IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 15, Issue 10 Ver. IX (October. 2016), PP 16-20
www.iosrjournals.org

Hyper bilirubinaemia And Liver Function Tests in Population of Bheemili

Dr. C. Rama Krishna[1], Dr.S.J.Basha[2], Dr.B.Preethi[3], Dr.S.Sanjeevi Rao[4], Mr.B.Venkateswara Rao[5]

[1]*Assistant Professor of Biochemistry,NRIIMS,Sangivalasa,Visakhapatnam*
[2]*Assistant Professor of Biochemistry,MIMS,Nellimarla,Vizianagaram*
[3]*Assistant Professor of Biochemistry,NRIIMS,Sangivalasa,Visakhapatnam*
[4]*Professor And Hod of Biochemistry,NRIIMS,Sangivalasa,Visakhapatnam*
[5]*Statistitian,NRIIMS,Sangivalasa,Visakhapatnam*

Abstract:
Objective: *Bheemili is a suburb of Visakhapatnam which is 30km from the port city of Visakhapatnam.To estimate the Liver Function Tests in symptomatic individuals to know the incidence of hyperbilirubinemia and deranged liver function tests in population of Bheemili.*
Method: *LFT's like total bilirubin (both direct and indirect),Alanine transaminase (ALT), Aspartate transaminase (AST),Alkaline phosphatase (ALP),Total protein, Seruma albumin and globulin were estimated.50 individuals(more than 15yrs age) suffering from Right abdominal pain reporting to medical and surgical Outpatient departments of NRI Institute of Medical Sciences, Sangivalasa, Bheemili, Visakhapatnam were taken and samples estimated for the above tests.50 asymptomatic healthy individuals(more than 15 yrs age) were taken as a controls.*
Results: *Out of 50cases 15 cases(30%) showed increased total Bilirubin values with a mean of 1.09+_0.85and p value <0.001. 15 individuals(30%) showed increased ALT values with a mean of 49.08+_ 54.76and p value<0.005.17 cases (34%)individuals showed increased AST values with a mean of 53.7+_60.96,p value<0.025,5 individuals(10%)showed increased ALP levels with a mean of 105.16+_71.44,p value<0.001. 13(26%) individuals showed low total protein levels.*
Conclusion: *Incidence of deranged LFT's is fairly high(30%) in population of Bheemili .Risk factors like Alcohol, hepatitis, High fat diet etc, need to be addressed and advised for the same to decrease the incidence of jaundice.*

I. Introduction

Jaundice also known as icterus is a yellowish or greenish pigmentation of the skin and sclera of the eye due to high bilirubin levels.[1,2] Jaundice is classified into three types prehepatic, hepatic and post hepatic types. Levels of bilirubin are normally below one. [3] High bilirubin is divided into conjugated and unconjugatedbilirubin.[4]

Causes

Prehepatic	Hepatic	Post hepatic
Haemolysis	Drug induced e.g. rifampicin, methyl testosterone	Gallstones
Drugs induced e.g. primaquin	Viral hepatitis	Billary stricture
G6PD deficiency	Prematurity	Carcinoma pancreas
Malaria	Crijjler najar syndrome	Choliangitis
Sickle cell anemia	Gilberts syndrome	
Ineffective erythropoiesis	Cirrohosis	
	Amyloidosis, billiary atresia, sepsis	

Diagnostic tests

Table of diagnostic tests[5]			
Function test	**Pre-hepatic jaundice**	**Hepatic jaundice**	**Post-hepatic jaundice**
Total bilirubin	**Normal/ increased**	**Increased**	
Urobilinogen	**Normal / increased**	**Decreased**	**Decreased / negative**
Urine color	**Normal**	**Dark (urobilinogen + conjugated bilirubin)**	**Dark (conjugated bilirubin)**
Stool color	**Normal**	**Normal / pale**	**Pale**
Alkaline phosphatase	**Normal**	**Increased**	

levels			
Alanine transferase and aspartate transferase levels		**Increased**	
Conjugated bilirubin in urine	**Not present**	**Present**	
Splenomegaly	**Present**	**Present**	**Absent**

II. Materials and methods

The present study was conducted on fifty (50) patients suffering from right abdominal pain who reported to the medical and surgical out patient departments of NRIIMS, Sangivalasa, Bheemili, Visakhapatnam, during the period from 1-4-16 to 31-8-16. All are above age 15yrs

Fifty (50) Asympotactic healthy individuals were taken as controls. All are above age 15yrs.

