

Study of Obstructive Jaundice with Special Reference to Etiology

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Abstract: The greek word 'ikteros' is derived from the word 'ictides', a species of ferret with bright yellow eyes. The term 'JAUNDICE' is derived from the French word meaning yellow and refers to the presence of an excess of bile pigment in tissues and serum. It develops when serum concentration of bilirubin exceeds 2.5 to 3.0 mg/100ml. To analyse the etiology in intra and extra hepatic cholestasis & To study the role of liver function tests in obstructive jaundice. 40 cases of obstructive jaundice comprise the material of this study .Out of these, 20 had jaundice, caused by extrahepatic obstruction of biliary tract, the remaining 20 had intrahepatic obstruction. These cases were taken from various wards of NIIMS medical college, Jaipur. Diagnosis was made on the basis of Clinical evaluation & Investigations. The hallmarks of patients of intrahepatic cholestasis were younger age, early appearance for treatment, positive history of drug ingestion (in drug induced jaundice only), slight elevation of serum bilirubin and serum alkaline phosphatase levels, marked elevation of serum transaminases and a positive corticosteroid test. In extrahepatic cholestasis, patients were of middle age group, presented late for treatment and had markedly raised serum bilirubin and serum alkaline phosphatase and only slightly raised serum transaminase levels. Palpable gall bladder, pain in right upper abdomen and a negative corticosteroid test were also the prominent clinical features. Jaundice, not infrequently a trial and tribulation to physician and surgeon, has been discussed in the present series, on the basis of its various etiologies and differentiation between intra and extra hepatic types of biliary obstructions. This differentiation is imperative if needless surgery in intrahepatic cholestasis is to be avoided.

Keywords: ikteros, ictides, bilirubin, bile pigment, obstruction.

INTRODUCTION

The greek word 'ikteros' is derived from the word 'ictides', a species of ferret with bright yellow eyes. The term 'JAUNDICE' is derived from the French word meaning yellow and refers to the presence of an excess of bile pigment in tissues and serum. It develops when serum concentration of bilirubin exceeds 2.5 to 3.0 mg/100ml. Patients with clinical jaundice have complete biliary obstruction .patients with pruritus, fever, pain and biochemical changes have intermittent biliary obstruction, but no clinical jaundice[1]. The term 'obstructive jaundice' has been held to be synonymous with surgical jaundice since it implies bile duct obstruction .However, an ever enlarging group of patients are noted to have an intra hepatic bile duct obstruction or intra hepatic cholestasis ,which is clinically and biochemically similar to an extra hepatic bile duct obstruction. Many patients of intra hepatic cholestasis have been subjected to fruit less surgical explorations with the wrong diagnosis of extra hepatic cholestasis, with disastrous results. Bile stasis or cholestasis is present in both groups but in one it is primary or due to hepatic disease, while in the other it is secondary to post hepatic bile duct obstruction.

Therefore, the present study has been under taken to establish the usefulness or otherwise of the methods chosen to differentiate between the two types of cholestasis, and to study their various causes [2-4].

AIM & OBJECTIVES

- To analyse the etiology in intra and extra hepatic cholestasis.
- To study the role of liver function tests (S.Bilirubin,S.ALP & Transaminase) in obstructive jaundice.
- To study the role of radiological investigations.
- To study the age and sex pattern.

MATERIALS & METHODS

Material

40 cases of obstructive jaundice comprise the material of this study .Out of these, 20 had jaundice, caused by extrahepatic obstruction of biliary tract, the remaining 20 had intrahepatic obstruction. These cases were taken from various wards of NIIMS Medical College, jaipur

Method

Diagnosis was made on the basis of

- **Clinical evaluation**
 - history in detail
 - examination ,both general & systematic
- **Investigations**
 - Hematological –CBC,TLC,DLC,LFT-S.ALP, S.BILIRUBIN,S.TRANSAMINASE
 - Urine examination
 - Stool examination
 - Corticosteroid test
 - Radiological investigations-X RAY,USG,CECT abdomen

- MRCP,ERCP for abnormality in biliary pathway
- Explorative laprotomy was done, when above investigations failed to locate the cause of jaundice and HPR of respective specimens was done.

