Original Article

PROFILE OF NEGATIVE AUTOPSY CASES AT PUNJAB MEDICAL COLLEGE, FAISALABAD

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ABSTRACT:

BACKGROUND: One of the most frustrating challenges faced by the medico legal doctors / forensic pathologists is the inability to determine the cause of death in cases of sudden / unexpected deaths of medicolegal nature even after detailed autopsy as well as Histopathalogical / Toxicological analysis.

OBJECTIVE: The study was aimed to find out the percentage of negative autopsy against the total cases of medicolegal autopsies conducted during the study period.

MATERIAL AND METHODS: The study was carried out in the Department of Forensic Medicine & Toxicology, Punjab Medical College Faisalabad and was based upon five years autopsy data from 1st January 2006 to 31st December 2010. All the medicolegal autopsies conducted by the demonstrators of Forensic Medicine Department were included in the study whereas; the cases of alleged custodial deaths / police encounters and autopsies conducted by the District Standing Medical Board (DSMB) were excluded. The cases where gross examination at initial autopsy, histopathalogical examination & toxicological analysis failed to detect the cause of death were labeled as negative autopsies.

STUDY DESIGN: Retrospective Study.

SETTING & DURATION: The study was conducted in Forensic Medicine Department of Punjab Medical College Faisalabad; for a period of five years from 1st January, 2006 to 31st December, 2010.

RESULTS: Out of the total 1681 autopsies, 1298 (77.22%) were males and 383 (22.78%) were females. After conducting detailed autopsy, histopathologic examination as well as toxicological analysis; 155 (9.22%) cases were found to be negative. The highest percentage of negative autopsy (12.30%) was found in year 2009 while average percentage of negative autopsy was 9.22%. Among the total 155 cases, the percentage of negative autopsy in males 119 (76.77%) was higher than females 36 (23.23%). The age of deceased ranged from 8 – 73 years. Majority i.e. 51 (32.90%) were in the age range of 20-29 years, followed by 38 (24.51%) in the age range of 30-39 years. Twenty nine (18.71%) cases were in the age range of 40-59 years and 21 (13.54%) cases belonged to the age group of 0-19 years. Among these negative autopsies, 92 (59.35%) belonged to the urban community and 63 (40.65%) were inhabitants of rural areas of Faisalabad. Majority of negative autopsies were of young adults from urban areas.

CONCLUSION: The cases of negative autopsy are higher at Faisalabad as compared to international perspectives. Negative autopsies need further studies to look for possible reasons

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like inadequate training of doctors or limited resources like availability of histopathalogical labs, analytical services and radiological facilities. Postmortem units and toxicology laboratories must be equipped according to the modern standards in the light of recent advances in the field of medicolegal death investigation.

KEY WORDS: Medicolegal Autopsy, Postmortem Examination, Negative Autopsy.

INTRODUCTION:

Medicolegal autopsy is performed to establish the cause of death and to decide whether it is due to natural or unnatural causes. This important maneuver helps to reveal important data for the public prosecutors, necessary information to the deceased's immediate family and a valuable source for epidemiological information[1-2]. An autopsy must be done perfectly, meticulously opening all the body cavities and examining each organ, because evidence contributory to the cause of death may be found in more than one organ. Partial autopsies have no place in the practice of Forensic Medicine because complete autopsy is necessary to substantiate the truth in the evidence of eyewitnesses. Hence, poorly performed autopsy is worse than no autopsy at all, as it is more likely to lead to a miscarriage of justice [3].

Many cases are being reported before the Forensic Experts, in which it becomes difficult to find out the precise cause of death. One of the most frustrating challenges faced by the doctors performing post mortem examination is the inability to determine the cause of death in those individuals previously thought healthy. The sudden death of a young person is a devastating event leaving the family at a loss as to why an otherwise healthy young person has died. Not only is this a tragic event for those involved, but also presents a challenge to the clinician involved in management of the cases as well as the forensic pathologist directly involved for investigation of sudden death cases [4].

