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BIOCHEMICAL PROFILE INPATIENT WITH JAUNDICE IN THE TERTIARY CARE CENTRE

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Abstract

Background: Jaundice is a condition where there is an excessive buildup of bilirubin in both conjugated and unconjugated forms. It shows up as a yellowish discolouration of the skin and mucous membranes. The objective is to evaluate and enumerate the biochemical profile in patients with jaundice in a tertiary care hospital. **Materials and Methods:** 208 adult patients over the age of 18 years who had clinical jaundice and serum bilirubin levels over 2 mg/dl were chosen for a prospective study, & from among those who visited the various departments of our tertiary centre hospital, Yenepoya Medical College, in Manglore, Karnataka, with a variety of symptoms. After acquiring the necessary history, physical examination, and lab results were noted. SPSS was used for analysis. **Result:** Out of 208 patients, 78 patients (37.5%) were less than 40 years, 92 patients (44.2%) were aged 61 years and above. 12 patients (5.8%) had transaminase levels up to 30 u/l, 104 patients (50%) had transaminase level between 31 - 100 u/l, 78 patients (37.5%) had transaminase level between 101-500 u/l and 14 patients (6.7%) had transaminase level between 501-1000 u/l. there was a statistically significant association found between outcome and etiology. Those patients with transaminase of more than 500 and higher levels of ALP (Alkaline Phosphatase) had higher rates of mortality. **Conclusion:** Early and critical evaluation of biochemical parameters are essential in jaundice patients to prevent worsening of clinical status and mortality.

INTRODUCTION

Jaundice, often referred to as hyperbilirubinemia, is a condition when there is an accumulation of too much bilirubin, which causes the body's tissues to become yellow.[1] Only when there is an excess of bilirubin, which denotes either excessive production or insufficient removal, can it deposit. Less than 1 mg/dl of serum bilirubin is considered normal. Jaundice, however, only becomes clinically apparent as scleral icterus (peripheral yellowing of the eye sclera) when levels above 3 mg/dl. Sclerae have a high affinity for bilirubin due to their high elastin content.[2] The skin will gradually turn from lemon yellow to apple green as serum bilirubin levels rise, particularly if the process is ongoing. The green colour is caused by biliverdin.[3]

MATERIALS AND METHODS

It was a Prospective study for a period of 2 years (2020-2022) in Department of General Medicine, Yenepoya Medical College and Hospital.
Calculated using the Formula
$N = Z^2 p(1-p)/d^2$
Sample size studied were 208.

Inclusion Criteria
Serum bilirubin levels more than 2 mg/dl, Age of 18 years and above. Patients willing for laboratory investigation.
Exclusion Criteria
Patients who fail to provide consent for this 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 ver-23 was used to analyse the data. Categorical variables were expressed as frequency (percentage).

RESULTS

As per [Table 1] on basis of age, out of 208 patients, 78 patients (37.5%) were less than 40 years, 92 patients (44.2%) were aged 61 years and above. Out

of 208 patients, 163 patients (78.4%) were males and 45 patients (21.6%) were females.
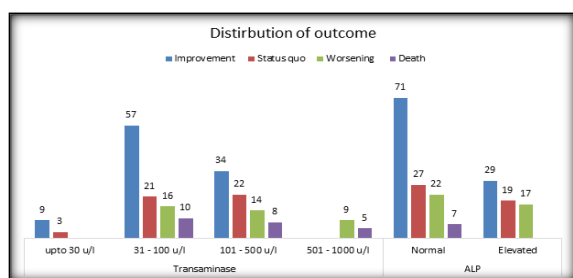

Figure 1: Distirbution of outcome

As per [Table 2] Out of 208 patients, 12 patients (5.8%) had transaminase level upto 30 u/l, 104 patients (50%) had transaminase levels between 31 - 100 u/l, 78 patients (37.5%) had transaminase levels between 101-500 u/l and 14 patients (6.7%) had transaminase level between 501-1000 u/l. On the basis of the transaminase ratio, 172 patients (82.7%) had AST > ALT, 15 patients (7.2%) had AST= ALT, 21 patients (10.1%) had ALT> AST. 127 patients (61.1%) had normal ALP and 81 (38.9%) had elevated ALP. Albumin was > 3.5 g in 103 patients (49.5%), 2.8 to 3.5 g in 51 patients (24.5%) and < 2.8 g in 54 patients (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

Characteristic	Level	N	%
Age	Less than 40 years	78	37.5
	41 to 60 years	92	44.2
	61 years and above	38	18.3
Gender	Male	163	78.4
	Female	45	21.6

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

Parameter	Levels	N	%
Transaminase Levels	Up to 30 U/L	12	5.8
	31 - 100 U/L	104	50.0
	101 - 500 U/L	78	37.5
	501 – 1000 U/L	14	6.7
Transaminase ratio	AST > ALT	172	82.7
	AST = ALT	15	7.2
	ALT > AST	21	10.1
ALP baseline	Normal	127	61.1
	Elevated	81	38.9
Protein (Albumin)	> 3.5 g	103	49.5
	2.8 to 3.5 g	51	24.5
	< 2.8 g	54	26.0
PT / INR baseline	< 1.7	153	73.6
	1.7 to 2.3	28	13.5
	> 2.3	27	13.0

Table 3: Association of transaminase levels with outcome of patient

Transaminase	Outcome				P value
	Improvement n (%)	Status quo n (%)	Worsening n (%)	Death n (%)	
upto 30 u/l	9 (75.0)	3 (25.0)	0 (0.0)	0 (0.0)	<0.001*
31 - 100 u/l	57 (54.8)	21 (20.2)	16 (15.4)	10 (9.6)	
101 - 500 u/l	34 (43.6)	22 (28.2)	14 (17.9)	8 (10.3)	
501 - 1000 u/l	0 (0.0)	0 (0.0)	9 (64.3)	5 (35.7)	
*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 n (%)	Status quo n (%)	Worsening n (%)	Death n (%)	
Normal	71 (55.9)	27 (21.3)	22 (17.3)	7 (5.5)	0.003*
Elevated	29 (35.8)	19 (23.5)	17 (21.0)	16(19.8)	
*P value <0.05 is considered statistically significant Pearson Chi-Square test					

DISCUSSION

Out of 208 patients in the current research, 78 patients (37.5%) were under the age of 40, and 92 patients (44.2%) were 61 years of age or older. Out of 208 patients, 163 (78.4%) were male and 45 (21.6%) were female when sorted by sex. Our results are in accordance with those of investigations by Vij

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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] 172 patients (82.7%) had AST > ALT, 15 patients (7.2%) had AST= ALT, and 21 patients (10.1%) had ALT> AST based on transaminase ratio. 81 patients (38.9%) had increased ALP, whereas 127 patients (61.1%) had normal 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

In the present study patients with severe biochemical abnormality (Ttranceminace more than 500, alp more than 600 PTINR more than 2) had higher rates of morbidities and mortality. Similar results were observed in a study by C Allen Pinkham et al. J Insur Med 2009.

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