RESULTS & DISCUSSION

Jaundice, poses a difficult problem in front of the surgeons & physicians, because the symptoms appear late. With the exception of acute appendicitis, the biliary tract disorders are the commonest abdominal conditions that a surgeon, gastroenterologist or a radiologist encounters. Because of this frequency, the methods of differentiation between intra & extra hepatic cholestasis, becomes a challenge [3-6].

Table-1: Age-table shows that maximum number of patients of obstructive jaundice was encountered during middle age group, i.e.21 to 50

S. No.	Age Groups (in years)	No. of Pts. of I.H.	No. of Pts. of E.H.	Total No. of Pts.	% of I.H.	% of E.H.	Total %
1.	Below 10	2	-	2	100	-	100
2.	11-20	-	-	-	-	-	-
3.	21-30	8	3	11	72.7	27.3	100
4.	31-40	7	4	11	63.6	36.4	100
5.	41-50	2	7	9	22.2	77.8	100
6.	51-60	-	4	4	-	100	100
7.	Above 61	1	2	3	33.3	66.7	100

Age incidence in obstructive jaundice

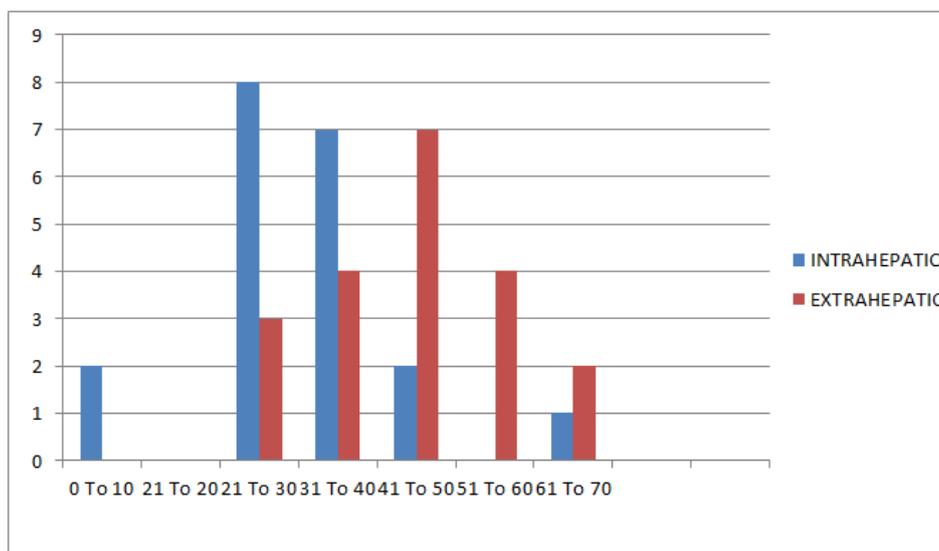


Fig-1: Age in years

Table-2: Sex-male to female ratio of intrahepatic cholestasis was 3:2 and in extra hepatic cholestasis was 1:1.

S. No.	Sex	No. of Pts. of I.H.	No. of Pts. of E.H.	Total No. of Pts.	% of I.H.	% of E.H.	Total %
1.	Male	12	10	22	54.5	45.5	100
2.	Female	8	10	18	44.4	55.6	100

Table-3: Duration of Symptoms-95% patients of intrahepatic jaundice were hospitalized within one and a half month of onset of illness,ou of this about 60% reported within first 15 days of their illness,however,this interval was longer with patients of extra hepatic cholestasis.