Although autopsy is considered superior to the clinical examination in determining the cause of death, but 5–10% cases are still unexplained after a gross autopsy, and 2–5% remain unclear (negative) after completion of the gross and histological examination and other laboratory tests [5-6].

The important steps involved in the investigation of a sudden death may include obtaining proper history and information about scene of crime, performing a detailed scrutiny of the dead body i.e. gross as well as microscopic autopsy, performing appropriate laboratory tests, and making the opinion [6-7]. When gross and microscopic examination, toxicological analysis and laboratory investigations fail to reveal a cause of death, the autopsy is considered to be negative [8].

The reasons of negative autopsy may be inadequate history of the case, lapses in external & internal examination, insufficient Laboratory / toxicological analysis and lack of doctors training. The sudden Death from vagal inhibition, status epilepticus, hypersensitivity reaction etc. may not show any anatomical findings. Even if death results from laryngeal spasm in drowning no anatomical findings may be present. Moreover, the coronary artery disease[9], Myocardial infarction[10], congestive cardiac failure[11], heart failure due to pheochromocytoma[12], mesenteric vein thrombosis[13], epilepsy[14], sports related activities[15], congenital anomaly like situs-inversus[16], spontaneous subdural[17] and aneurismal subarachnoid hemorrhage[18] may also contribute to sudden / unexpected deaths in apparently healthy individuals without showing any specific finding at autopsy.

Apart from these causes in grossly decomposed bodies; it is some time quite impossible to find out the cause of death and the concerned doctor after detailed scrutiny of the dead body & in view of the reports from Forensic Science Laboratories, frame final opinion mentioning exact cause of death undetermined [8]. It is not possible to detect certain poison as they are very quickly metabolized in the body, for example, barbiturate and alcohol. Negative autopsy rate (23.44%) documented by Chughtai BR et al [19] in Pakistan, (6.93%) by Rehman M et al [20] & (5.4%) by Biswas [21] in Bangladesh, (20.3%) in Turkey reported by Ince H et al [22] and (14.4%) in Tokyo Japan by Sakai et al [23] is

still higher than stated in the standard text books. Whereas; (1.45%) negative autopsy rate was found by khan MY et al [24] in Peshawar.

In addition to the unnatural deaths, sudden cardiac death accounts for majority of fatalities in human which are not easily detected at the autopsy table although the death is highly suspected from cardiac causes which may lead to the perplexity in deciding the cause of death[25]. It is honourous duty to find out the exact cause of death as far as possible to reduce the numbers of negative autopsies[26] which becomes falsely high if reasonable exercise of professional knowledge / skills and proper measures are not taken before postmortem examination. However, with the advances in modern molecular biology techniques, with emphasis on the role of postmortem genetic testing may provide helpful information to investigate and certify the cause of death in medico legal practice and reducing the figure of negative autopsies [27].

Although few studies conducted in our country presented inadequate data & no study has so far been conducted in Faisalabad city focusing on the negative autopsy. The present study was aimed to find out the rate / percentage of negative autopsy in Forensic Medicine Department, Punjab Medical College, Faisalabad and its comparison with other studies and to make_useful suggestions in order to reduce the number of negative autopsies.

MATERIAL & METHODS:

This study was conducted at Forensic Medicine Department, Punjab Medical College Faisalabad for the period of five years from 1st January 2006 to 31st December 2010. Total 1681 cases of unnatural deaths brought for postmortem examination during the study period were included in the study. The cases of Police encounter / custodial deaths which were examined by the District Standing Medical Board were not included. The record such as autopsy findings, reports of toxicological analysis and histopathology available in the Department of Forensic Medicine was carefully examined. The data cleaned, entered in Performa, tabulated and analyzed. Results are shown in tables and charts.

