CLINICAL AND BIOCHEMICAL SPECTRUM OF HEPATITIS E PATIENTS AT TERTIARY CARE CENTRE, AURANGABAD.

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ABSTRACT   **Introduction–** HEV infection is been increasingly seen because of scarcity of potable water. Along with Hepatitis A and B, Hepatitis E has also become important cause of jaundice and sickness. Hence, we had decided to study clinical features and biochemical abnormalities in patients with positive Hepatitis E serology in our institute.
Materials and Methods– All patients with positive Hepatitis E serology between December 2018 and December 2019 were included in the study. Clinical features and laboratory findings were retrieved from patients' charts and data was analyzed in MS Excel spreadsheet progamme.
Results – Out of 65 patients most common age group was 20-39 years. M: F ratio was nearly equal. Common signs and symptoms were jaundice (83.07%), yellow colored urine (76.92%) and nausea/vomiting (73.8%). Mean bilirubin was 8.4 with SD 6.1. Mean SGOT and SGPT were 1067 and 1194 with SD of 1388 and 1077 respectively. Prothrombin time was abnormal in 84.6% of patients. Urea and creatinine was abnormal in 35.3% and 13.8% respectively.
Conclusion– Common features of HEV in our study were jaundice, yellow colored urine and nausea/vomiting. Common biochemical abnormalities were abnormal LFT including raised bilirubin about 40 times higher than normal, raised enzymes SGOT and SGPT about 200 times of upper normal limit.

INTRODUCTION

Hepatitis viruses are one of the commonest causes of jaundice. It is already known that water borne hepatitis is caused by Hepatitis A, and Hepatitis E viruses, and Hepatitis B, C and D are causes of blood borne hepatitis infection. In water borne hepatitis viruses Hepatitis A is traditionally the common pathogen but now a days Hepatitis E is being increasingly seen. Hepatitis E virus is spherical non-enveloped virus, 32-34 nm in diameter, with a single stranded RNA genome. The surface of the virus shows indentation and spikes. [1]

The purpose of the paper was to study clinical and laboratory features of this emerging disease for public health importance. According to a paper by Gupta et.al.[2]This virus infects 20 million people annually across the globe. HEV causes 3.3 million acute cases with an estimated 56,600 deaths worldwide annually [3].Sometimes there can be co-infection with Hepatitis E and A as both are water borne viruses, usually these diseases affect children and young adults leading to absentees in school and work. This causes major health problems in a large developing country like India where potable water supply is not regular and many areas receive water once a week or even less.

As we know route of transmission of Hepatitis E virus is faeco-oral, therefore most common source of infection becomes feaces contaminated drinking water. Marathawada region in Maharashtra state also suffers from shortage of potable water because of scarce rainfall problems in water supply. There is no vaccine for Hepatitis E as of now, so this leaves the population vulnerable to Hepatitis E infection. Hence, waterborne Hepatitis especially Hepatitis E was noticed to be increasing over the years in this areas. So, we had decided to study biochemical and clinical profile of Hepatitis E patients coming to our tertiary care teaching institute in Marathawada.

SAMPLE SIZE

All the patients with positive HEV serology coming to our tertiary care hospital in Aurangabad, Maharashtra in Marathawada region from the district and surrounding towns and villages were included in the study.

MATERIALS AND METHODS

This study was conducted between December 2018 and December 2019. All the patients with positive serology for IgM and/or IgG Anti HEV were retrieved from HMIS (Hospital Management Information System). Distribution of patients across age, sex was tabulated. Clinical features and various laboratory findings were also noted. Investigation like LFT, RFT, and PT were performed on these patients.

Data was summarized and analyzed in MS Excel spread sheet programme.

RESULTS

Out of the total patients who had undergone screening for Hepatitis A, B, C and E viruses, who came to the hospital, 65 patients were positive for Hepatitis E either IgG or IgM antibodies from December 2018 to December 2019.

Table 1

AGE GROUP	0-19	20-39	40-60
NUMBER OF HEV POSITIVE PATIENTS	07	45	13
% OF HEV POSITIVE PATIENTS	10.76 %	69.24 %	20 %

Maximum positive patients were between 20yr – 30yr of age that accounts for 69.24%. While 10.76% of positive patients were from 0-19yr of age and 20% positive patients were from 40-60yrs of age. Minimum age recorded of Hepatitis E positive is 1 month, while maximum age recorded is 52 years.

