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The Epidemiology, Transmission and Prevention of Infective Hepatitis; An Observational Study.

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ABSTRACT

Background: Being an enterovirus infection, hepatitis A is endemic in most developing countries, with frequent outbursts of minor or major outbreaks. The human cases are the only reservoir of the infection and faecal oral route is the major route of the transmission. **Methods:** The present study was conducted in an urban hospital, "Kasturba Hospital" at Chinchpokali to discuss the epidemiological aspects of the infective hepatitis cases. 220 cases were studied prospectively, they were interviewed for the history, physical examination and investigation. **Results:** 1.In this study it was found that the proportion of infective hepatitis was more compared to other infectious disease admitted in Kasturba Hospital. The percentage of Infective Hepatitis was (57.74%) and other infectious disease was (42.26%). The total cases admitted in infective hepatitis was 220 and other infectious disease was 161. The proportion was high of hepatitis A (Infective Hepatitis) in the hospital, 2.Majority of the patients had serum bilirubin level (total and direct) in range of (1-10 mgm%), 74%, 88.18% respectively. 8) Majority of patients (67.72%) had SGPT level in range of 200 and above and SGOT (45.18%) level in range of 41-200 units, 3.Low income generating occupations were seen associated with the infective hepatitis, 4.208 (94.5%) recovered 4 (1.8%) died and 8 (3.6%) went AMA. **Conclusion:** Our results suggest that educational, legislative and therapeutic interventions to prevent morbidity, mortality and premature death from liver disease are urgently required.

Keywords: Epidemiology, transmission, prevention, Infective hepatitis.

INTRODUCTION

Health is vital for realization of four folds aim of life viz. the ethical, the material, the spiritual, and an artisic, for the development of man. These words are by the renowned Ayurvedic physician "Charaka" who lented in 2500 yrs ago. "Informed opinion and active cooperation on the part of the public are of the utmost importance in the improvement of the health of the people" The above words from the preamble of the constitution of the W.H.O are particularly relevant to the disease called "Viral Hepatitis". Viral hepatitis continues to present a vast array of importance, intriguing and perplexing questions. Hepatitis continues to be an important health related, even occurrence is seen throughout the world. During recent year's reports, incidence of hepatitis has considerably increased probably due to better notification. In India, viral hepatitis is recognised to be an important health and economic problem. The exact incidence of hepatitis A in India is not known. It has been estimated that about 4 million people suffer from one or the other form of viral hepatitis, in India.[1-3]

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Being an enterovirus infection, hepatitis A is endemic in most developing countries, with frequent outbursts of minor or major outbreaks, due to asymptomatic cases, the exact incidence is not known. The Indian literature is replete with numerous reports of sporadic and epidemic occurrence in the various cities, residential colonies and campus. Epidemics of hepatitis A often evolve slowly, involve wide geographical area, and last many months, but common source of epidemics (eg. faecal contamination of drinking water), and may evolve explosively.[4-6]

Hepatitis A formerly known as "Infectious hepatitis or epidemic jaundice" is an acute infectious disease caused by hepatitis A virus (HAV). The first suggestions in the literature that viral hepatitis could be infectious disease dates back to 1923 when two interns in a diabetic ward in Sweden noted, fall in cases of jaundice occurring in their ward on sterilization of lancet used for the blood collection.[7,8]

The causative agent, the hepatitis. A virus, is an enterovirus (type 72) of the picoranaviridae family. It multiplies only in hepatocytes. Faecal shedding of the virus is at its highest during the latter part of the

incubation period and early acute phase of the illness only one serotype is known. The API ,studies states that HAV is small sized (27 nm) non enveloped RNA virus, viral particle or virons consists of a capsid made of 4 poly peptides, vp to vp4 and encloses 7500 — nucleotide genome RNA.[9-12]

The human cases are the only reservoir of the infection. The cases range from symptomatic infections to severe ones, asymptomatic an icteric infections are especially common in children, these cases play an important role in maintaining the chain of transmission in the community.[13]

