was seen in 7 cases while primary tumour of liver in 6 cases.

Table No. 40 Percentage of primary and metastatic hepatic neoplasms

Authors	Primary hepatic neoplasms	Metastatic neoplasms
Gharpure et al (1950) ³⁵	1 %	2.3 %
Kshirsagar VH et al (1967) ³⁸	1 %	3.2 %
Bal MS et al (2004) ⁵¹	1 %	2 %
Present study (2009)	1.3 %	1.6 %

Gharpure et al (1950)³⁵, found the 1 % of primary hepatic neoplasms and 2.3 % of metastatic tumours in their study.

Kshirsagar VH et al (1967)³⁸, found 266 (4.18%) neoplasms in their study of 6356 autopsy cases. The 3.2% cases were metastasis while 1% had primary neoplasms.

Bal MS et al (2004)⁵¹ found metastatic tumours in 2% of cases and primary in 1% cases.

As shown in table no. 19, out of total 6 cases of primary neoplasms in present study, the 5 (1.1%) were benign, all being cavernous haemangiomas while one (0.22%) case was malignant tumour i.e. hepatocellular carcinoma.

• Cavernous haemangioma :

All the cases of **cavernous haemangiomas** were observed in females with the age ranging from 20 years to 60 years. The 4 (80%) were in right lobe while only 1 (20%) in left lobe of liver. All the tumours were found incidentally on autopsy without any symptoms related to haemangioma during life.

As reported by *Karhunen PJ et al* (1986)⁷¹ in autopsy series, the cavernous haemangioma is the most common primary liver tumour. Its occurrence in general population ranges from 0.4-20%.

Shrinivas RP et al (2009)⁵⁷, have stated that, a distinct female preponderance has been reported in surgical series with F:M ratio ranging from 5:1 to 6:1. Haemangiomas can occur in individual of any age, most frequently occurring in middle aged women.

• **Hepatocellular carcinoma (Hepatoma) :**

In present study, we found hepatocellular carcinoma in 1 (0.22%) case.

Table No. 41 Occurrence of hepatocellular carcinoma

Authors	Percentage of Hepatocellular carcinoma
Prabhakar V et al (1964) ³⁶	1.6 %
Kshirsagar VH et al (1967) ³⁸	0.4 %
Rao et al (1967) ⁶⁹	2.2%
Bal MS et al (2004) ⁵¹	1 %
Masoud Sotoudeh et al (2006) ⁵²	0.1 %
Present study	0.22 %

Prabhakar V et al (1964)³⁶, found 1.6% incidence of HCC. Most of these carcinomas were of trabecular type.

Kshirsagar VH et al (1967)³⁸, observed HCC in 0.4%.

Rao et al (1967)⁶⁹ studied 1293 autopsies and reported 31 primary carcinoma of liver out of which 29 (2.2%) were hepatocellular carcinoma. The 74% were associated with cirrhosis.

Bal MS et al (2004)⁵¹, found HCC in 1% of their autopsy cases.

Masoud Sotoudeh et al (2006)⁵², observed incidence of HCC in 0.1%.

We found hepatocellular carcinoma in a 73 year male patient which was multicentric in origin along with cirrhosis of liver. There was no history of chronic alcoholism. The serum bilirubin and liver enzymes were only mildly raised on liver function tests. However the serological test reports were not available. Grossly the liver weight was reduced with mixed nodular cirrhosis. Microscopically, the tumour was well differentiated.

Prabhakar V et al (1964)³⁶, have observed that the primary carcinoma of liver is predominantly a disease of males and accounts for 1.6% of autopsies.

Kshirsagar VH et al (1967)³⁸, found the average age group to be 44.8 years with range of 40 – 60 years. The cancer appears commoner in males with no female cases in many compared autopsy series. The 91.83% of the hepatomas were associated with cirrhosis in their study.

• **Metastatic tumours :**

Among the 7 metastatic tumours in present study, the M:F ratio was 1.3:1. The table number 20, shows the distribution of various tumours metastasizing to liver, among which the 5 (71.4%) were from haemato-lymphoid malignancies mainly, acute leukemias.

➤ **Haematolymphoid malignancies :**

Out of total 5 cases in present study, 3 cases of acute leukemia and 1 case of chronic myeloid leukemia had metastasis to liver. From 2 cases of acute leukemias, 1 was ALL showing dense infiltration in the portal tracts. The second case was of AML, which also showed predominantly portal and mild sinusoidal infiltration. A single case of CML, showed diffuse infiltration of liver parenchyma by malignant myeloid cells, predominantly in sinusoids. Metastasis of lymphoma was noted in 1 case, which was small cell type non-Hodgkin's lymphoma, and showed nodular infiltrate in lobules as well as portal tracts.

In a study by *Walz-Mattmuller R et al (1998)⁴⁶*, liver infiltration was found frequently in chronic leukaemia and myeloproliferative diseases (80-100%), acute leukaemia (60-70%) and non-Hodgkin's lymphoma (50-60%), but was significantly less common in multiple myeloma (32%) than in any of the other diagnostic groups. Hepatomegaly was found in over 50% of cases in all the diagnostic groups, but was not always associated with infiltration. Diffuse, non-destructive infiltration was most common: in acute myelogenous leukaemia, both the portal triads and sinusoids were usually involved; in chronic myelogenous leukaemia, multiple myeloma and myeloproliferative diseases, infiltration was

mainly sinusoidal; and in lymphatic leukaemia and non-Hodgkin's lymphoma the portal triads were mainly involved. Nodular infiltration was seen in multiple myeloma and non-Hodgkin's lymphoma.

