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Research Paper

A Study on Medico-Legal Autopsy Cases with Regards to Various Study Variables, with Special Reference to Hepatitis-'B' Sero-Positivity

Medical Science

KEYWORDS : Medico legal autopsy ,HBV infection,sero-prevalence

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ABSTRACT

Background : *In the view of limited literature on mortuary based sero-epidemiological studies on viral infections, the present study is undertaken in order to understand the sero-prevalence of hepatitis B infection among medico-legal autopsy cases. The hepatitis-'B' virus is viable in blood, tissues, and body fluids for considerable periods after death of the infected person.The prevalence of hepatitis-'B' virus infection among medico-legal autopsy cases was higher than cases examined by general duty doctor, as they constitute higher percentage of people with high risk behavior, i.e. truckers, migrant labors, commercial sex workers, vagabonds, intravenous drug users. They are more prone to expose to infectious diseases as well as unexplained violent unnatural deaths.*

Objectives: *To study the socio demographic profile of medico legal autopsy cases and to focus on sero-prevalence of HBV infection among them.*

Material and methods: Blood samples were collected from 193 cadavers before commencement of autopsy. Each sample was subjected to screening test for hepatitis-B surface antigen (HBsAg) by rapid test method. Test results were observed, analyzed with regards to various study variables like age, sex, occupation, mode of death etc.

Results: *In this study overall sero-prevalence of hepatitis-B infection was 2.59%among medico-legal autopsy cases. Among sero positive cases a clear male preponderance over female was noted. Most commonly affected age group was above 30 years.Sero prevalence of hepatitis B infection was more among high risk occupational groups.*

INTRODUCTION

The autopsy room is always been a potential source of various types of infections like anthrax, plague, rabies, viral hemorrhagic fevers, lassa-fever, group A streptococcal septicemia, and human immuno deficiency virus (HIV) and hepatitis B virus (HBV) [1](UNAIDS/WHO, 2006). After death of the person, body defense mechanism, reticulo endothelial system, blood brain barrier become non functional, hence the pathogens grow and spread themselves unrestricted within the body[2] (Sharma BR 2005). HIV and HBV comes under high risk group (B) of infections, which can spread from cadavers to mortuary room persons [3](HPA-NW-U.K-2004).

Hepatitis-'B' virus is a blood born virus with very high infectivity to the human beings, very minute, traces of injected blood (0.00001ml) can be infectious. A female nurse has got positive HBsAg results after 68 days exposure to the needle prick wound, which was contaminated with bloody pleural fluid [4](Okenhendlar-1996). According to a study the overall prevalence of HBsAg, among midwives in Congo was 67.21% [5](Tary-Taty-1990). As per a study among dental employees in Malaysia the Sero-prevalence of HBsAg, was 22.4% [6](Vadivale-1992). In a study in Chandigarh, Lab technicians has got the Sero- positivity rate for HBsAg was 8.8% [2](B.R.Sharma-2005). By above studies we can observe that the infection by HBV is not uncommon among health care providers.

OBJECTIVES:

1.To study medico-legal autopsy cases with regards to various study variables like age, sex, occupation etc.
2.To assess the prevalence of HBV infection among medico-legal autopsies.

MATERIALS AND METHODS

STUDY SUBJECTS: All medico-legal cases registered at mortuary, Sri Venkateswara Medical College, Tirupathi a total number of 193 cases were included in the study. After obtaining written consent from near relatives blood samples were collected for the period of 9 months from Sep-2005 to May-2006. Bodies showing advanced putrefaction were excluded from the study. Materials used for the study was personal protective equipment kits, 10ml syringes with 18 gauge needles, clean glass test tubes, centrifuge, HBsAg test kits (Biozyme one step HBsAg test card kits).