Faecal oral route is the major route of the transmission, it may occur by direct contact or indirect by way of contaminated water, food, milk, foodborne outbreaks are becoming more frequent for e.g. consumption of raw or inadequately cooked, shell fish cultivate in sewage polluted water is associated with epidemic outbreak of hepatitis A, direct infection occurs readily under conditions of poor sanitations and over-crowding. Hepatitis A is rarely transmitted by the parenteral route, (by blood or penetration). This mode of transmission is of minor importance. Incubation period is 15 to 45 days usually (25 to 30 days) the length of the incubation period is proportional to the dose of the virus ingested.[14,15]

The diverse social habits customs, ignorance and illiteracy, inadequate medical relief and lack of public health measures constitute the chief factors of epidemiology in the infective hepatitis, on which the present study is based.[16]

Some studies mentioned about the sequence of clinical and laboratory findings in a patient with hepatitis A. Faecal shedding of virus is brief in duration and ends with the appearance of anti-HAV in a serum. lgm anti HAV, usually present for a few months, may persists in serum for a year, or more after the acute illness.[9]

The aim of present study is to know the epidemiology, transmission and prevention of Infective hepatitis. The study also aims to find out the proportion of Infective hepatitis in kasturba hospital, compared to the other infectious disease in that hospital and to suggest recommendations based on the observations.

MATERIALS AND METHODS

The present study was conducted in an urban hospital, "Kasturba Hospital" at Chinchpokali to discuss the epidemiological aspects of the infective hepatitis cases. The study was carried out between the periods of 'October 2003 to December 2003.

220 cases were studied prospectively, they were interviewed for the history and physical examination and the investigations were carried out at admission and before discharging the patients. The collection of the data from the sample was carried out for features like socio economic factors, environmental factors, demographic profile, habits and customs etc. A suitable questionnaire cum clinical examination type proforma was designed.

Following investigations were carried out

1) Routine haematological examination: haemoglobin estimation, complete blood count (CBC), total count (TC) and differential count (DC).
2) Liver function test:
   a) Serum bilirubin in % total and direct
   b) SGOT (serum glutamic oxaloacetic transaminase),
   c) (SGPT) serum glutamic pyruvic transaminase
3) Aust - Antigen (HBsAg) — by ELISA method
4) Other specific investigations like serum proteins, serum potassium, calcium, sodium, blood urea nitrogen, were carried out only when required and advised by the attending physician.
5) USG abdomen as advised by physician

Using the afore mentioned methods a diagnosis was readied and the patients were classified into infective hepatitis. This complete data was analysed and put forward subsequently.

RESULTS

All the data in this study was collected, compiled and analysed. The observations and results which came forward were as follows:

Table 1: Distribution according to levels of serum bilirubin (direct and total) in infective hepatitis.

Serum bilirubin	Direct levels 0.05			Total Levels 10		
Mgm%	Male	Female	Total	Male	Female	Total
0-1%	10 (7.9%)	220 (2.2%)	12 (5.4%)	7 (5.2%)	4 (4.25%)	11 (5%)
1-10%	110 (87.4%)	84 (89.3%)	194 (88.2%)	93 (73.8%)	70 (74.46%)	163 (74.2%)
10-20%	6 (4.70%)	8 (8.5%)	14 (6.4%)	20 (15.02%)	12 (12.76%)	32 (14.5%)
20-30%				6 (4.8%)	8 (8.53%)	14 (6.3%)
Total	126	94	220	126	94	220
Total mean	3.81	3.86	-	9.26	9.29	-
SD	3.31	4.10	-	5.32	7.31	-

In majority of the cases, the serum bilirubin (Direct) level was more in 1-10 mgm %. The total cases were 194 (88.2%), in male cases were 110 (87.4%) and in female cases were 84 (89.3%). The Total mean of bilirubin (direct) in males was 3.81, SD, 3.31 and in female total mean of direct bilirubin was 3.86 SD, 4.10. The difference was found to be in-significant. In the Total level the majority of cases were in range of (1-10 mgm%). Total cases were 163 (74.2%) in which males were 93 (73.8%) and females were 70

(74.46%). The mean serum bilirubin (total) in the males was 9.26, SD 5.32 and in females 9.29, SD 7.31 [Table 1].