Serum samples were taken immediately after reporting to the OP departments and after thorough examination by consultant physician and surgeons.

Inclusion criteria

1. All patients with right abdominal pain
2. Age above 15yrs
3. Patients having generalized weakness pruritus, fever with abdominal pain were also included.
4. Patients residing in the geographical area of Bheemili

Exclusion criteria

1. Pediatric patients less then age 15yrs were not considered
2. Patients residing outside geographical area of Bheemili were not considered.

The following tests were conducted

1. Total bilirubin
2. Conjugated or direct bilirubin
3. Unconjugated or indirect bilirubin
4. Alanine amino transferase (ALT)
5. Aspartate amino transferase (ASP)
6. Alkaline transferase (ALP)
7. Total protein
8. Serum albumin
9. Serum globulin

All samples were estimated by semiautoanalyser, Chem – 5 in central biochemistry lab, NRIIMS. Kits were purchased from pavan diagnostics Visakhapatnam.

Total bilirubin normal value 0.2mg / dl to 1.2mg / dl This was estimated diazo reaction Conjugated bilirubin normal value 0.0mg / dl to 0.3mg / dl .This was also estimated diazo method Unconjugated bilirubin normal value 0.05mg / dl to 0.75mg / dl .This was calculated by deducting unconjugated bilirubin from total bilirubin ALT (SGPT) it is found in high concentration in liver and it is more specific for liver.[6] Normal value 42 Iu/L .This was estimated by enzymatic method. AST (SGOT) it is found in liver skeletal muscle kidneys liver. It is less specific and sensitive for liver diseases.[6] This was estimated by enzymatic method.

Alkaline phosphates main sources are liver and bone[7]. It was estimated by enzymatic method normal value is 40 to 150Iu/L. This was estimated by enzymatic method. Total proteins normal value 6.4gm/dl to 8.4gm/dl. This was estimated by biuret method S.Albumin normal value 3.5gm/dl to 5gm/dl This was estimated by BCG method. Globulins normal value 2.5gm /dl to 3gm /dl

Statished analysis –Statistical analysis was done by unpaired t Test. Significance between cases and controls was estimated by p value.

