

Serum Bilirubin Level and Associated Factors in Patients of Self Reporting Jaundice without Evidence of Clinical Jaundice

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Abstract

Introduction with objective: This study was done to see the serum bilirubin level of patients with self reporting jaundice without clinical jaundice. **Materials and Methods:** This study was done from January 2019 to January 2020 at Popular Medical Centre, Sylhet. Consecutive patients claiming to have jaundice without clinical icterus were included. Demographical information and presenting symptoms were noted. Serum bilirubin and relevant laboratory investigations were done and results were noted. Statistical analysis was done using SPSS 20. **Results:** Total 177 patients, age varying from six years to 80 years (mean 28.54) were included. Of them 134 (75.7%) were male. Common symptoms for were anorexia (90; 50.8%), pain abdomen (76; 42.9%), weakness (49; 27.7%), nausea (45; 25.4%), fullness of abdomen (35; 19.8%), gas (34; 19.2%) and vomiting (16; 9%). Of them 164 (92.7%) initially visited kabiraj. Serum bilirubin level of them varied from 0.04 mg/ dl to 2.67 mg / dl (mean 0.814±0.577) and ALT level varied from 10 iu/ dl to 2944 iu/ dl (mean 71.55±270.09). In this series 143 (80.0%) patients had no jaundice biochemically. Among others, 08 (4.52%) were case of acute hepatitis and 13 (7.34%) were possible cases of Gilbert's syndrome. Patients' attitude regarding informal caregivers significantly differed with education level. **Conclusion:** Most of patients claiming to have jaundice without icterus had no evidence of liver disease. Consulting kabiraj they are wasting money and sometimes inviting health related disasters. So mass education and motivation may increase awareness of people regarding liver disease and prevent health hazards.

Keywords: Jaundice, Kabiraj and traditional healers, Self reporting jaundice, Serum bilirubin.

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Introduction:

Jaundice or icterus is yellow discoloration of skin, sclera and mucous membrane due to accumulation of bilirubin in tissue^{1,2}. Tissue accumulation of bilirubin occurs in presence of hyperbilirubinaemia². It is not a disease but usually a sign of either liver or biliary tract disease or haemolytic disorder². Serum bilirubin level varies from laboratory to laboratory. It is taken as normal up to 1.0 (17 mcmmol/l) or 1.2 mg per deciliter¹. But it is not clinically evident at good light below the level of 3.0 mg / dl (50 mcmmol/l)^{2,3,4}. Jaundice is associated with yellow colouration of urine due to excretion of conjugated bilirubin through kidneys². It may be confused with yellow skin due to carotenemia, use of drugs quinacrine and excessive exposure to phenol^{5,6,7,8}. Carotenaemia may lead to yellow colouration of skin sparing sclera⁹. Serum bilirubin may rise due to a number of pathological conditions. In adult commonest cause is hepatitis, may be viral, drug induced or toxins or alcohol induced. Other common causes are haemolytic diseases, congenital hyperbilirubinaemic conditions like Gilbert's syndrome, and biliary obstruction. Patients usually come for consultation due to symptoms of underlying conditions or noticing yellow colouration of urine of eyes ie, sign of liver disease requiring further investigations. Patients may presents with nonspecific flu like symptoms, fever, abdominal pain, anorexia, weight loss, pruritus and change of colour of urine, skin and mucous membrane^{9,10}.

But in our country, specifically in rural areas, perception of people as well as informal care givers (without formal certification) ie, kabiraj, traditional healers and village doctors, regarding jaundice sometimes differs from medical definition^{11,12,13,14}. Our people claims to have jaundice (mete holmi in sylhet region) for any sorts of illness including hepatitis, hepatitis like illnesses¹⁴ and symptoms not consistent with liver diseases. Among them a good number of patients consults with informal caregivers ie, kabiraj and also with doctors. Most of times patients' views are also supported by informal care givers without clinical jaundice and biochemical reports. Some of these patients consult with physicians being referred by kabiraj with or without complications. Some patients also consult doctors directly claiming to have jaundice without clinical or biochemical evidence.

With this background, this study was designed to see the symptoms and symptom complexes and serum bilirubin levels of clinically anicteric patients claiming to have jaundice.