Table 2: Levels of SGOT (Serum Glutamatic Oxalo transaminiase) in case of infective hepatitis.

Units	Male	Female	Total
0-40	47 (37.31%)	23 (24.46%)	70 (31.82%)
41-200	57 (45.23%)	38 (40.42%)	95 (43.18%)
200 and above	22 (17.46)	33 (35.12%)	55 (25.1%)
Total	126	94	220
Mean SD	146.83	171.91	
SD	134.23	131.0	

It is observed, in majority of cases the levels of SGOT was more in 41-200 units. The total cases were 95 (43.18%). The male cases were 57 (45.23%) and females were 38 (40.42%). The total mean (in males) of SGOT las 46.83, SD 34.26 and total mean in female was 71.91, SD 13.0.

Table 3: Level of SGPT (serum gutamatic pyruvic transaminase) in infective hepatitis.

Units	Male	Female	Total
0-40	-		
51-200	41 (32.54%)	30 (31.92%)	71 (32.28%)
200 and above	85 (67.46%)	64 (68.08%)	149 (67.72%)
Total	126	94	220
Mean	371.57	369.28	
SD	238.53	221.94	

The majority of patients had serum SGPT level in range of 200 and above (67.72%). The total cases were 149 (67.72%) where male cases were 85 (67.46%) and female cases were 64 (68.08%). The total mean of SGPT in males was 37.57, SD 238.53 and in females was 369.28, SD 221.94 [Table 3].

Table 4: Distribution of the cases of infective hepatitis with cases of other infectious disease in the hospital.

Disease	Male	Female	Total
Hepatitis	126 (66.66%)	94 (48.95%)	220 (57.74%)
Other	63 (33.34%)	98 (51.10%)	161 (42.26%)
Total	189	192	381
X^2= 12.24	Df=1	P<0.002	

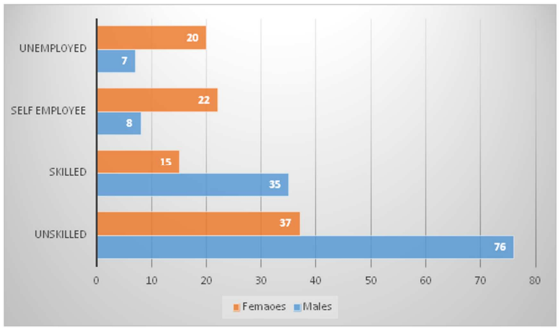

Figure 1: Distribution of the cases of infective hepatitis according to the occupation.

Out of 220 infective hepatitis cases, the male cases were 126 (66.6%) and females were 94 (48.95%). 161 cases were from the other infectious disease like (mumps, measles, diphtheria, Hepatitis B, chickenpox and diarrhoea). In the other infectious disease the male cases were 63 (33.34%), female cases were 98 (51.10%). The percentage was found to be more in infective hepatitis (57.74%) than other infectious disease (42.26%), showing significant value [Table 4].

It was observed out of 220 case, male cases unskilled were 76 (60.1%) and female cases 37 (39.4%), total 113 (51.4%). In the skilled work the males cases were 35 (27.7%) and female cases 15 (16.1%), total were 50 (22.6%) in self employee the male cases were 8 (6.7%) and females cases were 22 (23.40%). Total cases were 30 (13.6%). The total cases of unemployed were 27 (12.4%) out of which males were 7 (5.5%) and females were 20 (21.1%). The difference between occupations of the cases was found to be significant [Figure 1].

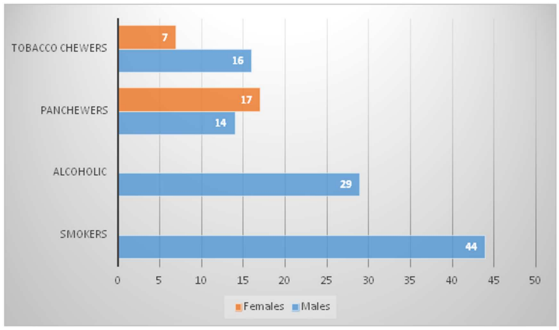

Figure 2: Distribution of the cases infective hepatitis according to the addiction.