Methodology:5 to 10 ml of blood aspirated from heart chambers or femoral vessels through percutaneous approach from each body. Serum samples were obtained by centrifuging the each blood samples at 2000 to 5000 rounds per minute for 5 to 15 minutes. Three drops of Serum added to the Sample well on the each HBsAg card by fresh plastic dropper. The test result was interpreted after 5 to 15 minutes (Rapid test). The formation of "control line" on the test card was taken as mandatory for the valid test results. The information about deceased persons were gathered from following documents, requisition given to conduct postmortem examination, Inquest report, brief history given by relatives or friends by a pre tested questionnaire , post-mortem examination report, hospital records. Sex, age, religion, caste, marital status, body preservation in cold storage, place of death, manner of death is self explanatory study variables. Truckers, migrant labors, Vagabonds, commercial sex workers, Intra venous drug users, and health care providers come under high risk occupational groups. Subjects with monthly income less than 6000/- rupees were taken as low income group, income from 6000/- to 12000/- taken as middle income group, and above 12,000/- taken as high income group. The information collected has been compiled, analyzed according to the study variables. The test results were condensed taking into consideration of various statistical calculations and data thus arrived at has presented in the tabular forms.

RESULTS/OBSERVATIONS

Among 193 subjects, 160 cases with known background and 33 cases with unknown data (unclaimed bodies). Religion, caste, occupation, income, education, marital status of the unclaimed

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bodies were not known, but age, sex, manner of death, body condition, place of death, postmortem interval and body preservation in cold starage, such information available for all 193 cases.

By studying socio demographic profile of the medico legal cases following points were observed, male were more prone(three times) for unnatural deaths than female. Half of the study cases belong to young adult age i.e.,21 to 40 years group. Tirupati is Hindu's famous Piligrimage ,hence naturally Hindu people taken major part (94.4%) in autopsy cases. Illitirates and people with primary school education contributed major part (64.3%) in study subjects. Among all unnatural deaths accidental deaths taken major part (65.8%) over suicidal and homicidal deaths. In this study it was shown that married persons (73%) were more prone to un natural deaths than unmarried persons, details shown in table no.1 & 2.

In the present study, total 193 serum samples were tested for the serological status of the HBV infection. Among 193 a total of five HBsAg positive cases were observed, with Sero-prevalence of 2.59 percent and 95% C.I of 0.35-4.83. details shown in table no.3

Among five HbsAg positive cases one had signs of hepatitis and jaundice and rest of the four were not showing any signs of liver disease, further one died due to advanced liver disease, another due to suicide, and rest of the three died due to accidents. Four were known cases and one with unknown background. All the five positive cases were male, no female was positive for HBsAg in this study. Among five, four bodies were fresh, but in one case slight greenish discoloration of right iliac fossa present . Among five positive cases two deaths in hospital, and rest of the three deaths reported at the spot. Among five bodies, three were preserved in cold storage and two bodies brought directly to the mortuary.

Among four known positive cases two were from rural and two were from urban areas. Two were truckers other two were farmer and mason. All known cases belong to Hindu religion. Among four subjects two belong two "middle income group" and other two belong to "low income group". One was illiterate and rest of the three studied up to 5th standard. Three were married and one was unmarried young adult...

DISCUSSION

According to a study in Maryland the sero-positivity of HBsAg among medico-legal autopsy cases was 23.2% [7](Li et al-2002). This figure was 9 times higher than that of present study. In another mortuary based study in south Africa, the overall sero-prevalence of HBsAg was 8% rising to 9% in sexually active reproductive individuals [8] (DU plessis-1999). This Sero-Prevalence was three times more than that of present study. As per a study in Tehran the Sero-positivity for HBsAg was 4.6% among medico-legal autopsy cases [9](Hossein-2002), this result was approximately double to that of present study. Above studies showing higher percentage of sero prevalence, because major part of the study subjects belong to high risk behaviour group. According to a study in India ,the sero-prevalence of HBsAg among medico legal autopsy cases was 0.17% , very low value in this study, because researchers taken into consideration only established cases of sero positivity before death, probably they might have not conducted any postmortem serological test on dead bodies [10] (B.R.Sharma 2004). Indian average HBsAg sero positive rate is 3.5% (2-7%) with increasing rates in South India [11], the present study result was slightly lesser than the average Indian Sero-prevalence of HBsAg. hence there is a constant risk of exposure to Hepatitis B infection from autopsy cases.