Materials and Methods:

Consecutive clinically anicteric patients consulting at a private medical centre in Sylhet, Bangladesh, claiming to have jaundice with or without history of consulting with kabiraj and traditional healers coming to doctors of both sexes were included. After taking informed consents their demographic information, symptoms for consultation were noted. After clinical examination, their blood samples were taken for estimation of serum bilirubin and ALT levels. Further investigations were done considering clinical findings and initial blood reports. Full work up for diagnosis in every patient were not possible due to lack of full logistic support.

This study was done from January 2019 to January 2020 at Popular Medical Centre, Sylhet.

Statistical analysis:

Data were analysed using SPSS version 20. Mean and SD were calculated for linear data. Percentages were calculated for categorical data. Chi square test was done to see relations between variables and P value <0.05 was taken as significant.

Results:

Total 177 patients, age varying from six years to 80 years (mean 28.54 SD12.15) were included. Of them 134 (75.7%) were male and 43 (24.3%) were female. In this series 137 (77.4%) and 40 (22.6%) were from rural and urban community respectively. Among them 57 (32.2%) were students, 29 (16.4%) were business man, 27(15.3%) were housewife, 18(10.2%) were service holders and 16(9.0%) were farmers (Table I).

In this series 78 (44.1%), 24(13.6%), 30 (16.9%) and 35 (19.8%) respectively had up to primary level, secondary level, higher secondary level, and higher level of educational background. Of them 133 (75.2%), 43 (24.3%) were from poor to lower middle class and middle class economic group. Among them 59(33.3%), 32 (18.1%) and 40 (22.6%) respectively had habit of smoking, taking Zarda and tobacco leave, and betel leave chewing (Table I).

Table-I: Demographic features.

Age	Number	Percentage
up to 25 years	83	46.9
26 - 40 years	76	42.9
above 40 years	18	10.2
Sex		
Male	134	75.7
Female	43	24.3
Address		
Urban	40	22.6
Rural	137	77.4
Occupation		
Student	57	32.2
Service	18	10.2
Business	29	16.4
Housewife	27	15.3
Farmer	16	9.0
Abroad	8	4.5
Others	22	12.4
Education		
Illiterate	10	5.6
Primary	78	44.1
SSC	24	13.5
HSC	30	16.9
Above	35	19.8
Economic status		
Poor and lower middle	133	75.2
Middle class	43	24.3
Rich	1	0.6
Habit		
Smoking	59	33.3
Zarda and tobacco	32	18.1
Pan	40	22.6
Faith to informal caregivers		
Faithful	164	92.7
Doubtful	13	7.3

Almost all patients had more than one symptom. Common symptoms for presentation were anorexia (90; 50.8%), pain abdomen (76; 42.9%), weakness (49; 27.7%), nausea (45; 25.4%), fullness of abdomen (35; 19.8%), gas (34; 19.2%), sleep disturbance (22; 12.4%), loose motion (18; 10.2%), constipation (17; 9.6%) and vomiting (16; 9%) (Table II).

Table-II: Symptoms.

Symptoms	Number	Percentage
*Pain abdomen	76	42.9
weakness	49	27.7
*Nausea	45	25.4
Sleep disturbance	22	12.4
*Anorexia	90	50.8
Gas	34	19.2
Fullness of abdomen	35	19.8
Loose motion	18	10.2
Constipation	17	9.6
*Vomiting	16	9
Backpain	9	5.1
Heart burn	13	7.3
*Fever / feverishness	5	2.8
*Yellow urine	46	26
Noisy bowel	5	2.8
Muscle cramp	12	6.7
headache / head discomfort	15	8.4
Limb pain	6	3.4
*Bad smell of food	4	2.3
cough	6	3.4
Palpitation	3	1.7
Excess flatus	1	0.6
weight loss	15	8.5
burning abdomen	5	2.8
Burning micturition	5	2.8
Belching / eructation	16	9.1
vertigo	13	7.3
Yellow eyes	None	00

• *Symptoms consistent with hepatitis of them 164 (92.7%) believed that they have jaundice and first consulted with kabiraj (informal care givers) while remaining only 13 (7.3%) directly came to physician for consultation. Serum bilirubin level of them varied from 0.04 mg/ dl to 2.67 mg / dl (mean 0.814±0.577) and ALT level varied from 10 iu/ dl to 2944 iu/ dl (mean 71.55±270.09). In this series 143 (80.0%) patients had serum bilirubin level within normal limit (up to 1.2 mg/ dl) (Table III).

