

Autopsy is the Potential Occupational Hazards in the Developing Country: A Retrospective Study

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ABSTRACT

Background : Every occupation including health sectors there are some occupational risks and hazards but in autopsy room at mortuary they are in high risk than other professionals. The risk of working in a mortuary is enormous, cadavers pose the risk of infection with organisms like cholera, plague, typhoid, tuberculosis and anthrax etc. Autopsy surgeons or Forensic pathologists and the personnel who assist in conducting the autopsy are liable to encounter a number of accidents and potential biohazards because of continuous risk of acquiring various kinds of viral, bacterial and fungal infections from contagious body fluids, soft tissues of the dead and skin injuries. The present paper highlights the hazards and risks, presents in the autopsy room. **Materials and methods :** This retrospective study was carried out over one year in the Forensic Medicine Department of Sylhet M.A.G Osmani Medical College in the year (January-December) 2018 . Total 1145 autopsy were done. **Results :** About 20% (Both male and female) of the total 1145 autopsy cases were found hazardous. Of which highest risk are contributed by infective cases (10.48%) and next risk factors are coming from poisoning cases (9.5%). The other existing hazards were studied through a open ended questionnaire given to the autopsy workers regarding physical injury, exposure to chemical, infections and adverse psychological effects secondary to stressful working environment of the autopsy room and presence of other occupational hazards if any. **conclusion :** Proper assessment, personal protective equipment, appropriate autopsy procedures and infrastructural modifications can significantly reduce the risks of occupational health hazards in the autopsy rooms.

Key words : Autopsy room; Hazards; Physical; Psychological.

Introduction

The term 'hazard' and 'risk' are often used interchangeably, which is not accurate. For example, health hazards due to use of scalpels, saws and needles facilitates acquiring hepatitis B, HIV and other infections within host. Staff of the medico legal laboratory have a great risk of infection inherent in their work, which frequent absent of group of workers from their working place. Health hazard and risk among health workers, is a well known occupational problem, but still it continues to be one of the biggest challenges faced till

date. Worthwhile to mention is that, these hazards are directly proportional to the type of work done by the health workers, and thus the autopsy centre becomes one of the biggest health hazards place among the health departments¹. It has also been shown by studies that the post-mortem examination room is one of the most potential sources for infections among all the areas of medical field. The persons at risk include the autopsy surgeons, the pathologist, mortuary technicians, potters, sweepers and others directly or indirectly involved in the postmortem examination. The major risk is infections, which comes from sources of viral origin such as HIV, hepatitis B, hepatitis C, hepatitis D, herpes, human T-cell lymphotropic virus type I etc., and bacterial sources as tuberculosis, staphylococcus, streptococcus, salmonella etc²⁻⁸. Moreover, most of the time the dead bodies coming for autopsy have no past medical records or if at all present, contains inadequate informations. Special informations worth mentioning is information of drug abuse, prostitution, occupations such as truck drivers, army men etc, as individuals with such history are at high risk of acquiring infections which have long latent period of clinical manifestation of the disease, but are potential source of infections, such as HIV, tuberculosis etc³. So risk from these bodies is also unknown and hidden. Also most

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Submitted on : 17th October 2019
Accepted on : 23th November 2019

of these dead bodies are cases of hospital admission, possible hospital acquired infections can be present, which are more virulent and resistant to treatment. The medium through which these infective risks can be exposed to workers includes mainly blood and other Potential Infective Materials (OPIM) includes, pleural fluid, peritoneal fluid, CSF, semen, vaginal secretion, pericardial fluid, other body fluids etc)^{3,6,8}.

Routes of Infection

Infections in the autopsy room may be acquired by any one of the following routes:

- i) Wound resulting from needle stick injury (e.g sharp objects) contaminated with blood or body fluids
- ii) Splashing of blood or other body fluids onto an open wound or area of dermatitis
- iii) Contact of blood or other body fluids with mucous membranes of eyes, nose or mouth
- iv) Inhalation and ingestion of aerosolized particles⁹.

