



Keywords: Coinfection; Enzyme-linked immunosorbent assay; Hepatitis B surface antigens; Hepatitis C; HIV

and Electrochemiluminescence (ECLIA) with serum or plasma samples. However these assays mandate infrastructure and skilled manpower. As an alternative, rapid test offers several benefits such as they are easy to perform, requires minimal training and provides conclusive and rapid results. Additionally, these tests may be performed on a case-by-case basis and eliminating the need for require laboratory infrastructure [13]. Rapid tests and Enzyme-linked immunosorbent assay (ELISA) are efficacious tools to assess the co-infection because Rapid test devices have a sensitivity >99% and specificity >98% while ELISA can detect different variables [14].

Recent literature review suggested a scarcity of studies among the geographical region of North Karnataka in this regard. Therefore, the current study was undertaken to assess the prevalence of co-infection of HCV and HIV among HBsAg positive patients in Belagavi.

Materials and Methods

This cross-sectional study was carried out in the Department of Microbiology, Belagavi (Northern Karnataka, India) from January 2017 to December 2017. The study was approved by the Institutional Ethics Committee and an informed consent was obtained from all the patients included in the study and strict confidentiality was followed for all the investigations.

Sampling Technique

Universal Sampling Technique was used for collection of sample. Out of total 3278 subjects, 75 subjects included in the study based on screening on HBsAg positive patients (Figure 1).

Figure 1: Selection of subjects for the study.

The serum samples were tested with Hepacard (Reckon Diagnostics Pvt limited, Gorwa, and Baroda, India) a rapid immunochromatographic assay, following the manufacturer's instructions. Two drops (70 µl) of human serum/plasma specimen was added into the sample well and the results were read after 20 minutes of the reaction. The appearance of pink coloured line, one each in test region "T" and control region "C" was taken as the sample is "REACTIVE" for HBsAg and appear-

cal variables were recorded given in the form of frequency tables. Continuous variables were represented as mean ± Standard deviation (SD). p<0.05 was considered as statistically significant.

Results

Of the 3278 patients screened for HBsAg, 75(2%) were positive for HBsAg via the card test which was later confirmed by ELISA. The mean age of the study subjects was 46.87 ± 14.45 years. Baseline features of the study population are tabulated in (Table 1).

Factors	Count (%)	
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	HHÉI Í	GJÁÇHI ÈT Í ÁD
	Í Ì ÈÍG	FJÁÇGI ÈHH ÁD
	ÍHÈT Í	F Í ÁÇGÈ ÁD
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	Ö í ç^!	FÈÁÇFHÈHH ÁD
	Ó ~ •á) ^••	GÁÇGÈT Í ÁD
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	P [~ •^, á^	F Í ÁÇGFÈHH ÁD
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	Væá [!	GÁÇGÈT Í ÁD
	Ù^ [}	FÁÇFHÈHH ÁD
	Ù í ^•c	FÁÇFHÈHH ÁD
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Table 1: Óæ^! í) ^! & @æ! æç^! í •çá •Á [-ç @^! & [@ [! çÈ

Among these 75 participants, fever (n=40) was the most common complaint among the HbsAg positive subjects. Fourteen subjects had

a history of high risk of sexual activity (Table 2). Sexual transmission was the most common mode of transmission 75(100%).

Factors	Sub-category	Count (%)
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	Š [••Á [-áæ]] ^çç^	F Í ÁÇGI ÁD
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	Çæá [{ á } æ Á] æá)	FÈÁÇFHÈHH ÁD
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	Y ^! • @ç [••	Í ÁÇJÈHH ÁD
	Ö [~ * @	I ÁÇ Í ÈHH ÁD
Pá • ç [í ^	ÁÙ^ç ~ æ Áæ&çáçç^	F Í ÁÇF Í ÈT Í ÁD
	VÓ	HÁÇI ÁD
	Ó [[[ááç] • ~ • á [}	GÁÇGÈT Í ÁD
	Ç) ^ ÁÙVÓ	FÁÇFHÈHH ÁD
	Ö T	ÈÁÇÈ ÁD
	Q] ^ Á çæá ^! áá! ~ * Áæá ~ • ^	ÈÁÇÈ ÁD
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($p=0.04$) were significantly associated with HIV infection (Table 4).

Discussion

HIV and HCV co-infections among HBV infected patients have been reported infrequently from region to region [8]. Here by the current study evaluated the prevalence of co-infection of HCV and HIV among HBsAg positive patients in Belagavi through ELISA and Rapid tests. The study also probed the factors affecting HBsAg positive patients.

The prevalence of HbsAg positive was quite low i.e. 2%. Similar results were observed by Malhotra et al., (1.5%), Negero et al., (4.5%-6.8%) and Arun et al., (4.94%) [15-17]. Higher prevalence of HbsAg positives (26%) were reported in a study conducted in Punjab [18]. The present study reported positive findings exclusively among the male subjects. High prevalence among males could be attributed promiscuity [19].

In the study, the age group between 33-47 years was frequently affected and this correlates with a study conducted by Yakasiri et al [20]. In the current study, the maximum HBsAg positive patients were farmers (44%) and analphabetic (56%) which is in agreement with a study conducted by Yang et al, who reported with 35.3% farmers and 44% illiteracy. Education is a major influencing factor for HBV infection.

The awareness about the infectious diseases along with the acceptance of vaccination is found to be more marked among the educated community [21].

Mode of transmission through sexual route was common in this study (100%) which was in agreement with (71%) Saravanan et al. [3] But the study conducted by Grewal et al., in Punjab inferred that alcohol/drug addiction (42.2%) and blood transfusion (35.2%) were common routes of transmission [18]. This could be due to the prevalence of drug abuse, usage of contaminated needles and syringes and improper screening before blood transfusion in that geographical region [18,22].

In the current study the prevalence of HBsAg-HIV co-infection observed was 5% which was similar to reports by Sarkar et al. (8.3%), Tiewsoh et al. (6.6%), and Ionita et al (4.4%) [23-25]. On the contrary, regions like Zimbabwe, South Africa, Malawi showed a higher prevalence of HBsAg-HIV co-infection 21%, 15%, 21% respectively [26]. Co-infection of HBV-HCV in the current study was 0%. High prevalence of HBV-HCV co-infection was reported by Mahajan et al. (1.41%) and Anwar et al (3.83%). The inconsistency in these results may be due to the variation in endemicity of these viruses according to geographical distribution [27,28]. HIV is co-infected with HCV and HBV because they have common routes of transmission.

The discovery of effective and well tolerated nucleoside/nucleotides analogues against HBV has greatly improved the views for HBV-HIV co-infections. But drug resistance is probably going to develop against all these compounds. HIV-HCV co-infected patients should be assessed for anti-viral therapy and liver biopsy should be considered. Further efforts should be focused on developing effective and well resistant combination therapies [29].

A small sample size and unequal distribution of sexes were a few limi-

4(3):241-249.

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