S. No.	Duration of Symptoms	No. of Pts. of I.H.	No. of Pts. of E.H.	Total No. of Pts.	% of I.H.	% of E.H.	Total %
1.	0 - 15 d	12	2	14	60	10	35
2.	16 d – 1 m	3	2	5	15	10	12.5
3.	1 m – 2 m	4	5	9	20	25	22.5
4.	2 m – 3 m	1	7	8	5	35	20
5.	Above 3 m	-	4	4	-	20	10

Duration of symptoms in Obstructive jaundice

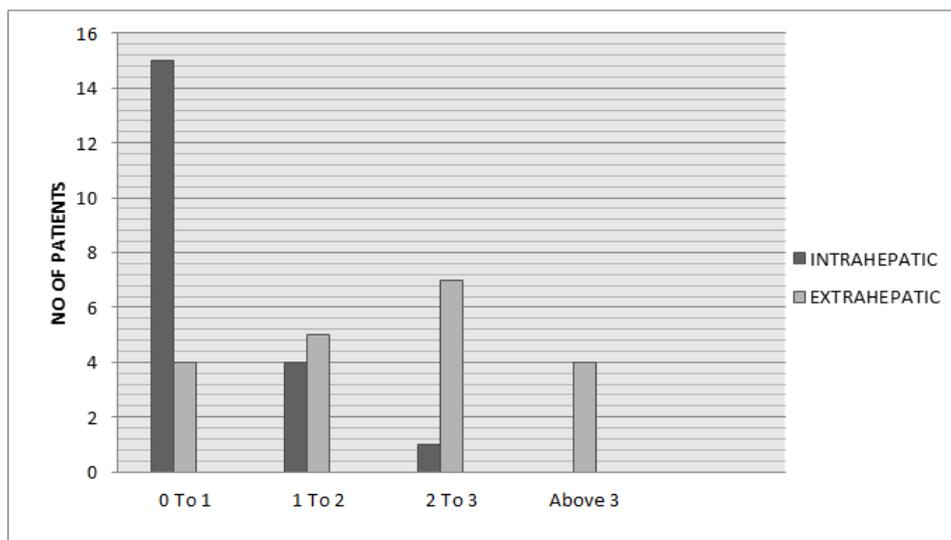


Fig-2: Duration (in months)

Table-4: Symptoms-almost all patients of both groups presented with icterus, weakness and anorexia. Itching was more common in extra hepatic cholestasis as compared with intrahepatic cholestasis.

S. No.	Symptoms	No. of Pts. of I.H.	No. of Pts. of E.H.	Total No. of Pts.	% of I.H.	% of E.H.	Total %
1.	Icterus	19	20	39	95	10	97.5
2.	Pain upper abdomen	11	12	23	55	60	57.5
3.	Itching	4	9	13	20	45	32.5
4.	Weakness and anorexia	19	18	37	95	90	92.5
5.	Rare Symptoms-						
	- Fever	9	3	12	45	15	30.0
	- Vomiting	4	7	11	20	35	27.5
	- Hematemesis	-	2	2	-	10	5

Table-5: Signs- incidence of anemia was 25% in intrahepatic group and 35%in extrahepatic group

S. No.	Signs	No. of Pts. of I.H.	No. of Pts. of E.H.	Total No. of Pts.	% of I.H.	% of E.H.	Total %
1.	Jaundice	20	20	40	100	100	100
2.	Palpable gall bladder	-	6	6	-	30	15
3.	Palpable liver	14	17	31	70	85	77.5
4.	Rare Signs-						
	- Palpable	-	2	2	-	10	5
	- Anemia*	5	7	12	25	35	30
	- Cachexia	1	2	3	5	10	7.5

Table-6: Urine and Stool Examination- absent urobilinogen in urine was more or less a constant feature in extra hepatic cholestasis (90%), in intrahepatic (65%)

S. No.	Urine/Stool	No. of Pts. of I.H.	No. of Pts. of E.H.	Total No. of Pts.	% of I.H.	% of E.H.	Total %
1.	Urine Urobilinogen						
	- Absent	13	18	31	65	90	77.5
	- Present	7	2	9	35	10	22.5
2.	Bile Salts						
	- Absent	6	13	19	30	65	47.5
	- Present	14	7	21	70	35	52.5
3.	Bile Pigments						
	- Absent	6	11	17	30	55	42.5
	- Present	14	9	23	70	45	57.5
1.	Stool Clay Colour						
	- Present	9	15	24	45	75	60
	- Absent	11	5	14	55	25	40

