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Original Research Article

Profile of autopsy cases at tertiary care centre during pandemic

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ABSTRACT

Background: The profile of autopsy cases are necessary for taking necessary preventive measures in future. New civil hospital is a government tertiary care center in south Gujarat where annually approximately 2500 cases are brought for postmortem examination. Forensic medicine department conducts postmortem examination of expert level cases which are directly brought by investigating officer or referred from medical officers. Manner of death is very important to determine the nature of investigation.

Materials and Methods: The present study is a retrospective study. It includes all the total 131 expert autopsy cases conducted from 1 Jan 2020 to 31 Dec 2020. The emphasis was given on age, sex, cause of death, manner of death, mode of death, causative weapons. All these data were collected and analyzed.

Result: In the year 2020 total 131 expert cases out of them 89 male, 41 female and 1 unknown. Among them mode of death 26.72% asphyxia, 20.61% coma, 33.59% syncope, 9.16% pending and 9.92% undetermined, 48.09% homicidal, 14.5% suicidal, 6.11% accidental, 12.98% natural death cases, 9.92% negative autopsy, 15.26% cases the time since death was within 12 hours.

Conclusion: Present study evaluates the expert and referred autopsy cases conducted in a tertiary center, majority of the cases are of allegation and highly suspicious nature. So very few cases of road traffic accident and natural deaths or obvious suicidal death cases are brought to our department. So sometimes it becomes a challenging work to determine manner of the death, causative weapon and time since death.

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1. Introduction

The profile of autopsy cases are necessary for taking necessary preventive measures in future. New civil hospital is a government tertiary care center in south Gujarat where annually approximately 2500 cases are brought for postmortem examination. Forensic medicine department conducts postmortem examination of expert level cases which are directly brought by investigating officer or referred from medical officers. Manner of death is very important for the investigating officers to determine the

nature of investigation. In 2021, there were over 29 thousand murders reported across India. Furthermore, more than 55 thousand attempted murder cases were filled in the country that year.¹ Manners of death are natural, accidental, suicidal, homicidal or undetermined.² Sometimes it becomes difficult for medical officers to decide the manner of death and manner of the injury. So they refer such cases to forensic experts to help the investigation. In the year 2020, total 131 expert post mortems were done by forensic medicine department. Surat is amongst the fastest growing city in the world and so it is also having so many migrant population. People from all over India

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migrate to Surat for earning their bread and butter. Migrant population have their own issues regarding unemployment, disparity on income, extra marital relationships, substance abuse etc. If their struggle continues at workplace, it will lead to more and more stress. Some may not be able to cope up with the stress level and might end their lives or take someone else's life.

2. Materials and Methods

The present study is a retrospective study. It includes all the autopsy cases conducted by forensic medicine department, government medical college and new civil hospital Surat from 1 Jan 2020 to 31 Dec 2020. The emphasis was given on age, sex, cause of death, manner of death, mode of death, causative weapons. All these data were collected and analyzed.

3. Statistical Analysis: Observation and Results

Table 1 shows total 131 autopsies were carried out by forensic medicine department, amongst them 89 were male, 41 were female and sex of one case couldn't be determined.

Table 2 shows mode of the death was determined from autopsy findings. Maximum number of cases were attributed to syncope (44), followed by asphyxia (35) and coma (27). Mode of death was kept pending for 12 cases and in 13 cases mode of death could not be determined despite of all efforts.

Table 3 shows amongst all deaths maximum cases (63) were of homicide, followed by suicide (19), natural deaths (17), and accidental deaths (8). Manner of death was kept pending in 9 cases and it was undetermined in 15 cases despite all efforts.

Table 4 shows amongst all homicidal deaths (63), maximum cases were of male (46) and there were 17 cases were of female. In homicidal deaths, hard and blunt weapon was used in total 41 cases, followed by sharp and cutting in 16 cases, firearms in 4 cases and burns in 2 cases.

Table 5 shows among all homicidal deaths, maximum deaths were caused by haemorrhagic shock and neurogenic shock (24 cases each) followed by asphyxia deaths (10 cases), cardiogenic shock (2 cases) and burns (2 cases).

Table 6 shows in suicidal deaths (total 19 cases), 17 died because of hanging and 2 because of poisoning. It's interesting to note that among all 11 males, all chose hanging to end their lives.

Tables 7 and 8 show among all 131 autopsy cases, we were able to give opinion on cause of death positively in 104 cases; in 14 cases we had kept opinion on cause of death pending for FSL, Histopathology and other laboratory reports whereas in 13 cases we could not give cause of death positively despite getting all reports (Negative autopsy), of them 10 cases were of advanced decomposed bodies, 2

cases were of 100 % post mortem burns and 1 case was of nonviable fetus.