Exposure to poisons from poisoning death cases is another important hazard, as death due to poisons is a common occurrence in Bangladesh. Biohazards to health as a result of exposure to decomposed bodies includes irrespirable gases as- Ammonia, Cadaverine, Putrescine, Carbon Dioxide, Hydrogen Sulfide, Methane, and Hydrogen as well as bacteria involved in decomposition^{3,7}. The other hazards includes physical injuries from needle prick, cut from scalpels, cutting saw, chisel and hammer and also cuts from broken sharp bonny parts of the victim while conducting autopsy, chemical hazards from formalin, absolute alcohol, phenol etc used as preservatives and disinfectants and adverse psychological effects as depression, mood swings, addiction etc secondary to stressful working environment in autopsy room⁷. Other possible risk of concern for autopsy workers includes- rabies, prion disease, plague, brucellosis, salmonella etc^{3,10}.

Material and methods

It is a retrospective study. Total 1145 cases of unnatural deaths and/or death under suspicious circumstances reported to Government by Sylhet M.A.G Osmani Medical College Hospital Sylhet, for medico legal autopsy during the period January-December 2018 and a questionnaire was designed to assess the hazards and risks faced by the autopsy workers. Data on the relevant factors was collected from various sources viz case papers or hospital records, the inquest papers and the information furnished by the relatives. The presence of hazards and risk from the dead bodies were noted based on presence of infective (As presence of pus, abscess, fibrosis, and adhere of lung to chest wall, features of gangrene, putried bodies) and poisons in the case of poisoning. These data were correlated with gender, type case, and presence of health problems. The samples from various organs viz Lungs, Liver, Spleen and Kidneys were subjected to histopathological examination

and a portion of spleen was subjected to microbiological examination to ascertain the organism responsible for septicemia. Viscera such as Liver, Kidneys, Stomach and their contents were properly preserved and forwarded to the Forensic Science Laboratory Mohakali, Dhaka for chemical analysis to determine the allegedly consumed poison.

Results

Among 1145 cases of autopsy 229 (20%) cases (132 male and 97 female) were noted to be source of risk and hazard to the health of the autopsy workers and of which infected samples were the commonest 120 cases (10.48%) followed by poisoning 109 cases (9.5%) as shown in Figure 1 and 2.

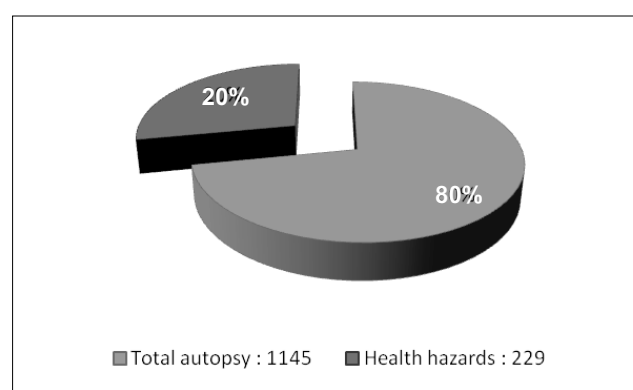


Figure 1 : Total health hazards autopsy

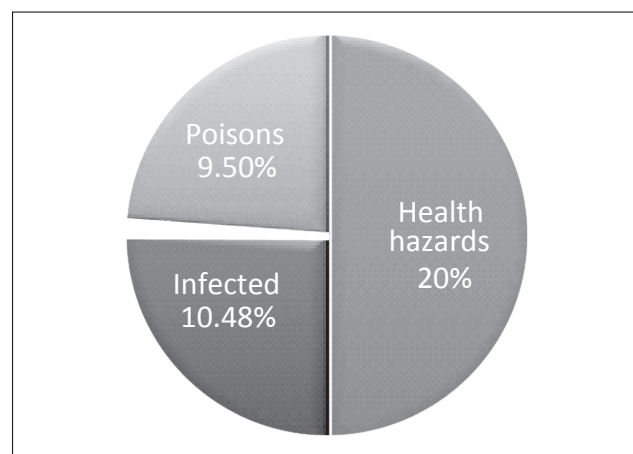


Figure 2 : Hazards and risk of autopsies

Of the infected source 120 cases, the most common case was pneumonia with septicemia 62 cases (51.6%) followed by trauma with sepsis 27 cases (22.5%). Klebsiella was the most common organism responsible for causing septicemia followed by Pseudomonas, Staphylococcus and Salmonella. Custodial deaths are always found various types infective. Other infective cases included, 7 known type tuberculosis, 6 cases peritonitis, 2 cases viral hepatitis B and one single case of gunshot in putrefied body, as shown in table I. The remaining 15 cases were decomposed bodies. The others risks and hazards were shown in table II.