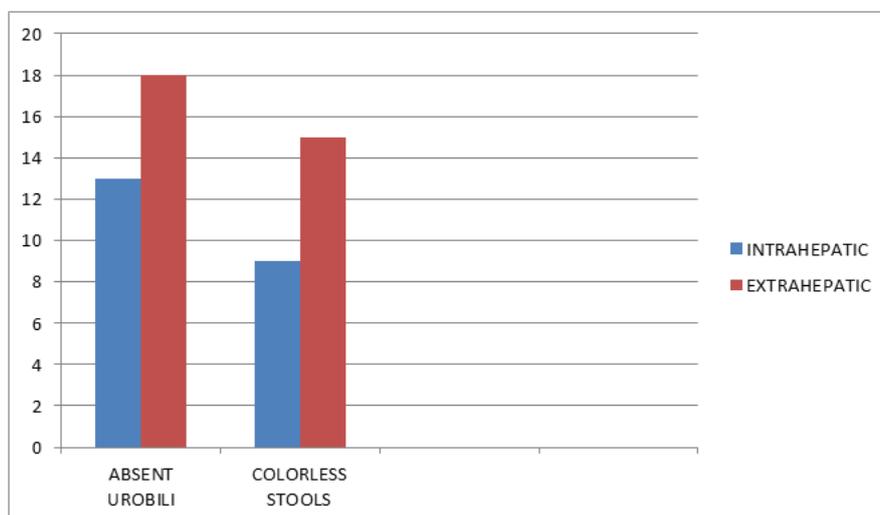


Fig-3: Duration of symptoms in Obstructive jaundice

Table-7: Serum Bilirubin –majority of patients of intrahepatic cholestasis had low serum bilirubin level as compared with hat of extra hepatic cholestasis

S. No.	Serum Bilirubin (mg/100 ml.)	No. of Pts. of I.H.	No. of Pts. of E.H.	Total No. of Pts.	% of I.H.	% of E.H.	Total %
1.	1 – 5.9	9	2	11	45	10	27.5
2.	6 – 10.9	4	4	8	20	20	20.0
3.	11 – 15.9	47	7	11	20	35	45.0
4.	16 – 20.9	2	3	5	10	15	12.5
5.	21 – 25.9	1	1	2	5	5	5.0
6.	26 – 30.9	0	2	2	0	10	5.0
7.	Above 31	0	1	1	0	5	2.5

Table-8: Liver Function Tests- in majority of patients of extrahepatic cholestasis the icteric index was on higher side as compared with intra hepatic group

S. No.	Liver Function Tests	No. of Pts. of I.H.	No. of Pts. of E.H.	Total No. of Pts.	% of I.H.	% of E.H.	Total %
1.	Icteric Index						
	1 – 50	12	9	21	60	45	52.5
	51 – 100	6	9	15	30	45	37.5
	101 – 150	2	2	4	10	10	10
2.	Thymol turbidity						
	1 – 3	13	14	27	65	70	67
	4 – 6	5	6	11	25	30	27.5
	Above 6	2	0	2	0	5	10
3.	Thymol Flocculation						
	0	13	15	28	65	75	70
	+	6	5	11	30	25	27.5
	++	0	0	0	0	0	0
	+++	1	0	1	5	0	2.5
4.	V.B.R.						
	- Im. D.P.	13	20	33	65	100	82.5
	- D.P.	6	0	6	30	0	15
	- Del. D.P.	1	0	1	5	0	2.5

Table-9: Serum Alkaline Phosphatase-all most all patients of intrahepatic cholestasis (95%) had serum alkaline phosphatase level below 15.9 B.U. whereas only 75% patients of extrahepatic group had it below 15.9 B.U