RESULTS:

Out of the total 1681 Postmortem examinations conducted during the study period of five years, the majority 1298 (77.22%) were males as compared to 383 (22.78%) females, which is shown in Fig. 1. Whereas; Table-I shows the year wise predominance of males over the female victims.

Fig. 1: Gender distribution in total autopsies during five years
study period (n=1681)

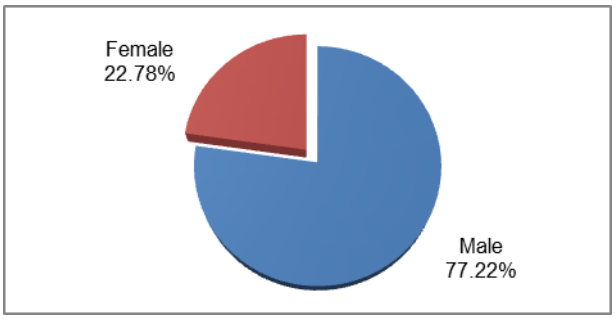
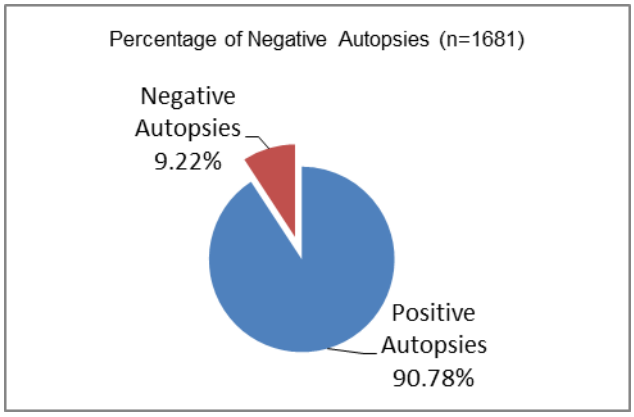


Table I: Year wise Gender distribution in total autopsies during
Five years study period (n=1681)

Year	Total autopsies	Male (%)	Female (%)
2006	312	241 (77.24%)	71 (22.76%)
2007	363	292 (80.44%)	71 (19.56%)
2008	306	227 (74.19%)	79 (25.81%)
2009	325	237 (72.92%)	88 (27.08%)
2010	375	301 (80.27%)	74 (19.73%)
TOTAL	**1681**	**1298 (77.22%)**	**383 (22.78%)**

After conducting the detailed external & internal examination of all 1681 cases alongwith further examination of viscera; the exact opinion about cause of death could not be established in 155 cases.

Fig. 2: Percentage of Negative autopsy during five years study period (n=1681)



The highest percentage of negative autopsy (12.30%) was found in year 2009 while average percentage of autopsy was 9.22%. Detail is shown in Table-II below.

Among the total 155 cases, the percentage of negative autopsy in males 119 (76.77%) is higher than females 36 (23.23%). This detail is shown in the Table – III below.

Table II: Year wise percentage of negative autopsy.

Year	Total No. of Post-mortem Examination	Total No. of Negative Autopsies	Percentage
2006	312	**22**	**7.05%**
2007	363	**31**	**8.53%**
2008	306	**36**	**11.76%**
2009	325	**40**	**12.30%**
2010	375	**26**	**6.93%**
TOTAL	**1681**	**155**	**9.22%**

Table III: Gender distribution in yearly negative autopsy (n=155)

Year	Cases of Negative Autopsies	Male (%)	Female (%)
2006	22	18 (81.82%)	4 (18.18%)
2007	31	24 (77.42%)	7 (22.58%)
2008	36	27 (75%)	9 (25%)
2009	40	30 (75%)	10 (25%)
2010	26	20 (76.92%)	6 (23.08%)
TOTAL	**155**	**119 (76.77%)**	**36 (23.23%)**

Among the total 155 cases, the minimum age was 8 years, while maximum age of the victim labeled as negative autopsy was 73 years. The year wise distribution of age among victims of negative autopsies is given in Table-IV.