Table I : The types and numbers of infected autopsy cases

Infected cases	Number of case
Pneumonia with septicemia	62
Trauma with sepsis	27
Tuberculosis	7
Peritonitis	6
Hepatitis B	2
Gunshot wound in putrefied body	1
Decomposed body	15
Total	120

Table II : Overall observation of hazards and risks

Hazards	Risk	Observations
Infections	Septicemia, pneumonic lung,	tuberculosis, Hepatitis B and others. 120 cases of autopsied bodies plus history of tuberculosis and treatment in two autopsy workers.
Poisoning	Poisons from Poisoning cases	109 cases
Biohazards	Irrespirable gases and bacteria's from Decomposed bodies	15 putrefied cases
Physical	Cut, needle pricks backaches, muscle pain and other injuries to body.	7 case of needle prick injury, one case of cut injury, and presence of body pain a common feature.
Chemical	Burn, irritations, sore eye, lacrimation, pain etc.	Frequently present.
Psycholo-gical	Stress, depression, mood swing, absenteeism etc.	Common occurrence.
Addictions	Smoking, chewing tobaccos, intake of alcohol	Present as habitual activity, especially among potters, dissectors and sweepers.

Discussion

From the above observations, it is clear that autopsy room is a high risk room for medical workers. The degree of risk faced among the workers involved in autopsy work differs, the highest infective risk is faced by those who are directly involved with the dissection of the body which is followed by those involved in examination and documentation of the observed information into reports (The doctors and the technical assistants) the others exposed to risks includes the potters involve in shifting the bodies, the accompanied police personnel and the sweepers⁵. In the Department of Forensic Medicine, Sylhet Osamani Medical College about 1200 to 1300 autopsies are conducted every year and on an average daily about 2 to 3 autopsies are conducted. The working team for an autopsy in our hospital consists of two doctors on duty having the facility for expert assistance when needed, one technical assistant, one worker helping for dissecting the body, four potters for shifting the body, one sweeper and two police constables on duty. Personal

protections as gloves, apron, rubber boots etc are provided to this team but sad to say of the inadequacy of the material provided, mainly due to inadequate funding to the department. Though rapid advancement and modernization is taking place in all the field of medical sciences in Bangladesh during this present century, the autopsy center remains an exception. The basic concept of health "womb to tomb" clearly indicates that in a health care set up the duty of a doctor is not only to care the living but also the patients who die but practically the later is less adopted¹¹. All these drawbacks and inadequacy of facilities are common problem all over Bangladesh and results in inadequate output of quality of work, thus forensic field in Bangladesh is gradually losing their integrity, which invites negative impacts on Forensic investigation. The eye opening catch from this study for the forensic medical people is how to create a safe and healthy working environment in the autopsy centers. To do so, in brief, safe and healthy practice should be adopted starting from the dead bodies, as washing the bodies, plugging all orifices and protecting the rest of the body with clothing's etc, soon after death^{2,3}. Regarding the autopsy centers, it should be adequately staffed, have adequate space with good ventilation, lighting, exhaust and sterilization facility along with good practice of cleaning and disinfecting the autopsy center especially the autopsy room. The practice of strict universal precautions of using gloves, face mask, goggles, protective aprons and head cap should be followed. In few cases as HIV, an extra care like using double glove, HIV autopsy kit, generously using disinfectants as bleaching powder in contaminated areas with adequate sterilization of instruments and finally careful and safe disposal of these bodies, preferably incinerating them^{2,3,5,7,11}. All these above mentioned practices should be strictly followed to ensure " Safe Life" as right and responsibility as well.

Conclusion

High prevalence of various infectious diseases in the population poses a great risk of occupational hazards to the forensic pathologist/autopsy surgeon and other staff involved in the postmortem examination. Proper assessment, personal protective equipment, appropriate autopsy procedures and infrastructural modifications can significantly reduce the risks of occupational health hazards in the autopsy rooms. Accordingly periodic training and education in safe postmortem procedures, prevention of sharp's injuries and other kinds of exposures should be reported to the forensic personnel regularly. Safe autopsy practice will be a great help and the goal of such practice is to protect the concerned workers and environment from the potential risks associated with occupation.

Disclosure

All the authors declared no competing interests.

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