It was observed that, the patients having addiction of smoking were the male cases 44 (35.1%) and alcohol taking male cases were 29 (23.9%). In addiction of panchewers, the male cases were 14 (11.9%) and female cases were 17 (18.0%). In tobacco chewers the male cases were 16 (12.1%) and female cases 7 (7.4%), the total was 23 (10.8%). The total percentage in addiction was (57.8%). In non-addiction, the cases were 93 (42.2%), in which males were 23(18.0%) and female were 70 (74.5%) [Figure 2].

Table 5: Distribution of the cases of the infective hepatitis according to the response of the treatment.

	Recovered		Died		Went AMA	
	Male	Female	Male	Female	Male	Female
Children	6 (5%)	1 (1.2%)	-	-	1	1
Adults	114 (95%)	87 (98.8%)	3 (2.3%)	1 (1.06%)	2	4
Total	120 (95.2%)	88 (93.6%)	3 (2.3%)	1 (1.06%)	3 (2.3%)	5 (5.3%)

Out of 220 patients, 208 (94.5%) were recovered. Males case were 120 (95.2%) recovered and female cases were 88 (93.6%) recovered. 4 (1.8%) patients

died out of which males were 3 (2.3%) and female was 1 (1.06%), 8 (3.6%) patients went against medical advice. In which 2 cases were children and 6 cases were adults [Table 5].

DISCUSSION

The present study was aim to find out epidemiological factors in the Infective hepatitis, and to find out the proportion of Infective hepatitis with other infectious diseases in the Kasturba Hospital. 220 patients of Infective hepatitis were studied, examined and analysed. 161 patients of other infectious disease were taken for the proportion of the infective hepatitis, in the hospital. The other infectious disease were mumps, measles, chickenpox, hepatitis B, diarrhoea.

In the majority of the cases the direct level and total level of serum bilirubin varied from 1 to 10% mg%. There was no past history of jaundice to the all cases. The mean of serum bilirubin (total) in adults male was 9.26, SD 5.32 and in adult females it w" 9-29, SD 7.31.

In majority of the cases, SGOT, was more in the 4 - 20 units, few cases were (43-1%). The total mean value of SGOT in males 146.83, 50134.23 and in females 171.91, SD 131.0. The majority of patients had SGPT level in range of 200 and above, the cases were (67.72%). The total mean value of SGPT in males 371.57, SD 238.53 and in females 369.28, SD 221.94. The liver function test were repeated before discharging the patients and whenever necessary, as advised by the physician. Increase in the amount of certain enzymes in the blood notably, glutamic oxaloacetic and pyruvic transaminase are among the first biochemical changes to occur25. Most commonly the diagnosis is clinched by presence of bilirubinuria, elevation of the serum transaminase and increase in the serum bilirubin, and tender enlarged liver in present series the diagnosis was mainly clinched by presence of bilirubinuria in increase in direct and total serum blilirubin level and enlarged liver.

Almost all the patients were admitted to hospital within 4-5 days at onset of the disease. So there hospital stay is almost to the course of the disease. Out of 220 patients 39.9% patients had hospital stay for less the 10 days. 41.36% patient had hospital stay for 11 to 29 days and 11.28% had hospital stay for 21 to 29 days and 6.4% cases were hospitalized for 30 to 39 days and 1.06% were hospitalized for more than 40 days. Infective hepatitis is apparently a self limited disease,' all the patients were given tablets of B complex, tablets of Liv 52, twice a day and advised complete bed rest. Those who had vomiting of other symptoms were given symptomatic treatment. Out of 220 cases, 94.5% were recovered in which males cases were 95.2% and female cases were 93.6%. 4 patients died, 3 patients were male and 1 was female Three male patients died, had excessive vomiting, headache, state of confusion and hallucinations and went into coma in age group 34 - 45 years. One female (52 yrs) died had excessive vomiting anorexia pain in abdomen hallucinations 8 patients went AMA in which 5 cases were females and 3 were males.

The remaining patients were kept in the hospital till the serum bitirubin level become normal and SGOT and SGPT level decrease.

