Original Research

To analyze the biochemical profile of patients with jaundice at a tertiary care hospital

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ABSTRACT

Aim: To analyze the biochemical profile of patients with jaundice at a tertiary care hospital. **Materials and methods:** 100 patients with serumbilirubin levels morethan2 mg/dl, Ageof18 years and above and Patients willing for laboratory investigation were included in this study. Detailed history along with demographicdetails was taken for all patients and a thorough clinical evaluation was performed. The participants' bilirubin levels, aminotrans ferase, ALP, protein levels, PT/INR, haemoglobin levels, total counts, platelet counts, and creatinine level swere evaluated. **Results:** Outof100patients, 38patients(38%)werelessthan40years,44 patients(44%)wereaged60years andabove. Out of100 patients,78patients(78%)were males and 22patients(22%)were females. Out of 100 patients, 6 patients (6%) had transaminase level upto 30 u/l, 50 patients(50%)had ransaminase levels bet ween31-100u/l,38 patients(38%) had transaminase levels between 101-500 u/l and 6 patients (6%) had transaminase level between 501-1000 u/l. On the basis of the transaminase ratio, 83 patients (83%) had AST>ALT, 7patients(7%)had AST=ALT, 10patients(10%)hadALT>AST.61patients (61%) had normal ALP and 39(39%) had elevated ALP. Albumin was > 3.5 g in 50 patients (50%), 2.8to3.5g in 24patients(24%)and<2.8 gin26patients(26%).There is a statistically significant association between transaminase values and final outcome. Majority of patients with transaminase values above 500 had poor outcome. There is a statistically Significant association between ALP values and final outcome. The proportion of patients with poor outcomes were higher among the ALP elevated patients when compared to normal ALP patients. **Conclusion:** Timely and crucial assessment of biochemical markers is critical in patients with jaundice to avoid deterioration of their clinical condition and death.

Keywords: Biochemical, Jaundice, ALP, Transaminase

INTRODUCTION

Jaundice, also known as icterus, is a yellowish pigmentation of the skin and whites of the eyes due to high bilirubin levels [1]. It is a symptom of one of many possible underlying pathological processes that occur at some point along the normal physiological pathway of the metabolism of bilirubin in blood. Since the development of jaundice is a characteristic feature of any liver disease, a correct diagnosis can only be made after confirming clinical presentation with biochemical, serological and radiological investigations. There is a need for study of these etiological agents in jaundice for prevention of hepatitis which in turnis dependent on social behaviour and hygienic factors in a particular community [2]. HAV is the most common cause of acute hepatitis in paediatric age group (1–3 years). But there has been a gradual shift in the age of acquiring the infection from early childhood to adulthood in different parts of the world [3]. HAV remains self-limiting and does not progress to chronic liver disease. Viral HAV in adults has more severe course than in children. HBV is a cause of about 15-30% of acute hepatitis in India [4] On the other hand, HCV causes most cases of post transfusion hepatitis [5] Acute infections by HCV is usually benign and asymptomatic. Clinically, it has remarkable ability to persist and produce chronic and irreversible liver damage. HEV is one of the leading causes of hepatitis worldwide. Most of the outbreaks of waterborne hepatitis in India have been attributed to HEV. It is uncommon in children younger than 10 years. HEV affects young to middle aged adults and causes high mortality in pregnant women, 20– 30% as compared to 0.2–1% in general population [6].

MATERIALS AND METHODS

This Prospective study was conducted in the Department of General Medicine. 100 patients with serumbilirubin levels morethan2 mg/dl, Age of 18 years and above and Patients willing for laboratory investigation were included in this study. Patients who

fail to provide consent for this study were excluded from the study.

METHODOLOGY

Detailed history along with demographic details was taken for all patients and a thorough clinical evaluation was performed. The participants' bilirubin levels, aminotransferase, ALP, protein levels, PT/INR, haemoglobin levels, total counts, platelet counts, and creatinine levels were evaluated. Written informed consent was taken and the study was approved by the Institutional ethics committee.

Statistical Analysis

Statistical software SPSS version 24.0 was used to analyse the data. Categorical variables were expressed as frequency (percentage).