Table 9 shows time since death was calculated from history and autopsy findings. In 20 (15.26%) cases the time since death was within 12 hours; in 44 (33.59%) cases it was between 12 hours to 24 hours; in 19 cases it was between 24 hours to 36 hours; in 10 cases each it was between 36 hours to 48 hours, 48 to 72 hours and 3 days to 7 days; in 11 cases it was between 7 days to 14 days; in 4 cases it was between 2 weeks to 8 weeks ; in 1 case it was more than 2 months and in 2 cases no opinion was given regarding time since death. In all 20 cases where the time since death was within 12 hours, we were able to give cause of death. In 42 cases (95.94%) where time since death was between 12 to 24 hours, opinion of cause of death was given.

4. Discussion

Sex and age: In the present study male cases had outnumbered female cases, male to female ratio is 2.17: 1. The male predominance is explained by more population, more outdoor work, more financial stress, the cultural environment of our community etc. in the study. Similar findings were obtained by Rahul Agarwal et al in Indore³ and by Khaja Azizuddin Junaidi et al in Belgavi.⁴

Maximum cases (41) were from 21 to 30 years age group, followed by 31 to 40 (33 cases) and 41 to 50 (16 cases). Rahul Agarwal et al in Indore³ and by Khaja Azizuddin Junaidi et al in Belgavi⁴ also found similar results. Amongst males and females it was also the age group of 21 to 30 years which showed maximum cases, 27 and 14 respectively. This predominance of young age group is understood by the facts that this is the age group which has recently entered into responsibilities of life, beginning of the career, love life, married life and stressful situations.

Mode of death is found to be haemorrhagic shock (38.09%) and neurogenic shock (24) cases of the cases. Where in Study of M Sugatha et al had 66.25% cases⁵ and in Study of Garg VK et al had 16 cases.⁶

Manner of death is found to be homicidal in majority (48.09%) of the cases. However it was found to be suicidal (14.5%), undetermined, natural (12.98%) and accidental (6.11%) also in some cases. As it can be decided only after thorough examination. It is to be noted that being the tertiary hospital, only expert level autopsies are conducted by forensic medicine department, Surat. In the study of Chandru K, Rudramurthy 43.44 % accidental, 35.87% suicidal and 3.71% homicidal death cases were found.⁷

In homicidal deaths, hard and blunt weapon was used in 65.08% cases, followed by sharp and cutting in 25.4% cases, firearms in 6.34% cases and burns in 2 cases. This can be explained by easy availability of hard and blunt objects compared with sharp cutting objects and firearms, for which preparedness is required. Prashanth Mada, and P. Hari Krishna in their comprehensive Study on Homicidal

Table 1: Age wise cases distribution

Age Wise	Male	Female	Unidentified sex	Total	Total (%)
< 1 Year	2	3	0	5	3.81
1 To 10	2	2	0	4	3.05
11 To 20	4	2	0	6	4.58
21 To 30	27	14	0	41	31.29
31 To 40	25	8	0	33	25.19
41 To 50	12	4	0	16	12.21
51 To 60	9	5	0	14	10.68
61 To 70	2	2	0	4	3.05
71 To 80	3	0	0	3	2.29
Unknown	3	1	1	5	3.81
Total	89	41	1	131	100%

Table 2: Mode of death wise cases distribution

Mode	Male	Female	Unknown	Total	Total (%)
Asphyxia	24	11	0	35	26.72
Coma	19	8	0	27	20.61
Syncope	32	12	0	44	33.59
Pending	7	5	0	12	9.16
Undetermined	7	5	1	13	9.92
Total	89 (67.94%)	41 (31.30%)	1 (0.77%)	131	100

Table 3: Manner of death wise cases distribution

Manner	Male	Female	Unknown	Total	Total (%)
Undetermined	8	6	1	15	11.45
Accidental	6	2	0	8	6.11
Homicidal	46	17	0	63	48.09
Suicidal	11	8	0	19	14.5
Natural	12	5	0	17	12.98
Pending	6	3	0	9	6.87
Total	89	41	1	131	100

Table 4: Homicidal death wise cases distribution

Homicidal Deaths	Male	Female	Total	Total (%)
Firearms	2	2	4	6.34
Hard And Blunt	28	13	41	65.08
Sharp And Cutting	15	1	16	25.4
Burns	1	1	2	3.18
Total	46	17	63	100