Table 2

	NUMBER OF HEV POSITIVE PATIENTS	% OF HEV POSITIVE PATIENTS
MALE	38	58.4%
FEMALE	27	41.53%
TOTAL	65	

Male to female ratio was 1.04, i.e. out of 65 positive patients 38 were male and 27 were female showing slight male predominance.

Table 3

Signs and Symptoms	Number Of Hev Positive Patients With Signs And Symptoms	% Of Hev Positive Patients With Signs And Symptoms
Nausea/ Vomiting	48	73.84%
Anorexia	41	63.07%
Jaundice	54	83.07%
Yellow coloured urine	50	76.92%
Pain in abdomen	35	53.84%
Hepatomegaly	31	47.69%

Commonest clinical presentation was jaundice (83.07%) followed by yellow coloured urine (76.92%) and nausea/vomiting (73.84%).

Table 4

S. No	Investigatons	Mean	Minimum Value	Maximum Value	SD
1	Total Bilirubin	9.4	0.9	39.8	6.1
2	Direct Blirubin	8.6	0.2	38.8	5.7
3	SGOT	1061.6	14	8397	1388.3
4	SGPT	1149.7	17	5227	1077.7
5	ALP	199.2	86	476	83.7
6	Protein	6.1	4.7	8.3	0.9
7	Albumin	3.3	2	4.4	0.5
8	Globulin	2.7	2.2	3.9	0.5
9	PT	16.2	7.7	78.3	8.5
10	Urea	21.2	1.1	137	19.4
11	Creatinine	1.02	0.4	3.9	0.6

Total bilirubin was found to be between 0.9 mg/dl – 39.8 mg/dl. The SD for it was found to be 6.1 and the mean was 9.4. Similarly direct bilirubin was found to be between 0.2 mg/dl - 38.8 mg/dl. The mean and SD for direct bilirubin was found as 8.6 and 5.7 respectively.

Both SGOT and SGPT were found to be markedly raised in almost all patients. The maximum value of SGOT was found to be 8397 U/L and minimum as 14 U/L. While, the maximum value for SGPT was 5227 U/L and minimum value was 17 U/L. The mean and SD for SGOT was 1061.6 and 1388.3 respectively and for SGPT it was 1149.7 and 1077.7 respectively.

Alkaline phosphatase (ALP) was found between 86 IU/L and 476 IU/L. The mean and SD for ALP was 199.2 and 83.7 respectively.

Proteins, both total proteins and individual albumin and globulin were found in normal range in almost all patients. The total protein range was found between 4.7 g/dl and 8.3 g/dl, with mean and SD as 6.1 and 0.9 respectively.

PT was found in between 7.7 sec and 78.3 sec with mean and SD as 16.2 and 8.5 respectively. It was abnormal in 84.6% of the cases.

Urea and creatinine were also found to be deranged. The maximum value of urea was found to be 137 mg/dl and minimum as 1.1mg/dl. The mean and SD was found to be 21.2 and 19.4 respectively. For creatinine, the maximum value recorded was 3.9 mg/dl and minimum was 0.4 mg/dl. The mean and SD were found as 1.02 and 0.6 respectively. Urea and creatinine were found to be abnormal in 35.3% and 13.84% respectively.

In our study we found 4 ANC patients i.e. 6.15% of total positive cases. Out of these 4 ANC patients 2 were having Hepatitis E associated abnormal findings as follows – bleeding, pneumonitis, and septic shock leading to abortion.

Other associated abnormal findings include UTI, appendicitis, renal calculus and cholelithiasis in other 6 positive patients, giving a total of 8 that is in 10.7% of the individuals.

Co-infection of Hepatitis A virus along with Hepatitis E virus was found in 11 patients that is equal to 16.92%.

DISCUSSION:-
Most of the time the Hepatitis E virus infection is self-limiting and the affected individuals are asymptomatic [2]. Whenever the viral load increases or the patient's immunity is affected acute infection of Hepatitis E sets in which clinically presents as a short non-specific prodromal phase characterized by myalgia, flu like symptoms, malaise followed by itching, jaundice and dark yellow colored urine.[4]

Our study showed maximum number of cases in the age group of 20-39 years which was correlating with the study of Sangita et.al.[5], Hardik et.al. [6] and Kaur et.al.[7], all of these studied showed commonest age group as 20- 30 yrs.