S. No.	Serum Alkaline Phosphatase (B.U.)	No. of Pts. of I.H.	No. of Pts. of E.H.	Total No. of Pts.	% of I.H.	% of E.H.	Total %
1.	0 – 5.9	6	4	10	30	20	20
2.	6 – 10.9	10	4	16	50	30	40
3.	11 – 15.9	3	5	8	15	25	20
4.	16 – 20.9	0	0	0	0	0	0
5.	21 – 25.9	0	1	1	0	5	2.5
6.	26 – 30.9	0	1	1	0	5	2.5
7.	Above 31	0	2	2	0	10	5
8.	Not done	1	1	2	5	5	5

Table-10: Transaminase Levels-the transaminase levels were always higher in intra hepatic cholestasis as compared with extra hepatic cholestasis

S. No.	Transaminase Level (Units/ml/min)	No. of Pts. of I.H.	No. of Pts. of E.H.	Total No. of Pts.	% of I.H.	% of E.H.	Total %
1.	S.G.O.T.						
	0 – 50	5	11	16	25	55	40
	51 – 100	9	8	17	45	40	42.5
	101 – 150	4	0	4	20	0	10
	151 – 200	2	1	3	10	5	7.5
2.	S.G.P.T.						
	0 – 50	8	14	22	40	70	55
	51 – 100	5	6	11	25	30	27.5
	101 – 150	1	0	1	5	0	2.5
	151 – 200	4	0	4	20	0	10
	201 – 250	2	0	2	10	0	5

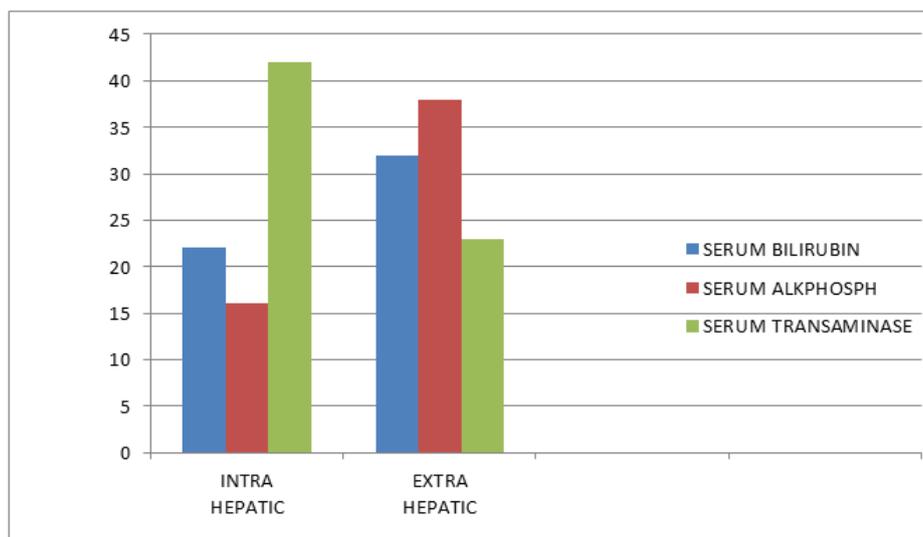


Fig-4: Serum bilirubin, serum alk. Phosphatase & Serum transaminase in obstructive jaundice

Table-11: Positive Radiological Investigations-radiological investigations were of no help in intrahepatic cholestasis, in extrahepatic group too, radiology helped in only 35% patients

S. No.	Positive Radiology	No. of Pts. of I.H.	No. of Pts. of E.H.	Total No. of Pts.	% of I.H.	% of E.H.	Total %
1.	Plain X-Ray abdomen	0	1	1	0	5	2.5
2.	Cholecystogram						
	- Oval	0	2	2	0	10	5
	- I.V.	0	1	1	0	5	2.5
3.	Barium meal study	0	3	3	0	15	7.5
	Non-conclusive						
4.		20	13	33	100	65	82.5