CONCLUSION

After careful analysis, the following conclusions were drawn, overall Sero-prevalence of Hepatitis-'B' infection among medico-legal cases was 2.59percent. There is a strong male preponderance over female in sero-positive cases of HBsAg . The common age group affected was above 30 years. Sero-Prevalence rate of HBsAg was more among the high risk occupational groups(2 positive cases out of 20) . Most of the Sero-Positive cases from low income and low literacy groups. By this study it is concluded that the mortuary staff are always at constant risk of exposure to hepatitis-'B' infection during their job work.

Recommendations

Further study with larger sample size is required to confirm the present study results. Hepatitis B is vaccine preventable disease, but there is no vaccine available against hepatitis 'C' infection. Hence further studies to assess the infectiousness of the dead bodies for HIV, HBV and also hepatitis 'C' virus infections are recommended. Public and morticians who are handling dead bodies should know their responsibilities in preventing the transmission of these infections by adopting safe sex, safe working and hospital practices.

Table 1: Back ground details of all the study subjects (known and unknown cases)

variable	Number of cases (out of 193)	Percentage
Gender		
Male	145	75%
Female	48	25%
Identity		
Known	160	83%
Unknown	33	17%
Age		
< 30 years	105	54.4%
> 30 years	88	45.6%
Manner of death		
Accident	127	65.8%
Suicide	43	22.3%
Homicide	18	9.3%
Others	5	2.6%
Postmortem interval		
6-12 hours	22	11.4%
12 – 24 hours	115	59.6%
24- 48 hours	51	26.4%
>48 hours	5	2.6%
Place of death		
Spot death	129	66.8%
Hospital death	64	33.2%
Postmortem changes		
Fresh	161	83.4%
Early putrefaction changes	32	16.6%
Body preservation in cold storage		
Present	161	83.4%
Absent	32	16.6%

Table no.2. Socio-demographic profile of the known cases (out of 160)

Variable	Number of cases (out of 160)	Percentage
Gender		
Male	112	70%
Female	48	30%
Marital status		
Married	117	73.13%
Unmarried	43	26.7%
Occupation		
High Risk Group*	20	12.5%
Low Risk Group**	140	87.5%
Income		
<6000/month	46	28.7%
6000 – 12000/	103	64.4%
>12000/ month	11	6.9%

Educational status		
illiterate	40	25%
Primary school	63	39.3%
Secondary school	46	28.8%
Graduate and above	11	6.9%
Caste_		
B.C	42	26.3%
S.C	26	16.2%
S.T	8	5.0%
Other caste	84	52.5%
Religion		
Hindu	151	94.4%
Muslim	8	5.0%
Christian	1	0.6%
Place of residence		
Rural	92	57.5%
Urban	32	42.5%

* truckers, migrant labors, commercial sex workers, vagabonds, intravenous drug users.

**farmers, business man ,students, housewives etc.,

Table 3: Sero – prevalence of HBsAg in the study subjects

Sero –positive results of HBs Ag	Number of cases	percentage	95%C.I
Positive	5	2.59%	0.35-4.83
Negative	188	97.41%	
Total	193	100%	

Table 4: Association between sero- prevalence of HBsAg and certain suspected risk factors

Variable	Classification of variable (number)	Number of HBsAg positive cases (out of 5)	Odds ratio (95%C.I)	Chi-square value	`P' value
Age	> 30 years (88) ≤ 30 years (105)	4 1	4.94 (0.54 -45.15)	1.232	0.267
Gender	Male (145) Female (48)	5 0	Not applicable	0.608	0.436
Place of death	Hospital death (64) Spot death (129)	2 3	1.35(0.22-8.32)	0.023	0.879
Identity	Unknown (33) Known (160)	1 4	1.22 (0.13-11.27)	0.183	0.669

Association between HBsAg and certain suspected risk factors were calculated and it was seen that HBsAg was 4.94 times more common among subjects who belonged to the more than 30 years age group when compared to the less than or equal to 30 years age group however the P value was not statistically significant (0.267). HbsAg was more common among males, people who had died in hospitals and among subjects with unknown identity; however none of the associations were statistically significant. Details can be seen in Table 4

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