Proportion: Hepatitis A patients were 220, in which males were 126 and females were 94 and other infectious patients were 161, in which males were 63 and females were 98. The other infectious disease cases admitted in hospital were mumps, mealses, chicken pox, diptheria, diarhhoea and hepatitis b, the patients of hepatitis b were 40, chicken pox were 50, measles were 42, mumps were 19, diptheria 7, diarhhoea 3. The percentage of hepatitis A in the hospital was 57. 74% and other infectious disease was 42.26%, the difference between the infective hepatitis and other diseases was found to be significant. The proportion of the hepatitis A was more than the other infectious disease. The control of infective hepatitis is one of the most important unsolved problems in the field of preventive medicine. The virus of the infective hepatitis is excreted in the faeces even upto two weeks before the appearance of Jaundice. Virus may therefore be widely disseminated in a community before the diagnosis is made, therefore isolation and quarantine of patients and contacts cannot be expected to influence significantly the spread of hepatitis. The control measures includes personal cleanliness and safe disposal of faeces and urine of patients and contact The clothes and other items of used by the patients should be boiled, as the agent of infective hepatitis is more resistant to heat and chemicals Contamination of food, Water and milk directly or indirectly by contacts or patients or by sewage should be prevented by taking measures; by hotels Those who are food handlers should be given specific advice and suggestions on personal hygiene but should be isolated as soon as the symptoms begin to them. If the water supply is thought to be considered effective unless the water has first been allowed to settle and has to be filtered even though some degree of risks remains, studies indicated that 0.5 mg/L of free residual chlorine can causes destruction of free virus in 30 minutes at pH value of 8.5 or less 39. The best means of reducing the spread of the infection, by promoting simple measures of personal and community hygiene e. g. hand washing before eating and after toilet.[17-19]

It has mentioned that Hepatitis A infection usually follows oral ingestion of virus spread by fecal shedding from an infected individual. The high sero prevalence of anti-hepatitis A virus antibodies in developing countries. The U.K has mention that

percentage of cases associated with a history of travel has risen from 7.6% in 1990 to 13.7% in 1998. The blood results in acute icteric hepatitis in over 70% of cases the case fatality rate is 0.3% 1.8% and the risk of serious complications increases significantly with age.[20,21]

An outbreak of hepatitis A in rural river Island community was found to be associated with consumption of contaminated well water. Specimens from case patients, the implicated well, and a cesspool suspected to be the source of contamination, were all positive for hepatitis A virus (HAV), RNA by immune-capture reverse transcription polymerise chain reaction, these findings demonstration the utility of viral detection techniques to evaluate contaminated ground water.[22]

Hepatitis 'A' developed myoglobinuria has been reported due to elevated CPK levels, EMG changes of polymyositis and muscle biopsy showing inflammation and degeneration of muscle fibres are supportive of active muscle destructor. Sub-acute hepatitis failure (SAHF) is characterized by persistent or progressive jaundice with development of ascites at least four weeks after the onset of icteric stage of acute viral hepatitis in the absence of pre-existing liver disease.[7,11,19]

CONCLUSION

1) In this study it was found that the proportion of infective hepatitis was more compared to other infectious disease admitted in Kasturba Hospital. The percentage of Infective Hepatitis was (57.74%) and other infectious disease was (42.26%). The total cases admitted in infective hepatitis was 220 and other infectious disease was 161. The proportion was high of hepatitis A (Infective Hepatitis) in the hospital.
2) Majority of the patients had serum bilirubin level (total and direct) in range of (1-10 mgm%), 74%, 88.18% respectively. 8) Majority of patients (67.72%) had SGPT level in range of 200 and above and SGOT (45.18%) level in range of 41-200 units.
3) Low income generating occupations were seen associated with the infective hepatitis.
4) 208 (94.5%) recovered 4 (1.8%) died and 8 (3.6%) went AMA.