Table-III: Serum bilirubin and ALT levels.

	Range	Number	Percentage
S. bilirubin	up to 1.20 mg/dl	143	80.8
	1.21 to 2.00	21	11.9
	>2.00	13	7.3
ALT	up to 40 iu/ l	121	68.4
	41-80	43	24.3
	81-120	5	2.8
	121-199	3	1.7
	200 and above	5	2.8

Out of 21 patients undergoing calorie deprivation test, 13 (7.34%) showed significant increase of serum bilirubin at second sample may be possible cases of Gilbert's syndrome. In this series, five patients had ALT raised more than five folds of normal (2.8%). Haemoglobin electrophoresis was done in four patients yielding one case of beta-thalassaemia minor (0.56%) and one Hb E-trait (0.56%). All patients underwent ultrasonography. Among them nonalcoholic fatty liver disease (NAFLD) was found in 9 (5.08%) patients, cholelithiasis was found in 7 (3.95%) patients. Among 48 patients undergoing test of HBV surface antigen, three (1.7%) were found positive. Stool antigen for *H. pylori* was positive in 11 (6.11%) patients out investigated 25 patients (Table IV).

Table- IV: Other Investigations.

USG (177)	N	% among investigated patients	% among total
Normal	143	80.79	
NAFLD	9	5.08	
Cholelithiasis	7	3.95	
Others (not related to liver)	18	10.17	
Endoscopy of UGIT (17)			
Normal	5	29.41	2.87
EAG	2	11.76	1.1
NEAG	6	35.29	3.38
Gastritis	1	5.88	0.56
DU	1	5.88	0.56
Barrett's	1	5.88	0.56
S. Ceruloplasmin (2)			
Normal	2	100	1.13
HBsAg (48)	N	% among investigated patients	% among total
Positive	3	6.25	1.69
Anti-HCV (9)			
Negative	9	100	5.01
Hb-electrophoresis (4)			
Beta- tahal (minor)	1	25	0.56
Hb-E trait	1	25	0.56
Normal	2	50	1.13
Stool <i>H. pylori</i> antigen (25)			
Positive	11	44	6.21
Negative	14	56	
Calorie deprivation test (21)			
Significant rise of bilirubin	13	61.9	7.34

Significant difference was seen between level of serum bilirubin and rise of ALT (p=0.001) (Table V).

Table-V: Relation between serum bilirubin and ALT.

Bilirubin	ALT up to 40	ALT 41-80	ALT 81-120	ALT 121-199	≥200	P
	N (%)	N (%)	N (%)	N (%)	N (%)	
up to 1.2 mg (143)	103 (72.03)	30 (20.97)	5 (3.49)	3 (2.0)	2 (1.40)	
1.21-2.0 (21)	12 (57.14)	9 (42.86)	0	0	0	0.001
≥2.01 (13)	6 (46.5)	4 (30.77)	0	0	3 (23.07)	

In this series history of consultation with informal care givers regarding jaundice significantly differed with education level (P=0.015), but no statistically significant differences was seen within age, sex, residency and economic groups (Table VI).

Table-VI: Relation between patients' attitude and variables.

Variables	Visted kabiraj		P value	
	Yes (%)	No (%)		
Age group	up to 25 y (83)	75 90.36	8	0.546
	26 -40 y (76)	72 94.74	4	
	>40 y (18)	17 94.44	1	
Sex	Male (134)	123 91.79	11	0.436
	Female (43)	41 95.35	2	
Residence	Urban (40)	36 90.00	4	0.464
	Rural (133)	128 96.24	9	
Education	illiterate (10)	10 100.0	0	0.015
	Primary (78)	76 97.43	2	
	SSC (24)	23 95.83	1	
	HSC (30)	27 90.0	3	
	Above (35)	28 80.0	7	
Economic group	Poor (15)	15 100.0	0	0.066
	Lower middle (118)	112 94.91	6	
	Middle class (43)	36 83.72	7	
	High (1)	1 100.0	0	
Occupation	Student (57)	49 85.96	8	0.457
	business (29)	28 96.55	1	
	Housewife (27)	26 96.29	1	
	service (18)	16 88.88	2	
	Farmer (16)	16 100.0	0	
	Abroad worker (8)	7 87.5	1	
	others (20)	20 100.0	0	