RESULTS

As per [Table1] on basis of age, out of 100patients, 38patients(38%) were less than 40years, 44 patients(44%) were aged 60years and above. Out of 100 patients, 78patients(78%) were males and 22patients(22%) were females. As per [Table 2] Out of 100 patients, 6 patients (6%) had transaminase level upto 30 u/l, 50 patients(50%) had transaminase levels between 31-100u/l, 38patients(38%) had transaminase levels between 101-500 u/l and 6 patients (6%) had transaminase level between 501-1000 u/l. On the basisofthe transaminase ratio, 83 patients (83%) had AST>ALT, 7patients(7%) had AST=ALT, 10patients(10%) had ALT>AST. 61patients(61%) had normal ALP and 39(39%) had elevated ALP. Albumin was > 3.5 g in 50 patients (50%), 2.8 to 3.5g in 24patients(24%) and <2.8g in 26patients(26%). As per [Table 3] there is a statistically significant association between transaminase values and final outcome. Majority of patients with transaminase values above 500 had poor outcome. As per [Table 4] there is a statistically Significant association between ALP values and final outcome. The proportion of patients with poor outcomes were higher among the ALP elevated patients when compared to normal ALP patients.

Table 1: Distribution of population according to age and gender

Age	N	%
Below 40years	38	38
40to60years	44	44
60yearsandabove	18	18
Gender		
Male	78	78
Female	22	22

Table 2: Distribution of the jaundice patients based on Biochemical parameter

Parameter	Levels	N	%
Transaminase Levels	Upto30 U/L	6	6
	31-100 U/L	50	50
	101 -500U/L	38	38
	501–1000U/L	6	6
Transaminase ratio	AST>ALT	83	83
	AST= ALT	7	7
	ALT>AST	10	10
ALP baseline	Normal	61	61
	Elevated	39	39
Protein(Albumin)	>3.5g	50	50
	2.8to3.5 g	24	24
	<2.8g	26	26
PT/ INR baseline	<1.7	74	74
	1.7to2.3	13	13
	>2.3	13	13

Table 3: Association of transaminase levels without come of patient

Transaminase	Outcome				P value
	Improvement	Statusquo	Worsening	Death	
upto30u/l	4	2	0	0	<0.001*
31-100u/l	29	10	6	5	
101 -500u/l	17	11	6	4	
501-1000u/l	0	0	4	2	
*P value<0.05 is considered statistically significant Pearson Chi-Square test					

Table 4: Association between ALP and final outcome

ALP	Outcome				P value
	Improvement	Status quo	Worsening	Death	
Normal	34	13	11	3	0.003*
Elevated	12	10	9	8	
*P value<0.05 is considered statistically significant Pearson Chi-Square test					

DISCUSSION

Out of 100patients, 38patients(38%) were less than 40years, 44 patients (44%) were aged 60years and above. Out of 100 patients,78patients(78%)were males and 22 patients(22%)were females. Our results are in accordance with those of investigations by Vij JC et al,[7] and AK Malhotra,[8] who noted similar occurrences. However, no statistically significant findings noted in our study between the various parameters of jaundice and gender.

Viral hepatitis was shown to be the most frequent etiology for jaundice in the literature. There have been several studies done in the past to determine the prevalence of HAV, HBV, HCV, and HEV. According to research by Dabadghao et al., hepatitis E accounted for 45% of cases followed by hepatitis A, hepatitis B, and hepatitis C.[9] Chandra NS et al. and Acharya SK et al. reported similar findings.[10,11] On the basis of the transaminase ratio, 83 patients (83%) had AST>ALT,7patients(7%) had AST=ALT, 10patients(10%) had ALT>AST.61patients (61%) had normal ALP and 39(39%) had elevated ALP. These results were in line with research by Singh SP et al.[12-15]

The study has few limitations firstly it's a single centre-related study. More individuals with comorbidities are needed to demonstrate statistical significance in the comparison of comorbidities such as diabetes, hypertension, and heart disorders with outcomes in patients with jaundice due to diverse causes. However, the percentage of individuals with such comorbidities was lower in our study. The reported hospital outcome at distribution in patients with jaundice may have been influenced by chronic liver disease, either by the condition itself or by overlap from comorbidity. The distribution of the aetiology of jaundice may have been impacted by the referral bias to a tertiary centre like our institute where the study of jaundice was conducted. By doing a multi-center study with a larger study group, the study can be reinforced even more.

