Viral Hemorrhagic Fever in Pakistan: Awareness among Health Care Personnel

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Abstract

Objective: To assess the level of knowledge regarding viral hemorrhagic fever (VHF) among healthcare personnel at two largest tertiary care hospitals in Karachi, Pakistan.
Methods:A cross sectional convenience survey was conducted in February 2001 among doctors, nurses, laboratory technicians and janitors/orderlies of Jinnah Postgraduate Medical Centre and Civil Hospital, Karachi. The questionnaire included demographic information with their designation and knowledge level regarding VHF management, spread and prevention. Frequencies of the answers to each question were calculated for all questions and scores were assigned. The frequencies were also calculated on the basis of the designation of the respondent so that each group could be examined separately.
Results:A total of 187 healthcare personnel (121 doctors, 31 nurses, 19 laboratory technicians and 16 janitors/orderlies) were interviewed. Forty three percent (81) respondents were males and 57% (106) were females.
By designation 90% doctors, 71% nurses, 32% laboratory technicians and 6% janitors knew about VHF. Only 57% doctors (69) knew the common signs and symptoms of VHF. Isolation for affected patients was suggested by 65% nurses and 6% janitors. Knowledge regarding burial procedure of dead patients was low in all groups.
Conclusion: Differences in knowledge of different groups is obvious but it is essential to raise the knowledge regarding VHF at all levels including the housekeeping staff. There is also a need for continuing medical education (CME) for all health care personnel for the emerging health problems in Pakistan (JPMA 52: 214, 2002).

Introduction

Viral Hemorrhagic Fever (VHF) is an acute illness that is caused by geographically restricted viruses more commonly found in Africa, Central Asia and South America[1]. The overall case fatality rate ranges from 2% to 88%1. Of the various types of organisms that cause VHF Lassa, Ebola and Marburg are restricted to Sub-Saharan Africa whereas Crimean-Congo Hemorrhagic Virus is widely distributed in Africa, Mediterranean, Middle East, Central Asia and China[2,3]. VHFs can cause a condition that is characterized by high grade fever, headache, myalgia, malaise, hemorrhage, and in severe cases, shock. Dengue and Crimean-Congo hemorrhagic fever (CCHF) are endemic in Pakistan. Although Dengue Fever (DF) and Dengue Hemorrhagic Fever (DFIF) occur in tropical and subtropical areas of Asia, Pakistan was noticeably absent from the WHO list of countries that have reported DH or DHF until 1994 when the first serologically and virologically confirmed Dengue outbreak was reported in and intense mosquito breeding[4]. A survey of mosquitoes in Karachi in 1983 showed that Aedes aegypti, the main Dengue virus vector, was abundant in the summer season from July to September[5].

CCHF occurs sporadically in regions of Africa, Asia and Eastern Europe[6] with case fatality rates ranging from 13% to 90%[7-9]. The virus has been isolated from ticks in Pakistan[10]. The disease has also caused nosocomial outbreaks in Pakistan. In the majority of cases the index patient presents with hemorrhagic manifestations and dies from related complications. Exposed health care personnel are at risk to develop the disease and its complications[11].

The risk of person-to-person transmission is highest during the latter stages of illness; VHF infection has not been reported in persons whose contact with an infected patient occurred only during the incubation period i.e., before the patient became febrile[12]. In Africa, transmission of VHF has been associated with reuse of unsterile needles and syringes and nosocomial spread by provision of patient care without appropriate barrier precautions to prevent exposure to virus-containing blood and other body fluids (vomitus, urine and stool). Epidemiological studies of VHF in humans indicate that infection is not readily transmitted from person-to-person through the airborne route[1,13].

In October-November 2000 there was an outbreak of VHF reported at The Aga Khan University Hospital (AKUH). The resulting panic stemmed from a lack of information about VHF among healthcare personnel and other staff. In order to prevent the further spread of VHF this study was conducted to assess the level of knowledge regarding VHFs among healthcare personnel of tertiary care hospitals in Karachi.

Nosocomial spread of VHF has been reported as a major cause of epidemics in Pakistan[3,14]. However, no study to date highlights the level of awareness among health care personnel or emphasizes the need for their education regarding the disease and precautions necessary to prevent its spread.