REFERENCES

1. Ray KW, Brown RS, Terrault NA, Hashem ES. Burden of liver disease in the United States: summary of a Workshop. Hepatology. 2002;36:227–242.
2. Lee S, Woojin C, Kyung-Rae H. Socioeconomic costs of liver disease in Korea. Korean J Hepatol. 2011;17:274–291.
3. Iacobucci G. Liver disease rises in England while falling elsewhere in Europe, report says. BMJ. 2012;345:e7931.
4. Adam R, Karam V, Delvart V, et al. Evolution of indications and results of liver transplantation in Europe. A report from the European liver transplant registry (ELTR) J Hepatol. 2012;57:675–688.
5. Marinho RT, Giria J, Moura MC. Rising costs and hospital admissions for hepatocellular carcinoma in Portugal (1993–2005) World J. Gastroentero. 2007;13:1522–1527.
6. Cortez-Pinto H, Gouveia M, dos Santos Pinheiro L, et al. The burden of disease and the cost of illness attributable to alcohol drinking-results of a national study. Alcohol Clin Exp Res. 2010;34:1442–1449.
7. Cortez-Pinto H, Marques-Vidal P, Monteiro E. Liver disease-related admissions in Portugal: clinical and demographic pattern. Eur J Hepatol. 2004;16:873–877.
8. John RM, Sung HY, Max W. Economic cost of tobacco use in India, 2004. Tob Control. 2009;18:138–143.
9. Fenoglio P, Parel V, Kopp P. The social cost of alcohol, tobacco and illicit drugs in France, 1997. Eur Addict Res. 2003;9:18–28.
10. Colagiuri S, Lee CM, Colagiuri R, et al. The cost of overweight and obesity in Australia. Med J Aust. 2010;192:260–264.
11. Zhang W, Bansback N, Anis AH. Measuring and valuing productivity loss due to poor health: a critical review. Soc Sci Med. 2011;72:185–192.
12. Rehm J, Dawson D, Frick U, et al. Burden of disease associated with alcohol use disorders in the United States. Alcohol Clin Exp Res. 2012;38:1068–1077.
13. Anderson P, Chisholm D, Fuhr DC. Effectiveness and cost-effectiveness of policies and programmes to reduce the harm caused by alcohol. Lancet. 2009;373(9682):2234–2246.
14. Chisholm D, Rehm J, Van Ommeren M, Monteiro M. Reducing the global burden of hazardous alcohol use: a comparative cost-effectiveness analysis. J Stud Alcohol. 2004;65(6):782–793.
15. Bruix J, Barrera JM, Calvet X, et al. Prevalence of antibodies to hepatitis C virus in Spanish patients with hepatocellular carcinoma and hepatic cirrhosis. Lancet. 1989;2:1004–1006.
16. Manns MP, McHutchison JG, Gordon SC, et al. Peginterferon alfa-2b plus ribavirin compared with interferon alfa-2b plus ribavirin for initial treatment of chronic hepatitis C: a randomised trial. Lancet. 2001;358:958–965.
17. Liaw YF, Sung JJ, Chow WC, et al. Lamivudine for patients with chronic hepatitis B and advanced liver disease. N Engl J Med. 2004;351:1521–1531.
18. Sarrazin C, Berg T, Ross RS, et al. Prophylaxis, diagnosis and therapy of hepatitis C virus (HCV) infection: the German guidelines on the management of HCV infection. Z Gastroenterol. 2010;48:289–351.
19. van der Meer AJ, Veldt BJ, Feld JJ, et al. Association between sustained virological response and all-cause mortality among patients with chronic hepatitis C and advanced hepatic fibrosis. JAMA. 2012;308:2584–2593.
20. Shariff MI, Cox IJ, Gomaa AI, et al. Hepatocellular carcinoma: current trends in worldwide epidemiology, risk factors, diagnosis and therapeutics. Expert Rev Gastroenterol Hepatol. 2012;3:353–367.
21. Chhatwal J, Ferrante SA, Brass C, et al. Cost-effectiveness of boceprevir in patients previously treated for chronic hepatitis C genotype 1 infection in the United States. Value Health. 2013;16:973–986.
22. Cure S, Bianic F, Gavart S, et al. Cost-effectiveness of telaprevir in combination with pegylated interferon alpha and ribavirin in previously untreated chronic hepatitis C genotype 1 patients. J Med Econ. 2014;17:65–76

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