Ali Nawaz Khan et al (2009)⁷², in their study report on liver metastasis in autopsy cases, have shown that, in children, the most common liver metastases are from a neuroblastoma, the eyes, Wilms tumor, or leukemia.

➤ **Other malignancies :**

Table no. 22, shows the frequency of metastasis of other malignancies to the liver. We found liver metastasis from solid organ malignancies in 2 (0.44%) cases.

Table No. 42 Percentage and common primary malignancies metastasizing to liver

Authors	Percentage of malignancy metastasizing to liver	Common primary tumours
Bal MS (2004) 51	2 %	➤ Adenocarcinoma ➤ Sarcoma
Present study	0.44 %	➤ Adenocarcinoma colon ➤ NE* carcinoma lung

* Neuro-endocrine carcinoma

Bal MS (2004)⁵¹, found the metastasis in 2% of cases in their study of 100 autopsy cases.

Out of total 9 (1.99%) cases of malignancies in the present study, 2 (22.2%) showed metastasis to liver. The first case was of adenocarcinoma of colon which occurred in a 65 years male while second was neuroendocrine carcinoma of lung in a 46 years old female.

Pickren JW et al (1982)⁷³, found that liver metastases were present in 41% and the primary malignancies most commonly metastasizing to the liver were the eye (77.8%), pancreas (75.1%), breast (60.6%), gallbladder and extrahepatic bile ducts (60.5%), colon or rectum (56.8%), and stomach (48.9%).

Gilbert HA et al (1982)⁷⁴, reported that the liver is a primary target organ of gastrointestinal (GI) cancers, some urologic cancers, neuroblastomas, some melanomas, and lung cancers. In breast cancer, the liver is less often the primary target organ. The liver may be the only organ involved in colorectal primaries, hepatocellular carcinoma, and neuroendocrine tumors.

Ali Nawaz Khan et al (2009)⁷², studied the liver metastasis in 9700 autopsy cases and found that, metastasis is the most common neoplasm in an adult liver and the liver is the second most common site for metastatic spread, after the lymph nodes. Metastases from primary sites in the eye, colon, stomach, pancreas, breast, or lung affect adults, usually those 50 to 70 years of age. The M:F ratio is 3:2 for colon carcinoma. The male-to-female ratio is 1:1 for Wilms tumor, neuroblastoma, pancreatic cancer, gastric cancer, and lung cancer.

5. SUMMARY AND CONCLUSIONS

In the present study, liver was examined in 451 cases from clinical autopsies. Our hospital does the clinical autopsies at the rate of about 5.18 % of total deaths. In a study period of five years from October 2004 to September 2009, the total number of autopsies done were 492, out of which 451 were complete autopsies while rest of the autopsies were either partial or showed autolytic changes and thus, not included in the study. The autopsy cases of all age groups admitted in all departments were included in the study.

The following inferences were noted in our study.

1. The study group comprised the cases from all ages and both sexes. Most of the autopsies were done in paediatric patients, mainly in neonates constituting the maximum of 17.29% of total. The number of autopsies were decreased for older age group.
2. The study included 233 males and 218 females. (M:F = 1.07:1).
3. The liver showed no specific pathological lesion in 97 (21.51%) cases.
4. The various common hepatic lesions in this study were steatosis (16.18%), hepatitis (21.29%), circulatory disorders (29.05%), cirrhosis (4.43%), and granulomatous hepatitis (3.10%).

5. Other less common lesions were abscesses (0.88%), metabolic diseases (0.44%), liver disorders in pregnancy (0.67%), and liver affection in various systemic diseases like malaria (0.22).
6. Various primary and secondary neoplasms were noted in 13 (2.88%) cases.
7. The most common lesion was circulatory disorders including chronic venous congestion and acute sinusoidal congestion, collectively seen in 131 (29.05%) patients, either as a single lesion or in combination with other hepatic lesions.
8. The steatosis was noted in 78 cases (16.18%). The focal (Grade II + Grade I) steatosis were more common (65.38%) than diffuse steatosis (Grade III) (34.62%). More number of patients having Grade III steatosis showed changes of steatohepatitis (54.55%) as compared to Grade II (31.82%) and Grade I (13.64%) steatosis.
9. The micronodular type was most common (55%), followed by mixed (30%) and macronodular (15%).
10. Various primary and metastatic neoplasms were found in 13 cases. The metastatic tumours were more common than the primary.
11. Most common primary tumour was cavernous haemangioma seen in 5 (1.10%) cases, all occurring all in females and found incidentally on autopsy.
12. The single case of hepatocellular carcinoma was noted in a 73 years old male, also having cirrhosis. The patient was non-alcoholic and the liver enzymes were only mildly raised.
13. In 7 (1.55%) metastatic tumours, 5 were from haematolymphoid malignancies and remaining 2 were from other solid organ malignancies.
14. The various haemato-lymphoid malignancies were acute leukemias (2 cases), chronic myeloid leukemia (1 case) and non-Hodgkins's lymphoma (1 case). The acute leukemias typically showed predominantly portal infiltrate while chronic myeloid leukemia showed diffuse sinusoidal and portal infiltrate. The metastasis from lymphoma was nodular involving both portal and sinusoidal areas.
15. Out of total 9 (1.99%) cases of other malignancies, 2 showed metastasis to liver, one from adenocarcinoma of colon and other from neuroendocrine tumour of lung.
16. Three cases of eclampsia and HELLP syndrome studied showed typical features of sinusoidal congestion, periportal haemorrhages and fibrin deposition, on microscopy.

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