Table 5: Homicidal death causes wise cases distribution

Homicidal Deaths Causes	Total No. of Cases	Percentage
Throttling	6	9.52
Ligature Strangulation	3	4.76
Smothering	1	1.59
Haemorrhagic Shock	24	38.09
Cardiogenic Shock	2	3.17
Neurogenic Shock	24	38.09
Burns	2	3.17
Pending	1	1.59
Total	63	100

Table 6: Suicidal death wise cases distribution

Suicidal	Male	Female	Total	Total (%)
Poisoning	0	2	2	10.52
Hanging	11	6	17	89.47
Total	11	8	19	100

Table 7: Cause of death wise cases distribution

Cause of death Opinion	Male	Female	Undetermined	Total	Total (%)
Positive Opinion	83	31	0	104	79.39
No Opinion	7	5	1	13	9.92
Pending	9	5	0	14	10.68
Total	89	41	1	131	99.99

Table 8: Negative autopsy wise cases distribution

Negative Autopsy Reasons	No of cases
Decomposed	10
100% Post mortem Burns	2
Nonviable Foetus	1
Total	13

Table 9: Time since death wise cases distribution

Time Since Death	Cases	Opinion of Cause of Death		
		Opinion Given	No Opinion	Pending
Up To 12 Hrs	20	20 (100%)	0	0
12 To 24 Hrs	44	42 (95.94%)	1	1
24 O 36 Hrs	19	17 (89.47%)	0	2
36 To 48 Hrs	10	8 (80%)	0	2
48 To 72 Hrs	10	7(70%)	1	2
3 To 7 Days	10	5 (50%)	3	2
7 To 14 Days	11	4 (36.36%)	4	3
2 To 8 Weeks	4	1(25%)	1	2
> 2 Months	1	0	1	0
No Opinion	2	0	2	0
Total	131	104	13	14

Deaths in Hyderabad find out that in majority of homicides, the inflicting injuries were caused by blunt or sharp weapons (61.3%), followed by strangulation (13.7%) during 2006 to 2010.⁸ Where in Study of Solanki UM et al 46% cases were found.⁹

In suicidal death, poisoning cases (10.52%) where in study of Patel JB et al had 8.45% poisoning cases.¹⁰

Considering the mode of death cardiovascular system is most commonly (33.59%) affected followed by respiratory system (26.72%) and nervous system (20.61%)

When the gross and microscopic findings, toxicological analysis and laboratory investigations fails to reveal a cause of death, the autopsy is considered to be negative. 2 to 5% of all autopsy are negative. A negative autopsy maybe due to inadequate history, inadequate external or internal examination, inadequate laboratory examinations, lack of toxicological examination or lack of training of doctor.² In present study among 13 cases of negative autopsy (9.92%); in study of Modi K et al at BJ medical college, Ahmedabad

it was found to be 17.13%;¹¹ in study of Altaf Pervez Qasim et al at Punjab medical college, Faisalabad 9.22% cases were found to be negative.¹²

In present study among 13 negative autopsies, 10 (76.9%) were due to decomposition. In study done by Modi K et al¹¹ decomposition accounted for 53.49% of autopsies. It is interesting to note that when the autopsy is conducted within 12 hours of death, cause of death was given in all the cases. As the time since death increases, the positive opinion regarding cause of death decreases and in cases where the time since death is more than 2 months, no opinion regarding the cause of death could be given due to advanced decomposition, skeletonisation and loss of important findings which leads to inconclusive autopsy findings.

In present study 15.26% cases the time since death was within 12 hours and 33.59% cases it was between 12 hours to 24 hours. In the study conducted by Abdul Sami Khan et al[13] time since death was Up to 12 hours in 44.58% cases

and between 12 to 24 hours in 55.42% cases.

5. Conclusion

Present study evaluates the expert and referred autopsy cases conducted by the forensic medicine department, Government medical college and new civil hospital Surat. Being a tertiary center majority of the cases are of allegation and highly suspicious nature. So very few cases of road traffic accident and natural deaths or obvious suicidal death cases are brought to our department. So sometimes it becomes a challenging work to determine manner of the death, causative weapon and time since death.

Majority of the cases belongs to young males who are not able to control their emotions during the crucial moments. And it becomes important to control the anger and other emotions for betterment. Skills and experience of the autopsy surgeons are equally important as the forensic experts can help a lot in differentiating the manner of the death and find out the cause of death in decomposed cases and doubtful circumstances. Post mortem examination should be conducted as soon as possible to get positive opinion regarding the cause and manner of death, which is a crucial factor for justice in this study probability of getting no opinion increases even for forensic experts as the postmortem interval increases.

6. Conflict of Interest

The authors declare that there is no conflict of interest.

7. Source of Funding

None.

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