Table-12: Corticosteroid Tests

S. No.	Corticosteroid Test	No. of Pts. of I.H.	No. of Pts. of E.H.	Total No. of Pts.	% of I.H.	% of E.H.	Total %
1.	Test Done	14	6	20	70	30	50
2.	Positive Test	13	0	13	92.8	0	65
3.	Negative Test	1	6	7	7.2	100	35

Table-13: Etiology-Intrahepatic Cholestasis

S. No.	Etiology	Total No. of Pts.	% of I.H.	Total %
1.	Viral	11	55	27.5
2.	Drug induced –	6	30	15
	- Chlorpromazine	4	20	10
	- Isonex	2	10	5
3.	Post blood transfusion	1	5	2.5
4.	Post pregnancy	1	5	2.5
5.	Cirrhosis	1	5	2.5

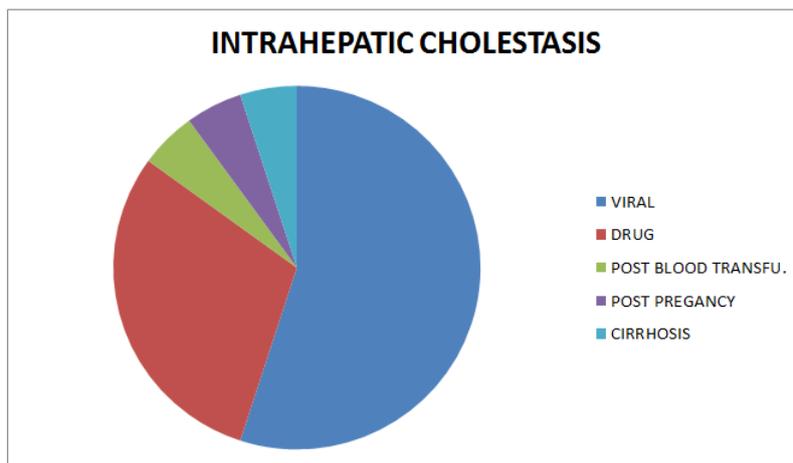


Fig-4: Causes

Table-14: Etiology-Extrahepatic Cholestasis

S. No.	Etiology	Total No. of Pts.	% of I.H.	Total %
1.	Carcinoma of head of pancreas	7	35	17.5
2.	Carcinoma of gall bladder with secondaries liver	3	15	7.5
3.	Carcinoma gall bladder with secondaries at P.H.	3	15	7.5
4.	Cholelithiasis	3	15	7.5
5.	Stricture common bile duct	2	10	5
6.	Carcinoma common bile duct	2	10	5

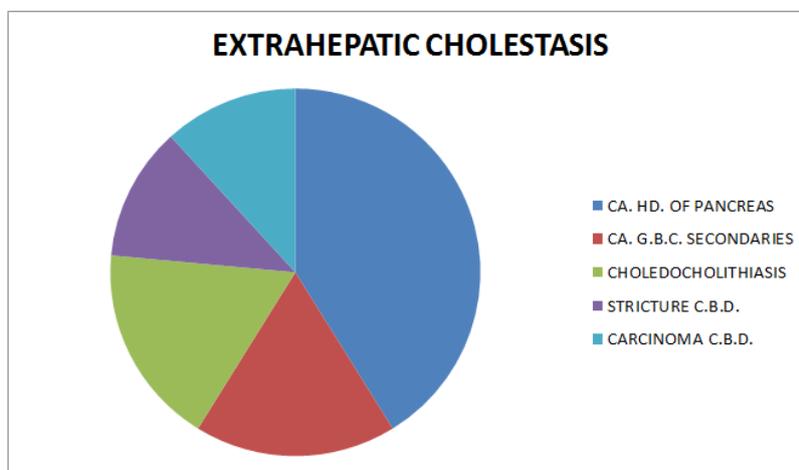


Fig-5: Causes

Table-15: Treatment

S. No.	Treatment	Total No. of Pts.	% of I.H.	Total %
1.	Intrahepatic cholestasis			
	- Conservative	20	100	50
2.	Extrahepatic Cholestasis			
	- Cholecys to jejunostomy	6	30	15
	- Exploratory Laparotomy (inoperable)	4	20	10
	- Cholecystectomy with explration of C.B.D.	3	15	7.5
	- Exploration of C.B.D.	2	10	5
	- Choledocho jejunostomy	1	5	2.5
	- End to end anastomosis of C.B.D.	1	5	2.5
	- Conservative (low general condition)	3	15	7.5