III. Results

Figure: 1

Distribution Of Study Population According To Age Group And Sex In %

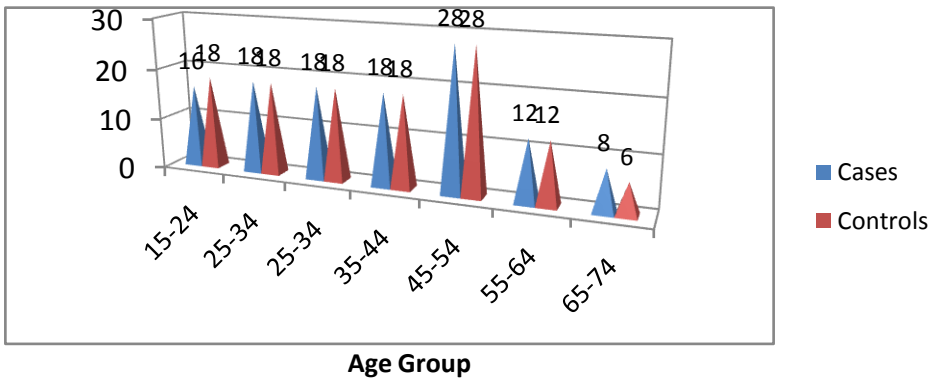


Table No: 1

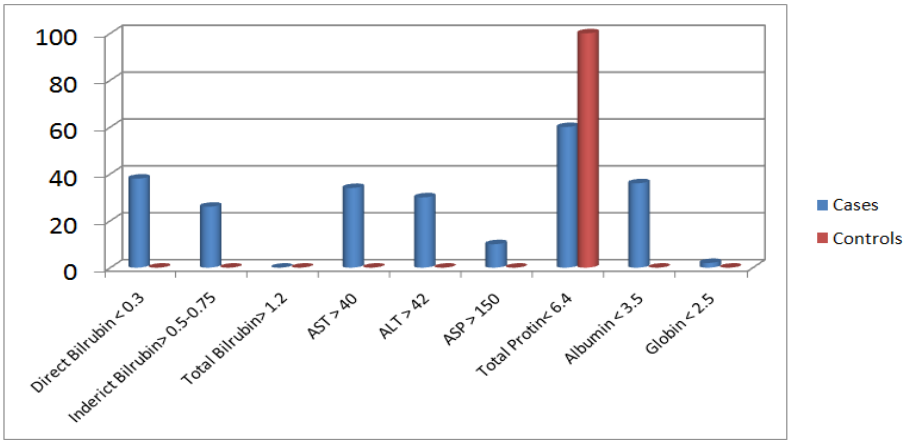
Character	Means & SD s of Cases (n=50)	Means & SDs of Controls (n=50)	Mean difference	SE	T value	Degrees of Freedom	P value
1.Direct Bilrubin	0.48 ± 0.50	0.13 ± 0.05	0.35	0.07	5.00	96	P < 0.001
2.Indirect Bilrubin	0.61 ± 0.42	0.43 ± 0.05	0.18	0.05	3.6	96	P < 0.01
3.Total Bilrubin	01.09 ± 0.85	0.57 ± 0.09	0.52	0.11	4.72	96	P < 0.001
4. AST	53.7 ± 60.96	33.14 ± 1.47	20.56	8.62	2.38	96	P < 0.05
5. ALT	49.08 ± 54.76	32.9 ± 2.45	16.18	7.75	2.08	96	P < 0.05
6.ASP	105.16 ± 71.44	51.32 ± 8.39	53.84	10.17	5.29	96	P < 0.001
7. Total Proten	06.52 ± 0.57	6.98 ± 0.14	-0.46	0.08	-5.75	96	P < 0.001
8. Albumin	03.45 ± 0.69	3.97 ± 0.09	-0.52	0.09	-5.77	96	P < 0.001
9. Globin	03.05 ± 0.47	3.01 ± 0.24	0.04	0.074	0.54	96	P > 0.05

Table No: 2

Sample	Direct Bilrubin- > 0.3	Indirect Bilrubin - > 0.05-0.75	Total Bilrubin - > 1.2	AST - > 40	ALT - >42	ASP - > 150	Total protean - < 6.4	Albumin - < 3.5	Globin – < 2.5
Cases (n=50)	18 (38.00)	13 (26.00)	15 (30.00)	17 (34)	15 (30.00)	05 (10.00)	30 (60.00)	18 (36.00)	01 (02.00)

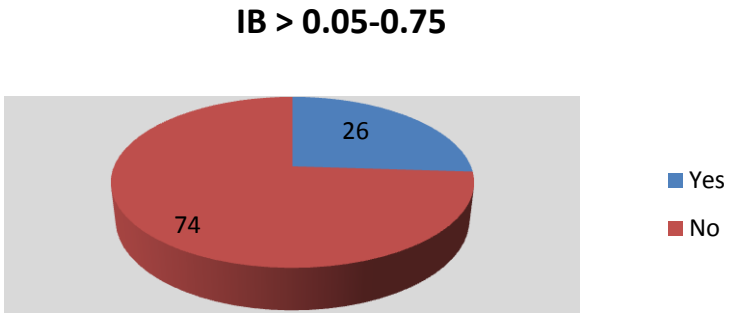
ABNORMAL RANGES IN DIFFERENT CATAGEORIES IN %