The cases for medicolegal autopsies were brought to the mortuary of Punjab Medical College, Faisalabad from the urban areas as well as from surroundings rural areas of the city of Faisalabad. Out of the total 155 cases of negative autopsies; 92 (59.35%) were residents of urban areas and 63 (40.65%) belonged to rural areas surrounding the city. Area wise distribution of negative autopsies is shown in Table-V.

Table IV: Age Groups among negative autopsies (n=155)

Age Groups (Years)	No. of Cases of Negative autopsy	Percentage
0 – 09	09	5.80 %
10 – 19	12	7.74 %
20 – 29	51	32.90 %
30 – 39	38	24.51 %
40 – 49	13	8.38 %
50 – 59	16	10.36 %
60 – 69	13	8.38 %
70 & above	03	1.93 %
Total	**155**	**100 %**

Table V: Area wise distribution of negative autopsies (n=155)

Residential Status Rural / Urban	No. of Cases of Negative autopsy	Percentage
Urban	92	59.35 %
Rural	63	40.65 %
Total	**155**	**100 %**

DISCUSSION:

Partial or incomplete autopsies are commonly done by inexperienced doctors in peripheral hospitals which may lead to either faulty medicolegal opinions or end up without establishing exact cause of death and autopsies becomes obscure or Negative. Such type of substandard medicolegal work has no place either in Forensic practice or in criminal justice system. The trend of negative autopsy observed in the Department of Forensic Medicine, Punjab Medical College Faisalabad provides a snapshot of the unclassifiable

causes of deaths in 155 cases whereas; the study conducted by Rahman M et al [20] on a sample of 294 cases; the negative autopsy rate was 6.9% which is higher than that mentioned in standard text books [1,5,7,8] and in our study of 1681 cases over the period of five years, the negative autopsy rate 9.22% is also higher than that of Rahman M et al [20] and even higher than the percentage mentioned in the text books. The higher rate has also been documented by Yogender M et al [28] showing that cause of death could not be ascertained in 43% of the cases in final reports.

The increasing negative autopsy rates of various studies may be due to inadequate history, lack of arrangements of crime scene inspection, insufficient laboratory examination facilities, inadequate toxicological analysis service and above all by posting of fresh medical graduates without knowledge and training of medicolegal and autopsy work.

This study shows involvement of 77.22% males and 22.78% females which is almost similar to the study[20] conducted at Sir Salimullah Medical College involving male and female cases 72.63% and 27.37% respectively. This may be due to fact that males are more exposed to external environment than females.

CONCLUSION:

This study revealed that rate of negative autopsy at Punjab Medical College, Faisalabad is higher as compared to other studies. It may be expected that it will also be higher in the other topmost specialist centers of the world including our country Pakistan. To minimize the negative autopsy rate, the facilities for the postmortem examination should be improved. Some important guidelines & qualifications must be decided before a person is allowed to conduct postmortem examination.

RECOMMENDATIONS:

Sadly in our country, Forensic Medicine is not a preferred specialty and there are few specialized Forensic experts, the number even fewer in District and peripheral Hospitals.

Today, it is need of the time that quality of medicolegal work has to be improved because if one comes to know about root of the crime; then only it can be extracted. It is strongly recommended to start training programmes in form of workshops, seminars, conference and demonstrations to update the knowledge regarding various medicolegal aspects including postmortem examination as well as complication of different legal and illegal procedures. Government should decide some policies and for their implementation various Departments of Forensic medicine and Toxicology should be promoted, supported, facilitated and funded, so that such type of programmes could be implemented effectively and successfully. Meticulous autopsy and histopathalogical examination are need of the hour to minimize risk of autopsy being negative or obscure one. In addition to that; provision of latest investigative tools i.e. highly sophisticated analytical toxicology Lab; DNA fingerprinting, as well as postmortem radiology / imaging to be used in death investigation. It will help to reduce the number of negative autopsies in the long run and provide a definitive cause of death.

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