Discussion:

Jaundice, a clinical condition, is usually related to liver disease. And one report from Pakistan shows that about 70% of patients with liver disease suffer from anxiety and or depression¹⁶. So people become panicked hearing message of having jaundice. In our country anecdotal experience shows jaundice also creates some anxiety among people. For this, good number of people seek health care for jaundice ie liver disease. In our country, specially in rural areas people visits to traditional healers - kabiraj with any sorts of illnesses due to easy accessibility, cheap and flexible payment scheme¹⁵. Most of the time kabiraj and traditional healers diagnose them having jaundice without clinical and biochemical evidence. In our series all patients were clinically anicteric. Common symptoms of our patients were anorexia, nausea, vomiting, abdominal pain which may occur in many diseases including hepatitis a common cause of jaundice¹¹. But gas, fullness of abdomen, sleep disturbance and many other presenting symptoms or complaints could not be well explained by hepatitis.

Serum bilirubin level below 3 mg/ dl is not clinically detectable. Even in early hepatitis, bilirubin may be below the above mentioned level and only biochemical tests may be diagnostic^{3,4}. So clinical jaundice is not mandatory for hepatitis. In this series all patients were anicteric and highest level of bilirubin was 2.67 mg/ dl. In case of acute hepatitis or liver disease jaundice is usually associated with derangement of serum enzymes ALT, AST, alkaline phosphatase. In our series five patients (2.8%) had more than five times rise of ALT¹⁷.

In this series most of the patients claiming to have jaundice visited informal care givers (kabaraj) who supported their views without having biochemical reports. Their faith to informal caregivers (kabaraj) was very strong. In one report from Matlab, Bangladesh also showed that people's belief to informal care givers were very strong¹⁶.

In our study around 90% of patients claiming to have jaundice visited kaborajs for treatment with statistically significant difference with education level. But one report from Matlab, Chandpur, Bangladesh also showed that about two third of patients claiming having jaundice consulted with kaboraj¹⁸. This difference may be due to difference in study design, and in education level.

The report from Matlab showed that People had some idea that informal care givers can better treat jaundice and medical science has no good remedy for it. Social tradition, lower education level, and lower economic status influenced them to this belief¹⁸. Probably this type of attitude of our series also attracted majority of patients towards informal care givers.

In this series, a small number of patients had features of acute hepatitis, Gilbert's syndrome and haemoglobin related diseases – thalassaemia and haemoglobin E trait. Gilbert's syndrome, an autosomal recessive disorder usually presents with hyperbilirubinaemia triggered by stress, strain, dehydration, fasting, infection or exposure to cold. And patients may experience nonspecific symptoms like anorexia, nausea, abdominal pain, tiredness and weakness may be confused with symptoms of hepatitis. These symptoms are usually related to triggering factors rather than liver disease^{19,20}. Beta thalassaemia trait and Hb-E trait are autosomal recessive diseases prevalence of which is about 4% and 1% respectively in our country²¹. But in our series it is very low. Our sample size is low and very small amount of patients were investigated in our study.

Informal care givers uses different modalities of treatment ie, Hat dhoa, Jhara, voron – application of sticky herbal paste on shaved scalp, Mala (special necklace), Herbal drugs etc. consumption of blessed water, banana, etc. as treatment. Some of the treatment modalities of kaboraj may be potentially deleterious for health¹⁸. So educational motivation of community people including informal caregivers regarding jaundice, hepatitis and hepatitis like illnesses and explanation of common symptoms may be beneficial for community health.

Conclusion:

Most of the patients claiming to have jaundice without clinical icterus had no evidence of liver disease and even no other significant illness. Consulting kaboraj they are wasting money and sometimes inviting health related disasters. So mass education and motivation may increase awareness of people regarding liver disease and thereby sometimes prevent health hazards.

Further well designed and well funded study with large sample size may be done to overcome limitations and to make a definite conclusion.

Conflict of Interest: None.

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