Methodology

Ideally our study should have taken place among all healthcare personnel at all the tertiary care hospitals in Karachi to give us an exact idea of the level of awareness regarding VHF and the necessary precautions. However, due to limitation of time and resources we conducted a cross-sectional survey in February 2001 with a convenient sample size of 187 at Jinnah Postgraduate Medical Center (JPMC) and Civil Hospital Karachi (CHK), two major public tertiary care centers in Karachi, which carry the highest patient load in the province of Sindh. The Infection Control department at AKUH conducted an informative seminar about VHFs and how to prevent its further spread. For this reason AKUH was not included in the study. However the questionnaire was designed and pilot tested at AKUH. Changes were made before its final administration. Our target population consisted of health care personnel, which included doctors, nurses, laboratory technicians and housekeeping staff such as janitors! orderlies. We also included all those potential health care personnel who are involved in handling of patients.

We used a questionnaire formulated after a thorough literature search, which included the demographic data of the respondents along with knowledge regarding viral hemorrhagic fever, its management and measures taken to prevent its spread.

Written consent was obtained from the Medical Superintendent of the concerned hospitals. Permission was granted to interview health care personnel at the Casualty Department, medicine wards and the laboratories as well as the Nursing Center of one hospital. Following this, individual verbal consent was obtained from all participants prior to filling-in the questionnaires. Questionnaires not completely filled were disregarded. For the purpose of maintaining respondents' privacy no names were recorded; only designations were taken.

Analysis

Frequencies of the answers to each question were calculated for all the questions in the questionnaire. The frequencies were also calculated on the basis of the designation of the respondent (doctors, nurses, laboratory technicians and janitors/orderlies) so that each group could be examined separately.

Respondents who claimed prior knowledge of VHF answered two sets of questions. The first set was divided into two categories: questions pertaining to the disease itself and questions pertaining to the management and prevention of the disease. We devised a scoring system in order to assess the respondents' level of knowledge as it pertained to these two categories. One mark was assigned to each correct answer for every question (some questions had more than one correct answer.) One mark was subtracted for every incorrect answer with a provision that 0 was the minimum score that any subject could be assigned for a given question. No marks were added or subtracted for skipped questions or options left blank. The score, by designation, for the questions in each category were added. The sum was divided by the number of respondents of the concerned designation to yield an average score, by designation, for each question. The average scores in each category were added to yield an average score for doctors, nurses, laboratory technicians or janitors/orderlies. These scores reflect the respondents' level of knowledge in each category by designation.

The second set of questions comprised of questions answered by respondents who knew what viral hemorrhagic fever was. It allowed subjects to assess their own level of competence in handling patients with viral hemorrhagic fever.

Respondents who did not know what viral hemorrhagic fever was then answered a third set of questions comprising of three questions. These questions were designed to examine the level of knowledge concerning general infection prevention measures, the desire to learn more about viral hemorrhagic fever and the knowledge as to where useful information could be sought.

Results

The study group interviewed 187 health personnel 121 doctors, 31 nurses, 19 laboratory technicians and 16 janitors/orderlies. Women represented approximately 57% of the respondents and the remaining 43% were men.

Participants were asked whether they knew about VHF or not. If the response was positive, the subjects were further asked a set of 17 questions regarding the disease, its management and the necessary precautions to prevent its spread. If the response was negative, they were asked a 3-question sub-set of those 17. Only 74% (138) of the total respondent claimed to know what viral hemorrhagic fever was. By designation, 90.1% of doctors, 71% of nurses, 31.6% of laboratory technicians and 6.2% of janitors said they knew what viral hemorrhagic fever was.

Table 1. Scoring Results.

	Doctors	Nurses	Laboratory Technicians	Janitors/Orderlies	Total Sample	Total Possible Score
Disease	4.48	2.95	1.57	0.19	2.30	16
Precautions/ Management	2.51	2.00	0.78	0.24	1.38	19
Total Score	6.99	4.95	2.35	0.43	3.68	35

Table 1 indicates the scores obtained by different participants regarding knowledge of VHF, management and precautions to reduce nosocomial spread.

Eighty-one percent of doctors believe that afflicted patients should be isolated while 64.5% of nurses, 31.6% of laboratory technicians and 6.3% of janitors agreed. Of the health care personnel interviewed 11.6% of doctors, 29.0% of nurses, 68.4% of laboratory technicians and 93.7% of janitors did not know whether VHF patients should be isolated or not.

Once an afflicted patient has died 37.2% of the doctors, 32.3% of the nurses and 2 1.1% of the laboratory technicians surveyed suggested that the body be buried normally without any special precautions. Fourteen percent of doctors suggested cremation, 11.6% suggested burial in a polyethylene bag and 14.0% suggested burial in a sealed casket. Amongst nurses and technicians 0% and 5.3% respectively suggested cremation, 16.1% and 5.3%.