Figure: 2

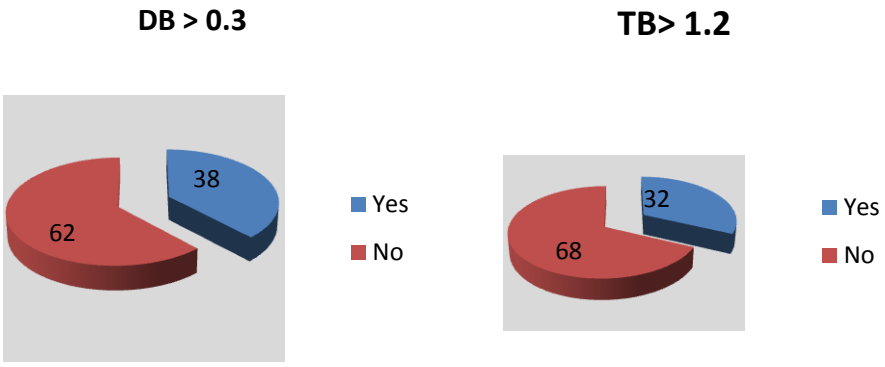


Out of 50 cases 32 were male (64%) and 18 cases (36%) were female. Out of fifty cases 15(30%) showed raised T.Bilirubin levels with an average of 1.09+/-0.85(mean+-SD) compared with controls with an average of 0.5+-0.09 with a p value <0.001 which is highly significant. Out of fifty cases 18(36%) showed raised conjugated bilirubin levels with an average of 0.48+/-0.50(mean+-SD) compared with controls with an average of 0.13+-0.05. .Out of fifty cases 13(26%) showed raised unconjugated Bilirubin levels with an average of 0.61+/-0.42(mean+-SD) compared with controls with an average of 0.43+/-0.05. .Out of fifty cases 17(34%) showed raised AST levels with an average of 53.7+/-60.91(mean+-SD) compared with controls with an average of 33.14+-1.47 with a p value <0.05 which is highly significant . .Out of fifty cases 15(30%) showed raised ALT levels with an average of 49.08+/-54.76(mean+-SD) compared with controls with an average of 32.9+-2.45 with a p value <0.05 which is highly significant . .Out of fifty cases 5(10%) showed raised Alkaline phosphatase levels with an average of 105.16+/-71.44(mean+-SD) compared with controls with an average of 51.32+-0.8.39 with a p value <0.001 which is highly significant .Out of fifty cases 30(60%) showed decreased T.Protein levels with an average of 6.52+/-0.57(mean+-SD) compared with controls with an average of 6.98+-0.14 with a p value <0.001 which is highly significant . .Out of fifty cases 18(36%) showed decreased S.Albumin levels with an average of 3.45+/-0.69(mean+-SD) compared with controls with an average of 3.97+-0.09 with a p value <0.001 which is highly significant.

Figure: 3



Total Bilirubin



Direct bilirubin **Indirect bilirubin**

IV. Discussion

15 cases (30%) showed increase in T.Bilirubin with 15 cases (30%) increase in direct Bilirubin and 13 cases (26%) increase in indirect bilirubin. Out of 50 cases 15(30%) showed increase of ALT and 17 cases(34%) cases showed increase of AST.Out of 15 cases (30%) which showed increased bilirubin levels 9 cases (18%) showed raised liver enzymes and no increase in alkaline phosphatase which shows that 18% have deranged pre hepatic liver function tests. Out of 15 cases (30%) which showed increased bilirubin levels 3 cases (6%) showed high increase of liver enzymes and no increase in alkaline phosphatase which shows that 6% have deranged hepatic liver function tests. Out of 15 cases (30%) which showed increased bilirubin levels 3 cases (6%) showed mild increase[8] of liver enzymes and high increase in alkaline phosphatase which shows that 6%

have deranged post hepatic liver function tests. Moderate increase of liver enzymes (3-20 times) are seen in 3% cases which may indicate viral hepatitis. This is consistent with the illustration by Thapa and Walia[9].3 cases (6%) showed more than five times increase of ALT (mild increase[10,11]) which may indicate Alcoholic liver disease this is consistent with the findings of Lindi and Hyde[12].

V. Conclusion

There is fairly high incidence of deranged liver function tests in the population of Bheemili. Risk factors like Malaria, Hepatitis viruses, Alcohol, fatty diet should be controlled and the population should be advised for the same in order to decrease the incidence of deranged liver function tests in the population of Bheemili.

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