In our study we found minimum age to be 1 month and maximum to be 52 years. The cause of HEV infection in 1 month old baby can be due to ancient Indian practice of feeding honey to baby immediate after birth. If contaminated this becomes the route of transmission of HEV infection, as vertical route of transmission for Hepatitis E virus has not been proved[8] and in this case the mother was Hepatitis E negative.
In our study out of total 65 positive individuals 38 were male giving a Male: Female as 1.04:1. Study conducted by Sangeeta et. al. showed Male: Female as 1.6:1 which was nearing our observation [5]. The reason was nearly equal spread may be due to equal exposure of males and females due to shift from male earning society towards equality in males and females in all aspects. Whereas a study conducted in a tertiary care hospital in Mysore reflects 4.8:1 as Male: Female ratio in their study which is not correlating with our study [9].

Our study included 4 pregnant females i.e. 6.15% out of them 1 had bleeding PV due to deranged coagulation profile and other had bleeding PV with associated infection like bilateral pneumonia. On follow up, the one with bleeding PV gave birth to a healthy baby while the other pregnancy landed up into abortion after going into septic shock. The study conducted by Kaur et.al. in their study also included 2 ANC cases out of which 1 pregnancy was unaffected while the other ended with still birth [7].While the study conducted by Sangita et. al. had 4 pregnant females in their study with zero mortality and all of them had uneventful recovery in their study.[5]

In our study total 8 cases had mild to moderate associated infections, this may be due to reduced immunity as the individuals become susceptible. These infections include UTI, appendicitis, pneumonitis, cholelithiasis and even septic shock which led to abortion in 1 pregnant female. Study of Sagita et. al. showed complications in 14 cases out of 96

patients like thrombocytopenia associated with increased liver enzymes. Acute kidney injury due to glomerular damage and acute tubular necrosis. One patient had gone into MODS (multi-organ dysfunction syndrome) and died leading to mortality of 1.04% [5]. Acute liver failure was observed as complication in 6 cases in the study conducted by Hardik et.al. [6]. High mortality (3.45%) was observedin a study conducted in Mysore which was relatively high among alcoholics(12.5%)[9].

The most common clinical presentation in our study was jaundice followed by yellow colored urine followed by nausea/vomitting. This was correlating with the study conducted in Mysore; they also had similar signs and symptoms [9]. Hardik et. al. in their study showed most common sign as icterus and most common sign as jaundice followed by anorexia [6]. While Sangita et. al. in their study found hepatomegaly as the commonest sign and yellow eyes as commonest symptom [5].

In our study we got varying degrees of elevated serum bilirubin levels with maximum as 39.8 mg/dl while the study conducted by Sangeeta et. al. showed maximum Sr. bilirubin as 78.3 mg/dl [5]. Similarly in a study conducted by Hardil et. al. also documented raised serum bilirubin levels in almost all cases [6].

Our study shows markedly raised SGOT, SGPT and ALP levels which were correlating with the study of Sangita et. al. where they found similar results [5]. Hardik et. al. in their study showed raised ALP in 40.8% whereas SGOT was raised in all cases in their study too [6].

Total proteins along with albumin and globulin were all normal in our study. While in the study conducted in Mysore showed higher mortality rates associated with low albumin levels (p= 0.001) [9]. In the study conducted by Hardik et. al. low serum albumin was observed in 21.4% cases [6].

PT in our study varied widely from 7.7 sec to 78.3 sec and found deranged in 84.6% cases. While in Hardik et. al.'s study PT was found deranged in 22.5% cases [6] and in the study conducted in Mysore showed increase in mean PT values (p=0.021) to be associated with increased mortality[9].

Creatinine levels were found abnormal in only 13.8 % cases in our study while urea levels varied between 37mg/dl and 1.1 mg/dl. Urea was found to be raised in 35.3% cases that must be due to dehydration caused by vomiting. While the study conducted in Mysore showed increase in both mean blood urea level and mean serum creatinine in their patients [9].

In our study out of 65 positive patients 11 (16.92%) had co-infection with Hepatitis A virus. Kaur et. al. in their study had 6 (6.3%) cases of co-infection out of total 65 cases which was correlating with our study. Whereas Manoj Kumar et. al. in their study had only 0.48% of HAV co-infection [10].

CONCLUSION:-
Common features of HEV in our study were jaundice, yellow colored urine and nausea/vomiting. Common biochemical abnormalities were abnormal LFT including raise bilirubin about 40 times higher than normal, raised enzymes SGOT and SGPT about 200 times of upper normal limit.

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