The health care personnels' awareness level with regards to common signs and symptoms of VHF offer an insight into their knowledge of the disease itself. Hemorrhage of any sort was reported as a feature by 57% of doctors, 45.2% of nurses, no laboratory technicians and 5.3% ofjanitors. Fever was reported as a feature by 59.5% of doctors, 45.2% of nurses, 6.3% of laboratory technicians and 0.5% ofjanitors interviewed. Approximately 4.1% of doctors and 6.5% of nurses responded that headache was a feature of VHF. Of the total sample population 12.4% (22) of the doctors, 9.7% (17) of the nurses and 21. 1%(40) otthc laboratory technicians selected 'Don't know.'

Respondents who claimed prior knowledge regarding VHF were asked what precautions were necessary for health care personnel while dealing patients with viral hemorrhagic fever cr, the information in Table 2 was obtained

Table 2. Knowledge level about precautions required while dealing with VHF patients.

	Doctors (%)	Nurses (%)	Laboratory Technicians (%)	Janitors/ Orderlies (%)
Gloves	52.9	54.8	15.8	0.0
Face Mask	35.5	35.5	5.3	0.0
Gown	14.0	22.6	0.0	0.0
Goggles	1.7	0.0	0.0	0.0

respectively suggested burial in a polyethylene bag and 9.7% and 5.3% suggested burial in a

sealed casket. Twenty three percent doctors, 41.9% of nurses, 68.4% of laboratory technicians and 93.7% of janitors chose 'Don't know.'
Of those respondents who claimed some prior knowledge of VHF 10.7% of doctors, 9.7% of nurses and 5.3% of laboratory technicians felt that their level of knowledge was sufficient for them to safely and effectively handle an afflicted patient. Amongst the health care personnel interviewed 89.7% (166) felt that they wantei to know more about VHF.
The respondents were also asked to identify reliable sources from which they could obtain further information on VHF. Thirty-four percent (64) of respondents suggested that they would seek further information in the newspaper, 33% would look for information on the internet. 32% would look to television for information, 28% would seek advice from senior personnel and 25% would look for information in text books.

Discussion

The majority of the healthcare staff interviewed, 90% of doctors and 70% of nurses, claimed some prior knowledge regarding viral hemorrhagic fever. However, only 12% of the respondents felt that their knowledge was adequate to effectively handle an infected patient. Fewer than 60% of doctors knew the most common symptoms; similarly, fewer than 50% of doctors thought it was necessary to use at least latex gloves when handling infected patients or blood products. The overwhelming response from the interviewees was that they wanted to know more about the disease and its control measures.
There seemed to be some variation in the level of information among different types of hospital personnel i.e., janitors knew least and doctors were most informed because of obvious reasons but janitors are at equal risk of acquiring nosocomial infection and should be given education and awareness about this illness. Janitors do not need to know the signs and symptoms but they need to know about the mode of spread of disease and precautionary measures.
The results of this study indicate the need to increase knowledge level among healthcare personnel regarding VHF at all levels including the housekeeping staff and provision of better management facilities including isolation rooms and availability of at least some protective gears for health workers.
An education campaign consisting of seminars, pamphlets and workshops would be useful in disseminating information and could form one arm of this approach. As indicated by our respondents the newspaper, television and the internet are the sources that healthcare personnel would most readily consult; therefore, some resources for education should be allocated accordingly.
Our study has some limitations. First, the hospital sample was small and access to the staff was limited. However, the hospitals sampled were the two largest hospitals in the city and although our access to personnel was limited; it did include the most relevant departments: medicine, casualty and the hematology and biochemistry laboratories. Second limitation is that the study was conducted in Karachi rather than Balochistan, which is an area of much higher prevalence. An outbreak in a large urban center with a high population-density such as Karachi, however, could quickly become an epidemic: onditions in which inadequate knowledge amongst healthcare workers could be dangerous. Finally the study was conducted shortly after an outbreak of viral hemorrhagic fever - an event that may changé healthcare workers' baseline level of knowledge.
Patients infected with VHF will continue to filter from Balochistan to Karachi and despite the

fact that the city is not located in an endemic area its healthcare personnel will continue to see cases. The process of education of healthcare personnel regarding VHF must accelerate in order to avoid any further nosocomial spread and unnecessary deaths.
This study could be an indicator of the level of knowledge of healthcare workers regarding the mode of spread of diseases and therefore efforts to educate about the common preventive measures may decrease the burden of other diseases which are more prevalent in these hospitals.

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