Table-16: Mortality

S. No.	Type of Cholestasis	Total No. of Pts.	% of I.H.	Total %
1.	Intrahepatic Cholestasis	1	5	2.5
2.	Extrahepatic Cholestasis	5	25	12.5
3.	Total	6	-	15

SUMMARY & CONCLUSION

There are still large gaps in our knowledge of the cause, pathogenesis and methods of diagnosis of various biliary diseases. The causes of jaundice are diverse and are often difficult to identify by using clinical criteria alone and usually require specific therapy for resolution. Jaundice, not infrequently a trial and tribulation to physician and surgeon, has been discussed in the present series, on the basis of its various

etiologies and differentiation between intra and extra hepatic types of biliary obstructions. This differentiation is imperative if needless surgery in intrahepatic cholestasis is to be avoided.

Following inferences were drawn from the present study, in differentiating intrahepatic cholestasis from extrahepatic cholestasis:

Table-17: Clinical Information

S. No.	Clinical Information	Intrahepatic Cholestasis	Extrahepatic Cholestasis
1.	Age	2 nd decade	4 th decade
2.	Male to Female Ratio	3 : 2	1 : 1
3.	History of Drug ingestion	Positive (in drug jaundice)	Negative
4.	Duration of Symptoms	<1.5 months	>2 months
5.	Major symptoms and signs –		
	- Pain right hypochondrium	Less common	Common
	- Icterus	Common	Common
	- Pruritis	Common	Common
	- Anorexia and weight loss	Less Common	Common
	- Hepatomegaly	Common	Common
	- Palpable Gall Bladder	Absent	Common
6.	Absent urine urobilinogen	Less Common	Common
7.	Colourless Stools	Less Common	Common
8.	Serum Bilirubin (mg.%)	<20 mg.%	>20 mg.%
9.	Serum Alkaline phosphatase (B.U.)	<20 B.U.	>20 B.U.
10.	Van den Bergh Reaction	Direct +ve	Direct +ve
11.	S.G.O.T. & S.G.P.T. (units/ml./min.)	>50 units/ml./min. Not suggestive	<50 unit/ml./min. Not suggestive
12.	Radiological investigations	Positive	Negative
13.	Corticosteroid Test		

The hallmarks of patients of intrahepatic cholestasis were younger age, early appearance for treatment, positive history of drug ingestion (in drug induced jaundice only), slight elevation of serum bilirubin and serum alkaline phosphatase levels, marked elevation of serum transaminases and a positive corticosteroid test. In extrahepatic cholestasis, patients were of middle age group, presented late for treatment and had markedly raised serum bilirubin and serum alkaline phosphatase and only slightly raised serum transaminase levels. Palpable gall bladder, pain in right upper abdomen and a negative corticosteroid test were also the prominent clinical features. Radiological investigations were of no help whatsoever, in this differentiation. Viral hepatitis and drug induced jaundice were the commonest cause of intrahepatic cholestasis. Carcinoma of head of pancreas and carcinoma of gall bladder (with secondaries) were responsible for most of the cases of extrahepatic cholestasis. Patients of

intrahepatic cholestasis responded well to conservative measures. Because of simple operative technique and low mortality rates cholecystojejunostomy was the procedure of choice in carcinoma of head of pancreas, cholecystectomy with choledocholithotomy in common bile duct stones and choledochojejunostomy and end to end anastomosis in strictures of common bile ducts.

Average age of intrahepatic cholestasis (32.25 yrs) was low as compared with extrahepatic cholestasis(44.15) in this series. Male to female ratio in intrahepatic cholestasis was 3:2 in present study and 1:1 in extra hepatic cholestasis.

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