CONCLUSION

Timely and crucial assessment of biochemical markers is critical in patients with jaundice to avoid deterioration of their clinical condition and death.

REFERENCES

1. Chauhan S, Rana BS, Sharma R, Barwal VK, Sood N, Rana N et al. Clinical and biochemical profile of patients hospitalized with jaundice: Experience from a teaching hospital in north India. Int J Adv Med 2019;6:810-5
2. Desai HD, Ansari AAZ, Makwana D, Jadeja DM, Gusani J. Clinical-biochemical profile and etiology of acute viral hepatitis in hospitalized young adults at tertiary care center. J Family Med Prim Care. 2020 Jan 28;9(1):247-252. doi: 10.4103/jfmpc.jfmpc_727_19. PMID: 32110599; PMCID: PMC7014869.
3. Sakir M, Satyawali VN, Kumar A, Singh Y, Arun J. A Study of Clinical, Biochemical Profile and Risk Factor of Patients with Chronic Hepatitis C Virus Infection in Tertiary Care Centre InKumaun, Uttarakhand. Ann. Int. Med. Den. Res. 2019; 5(2):ME14-ME18
4. Shailendra Mosamkar P. Tutor, Department of Biochemistry, K J Somaiya Medical College, Mumbai, Maharashtra, A prospective study of hematological parameters among neonates with neonatal jaundice, Medpluse research and publication 2020, 14(3)
5. Thakur RK, Dixit VK, Shukla SK, Yadav DP, Thakur P, Mitra T. Clinical Profile and Outcome of Young Patients with Extrahepatic Biliary Obstruction at A High-Volume Tertiary Care Centre in Northern India. Tropical Gastroenterology. 2021 Nov 19;42(1):14–9
6. Kalraiy A, Gyanani P, Dubey SRK, Beohar V, Verma P.Clinico-etiological profile of neonates admitted with jaundice in a tertiary care NICU of Central India. Int J ContempPediatr2018;5:1049-52.
7. Vij JC, Tandon BN. Evaluation of prognostic factors infulminant hepatitis. JAPI; 1979, 27: 200-203.
8. AK Malhotra et al: Pattern of infective hepatitis in Jhansi - a5-year appraisal. Indian Medical Gazette, 1985: 254 – 257.
9. DabadghaoV,BarureR,SharmaS,MangudkarS.Astudyoftheclinicalandbiochemicalprofileofacuteviralhepatitis.Int J Biomed Adv Res. 2015;6(10):68993.
10. ChandraNS,SharmaA,RaiRR,MalhotraB.Contributionofhepatitis E virusin acute sporadic hepatitisin North WesternIndia. Indian J Med Res. 2012;136(3):477- 82.
11. Acharya SK, Madan K, Dattagupta S, Panda SK. Viralhepatitis in India. Natl Med J India. 2006;19(4):20317.
12. Askgaard G, Grønbæk M, Kjær MS, Tjønneland A, TolstrupJS. Alcohol drinking pattern and risk of alcoholic livercirrhosis: a prospective cohort study. J Hepatol. 2015May;62(5):1061-7.
13. Maskey R, Karki P, Ahmed SV, Manandhar DN. Clinicalprofile of patients with cirrhosis of liver in a tertiary carehospital, Dharan, Nepal. Nepal Med Coll J. 2011;13(2):115-18.
14. Sarin SK, Dhingra N, Bansal A, Malhotra S, Guptan RC.Dietary and nutritional abnormalities in alcoholic liverdisease: a comparison with chronic alcoholics without liverdisease. Am J Gastroenterol. 1997;92(5):777-83.
15. Singh SP, Singh R, Ahmad N. A study of complications ofscrubtyphusinatertiaryhealthcareinstituteofUttarakhand,India. Int J Res Med Sci. 2014;2(1):246-49