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ORIGINAL ARTICLE

Study of Natural Death in Prisoners: An Autopsy Based Cross Sectional Study Conducted in a Tertiary Care Hospital

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Abstract

Background: Death in prison is a sensitive issue and is always associated with public concern and suspicion of violation of human rights leading to scrutiny on the health standards and safety of prisoners. Among the increasing prison population, prevalence of natural diseases is also in rising trend which needs to be addressed for timely intervention and prevention of fatality. In this study highlights the prevalence of natural causes of death among prisoners. **Methods:** Data for this study was collected from medico-legal autopsies of custodial death cases conducted in the Department of Forensic Medicine and Toxicology at a tertiary care centre in southern India. This cross-sectional study was carried out over two years, from December 2018 to November 2020, and included 30 custodial death cases. The bodies were subjected to autopsy and all external and internal findings were noted. Specimens were collected and sent to Regional Forensic Science Laboratory for toxicological analysis. **Results:** In this study out of the total 30 deaths among prisoners, 26 cases were natural deaths and 4 were unnatural. Among the natural deaths, the most common system involved is the circulatory followed by the respiratory involvement. The most common non-communicable disease prevalent in prisoners were hypertension and diabetes. Sudden death in prison is an entity which can trigger restlessness among the relatives raising suspicion of custodial torture. Five cases sustained sudden death without any previous medical illness. In our study we found that this pattern of sudden death was not uncommon among the prisoners. Out of the seven cases of death due to cardiovascular complications, three cases were not exposed to any pre-existing illness and were apparently normal. The forensic pathologist can consider these natural causes to clear the air of all suspicion and give a clear idea about the cause of death. **Conclusion:** As custodial death cases often provoke agitation and suspicion among the relatives of the deceased, the present study highlights various possible natural causes of death and sudden deaths, apart from commonly presumed unnatural scenarios.

Keywords: Custodial death, Natural diseases, Sudden death, Prisoners

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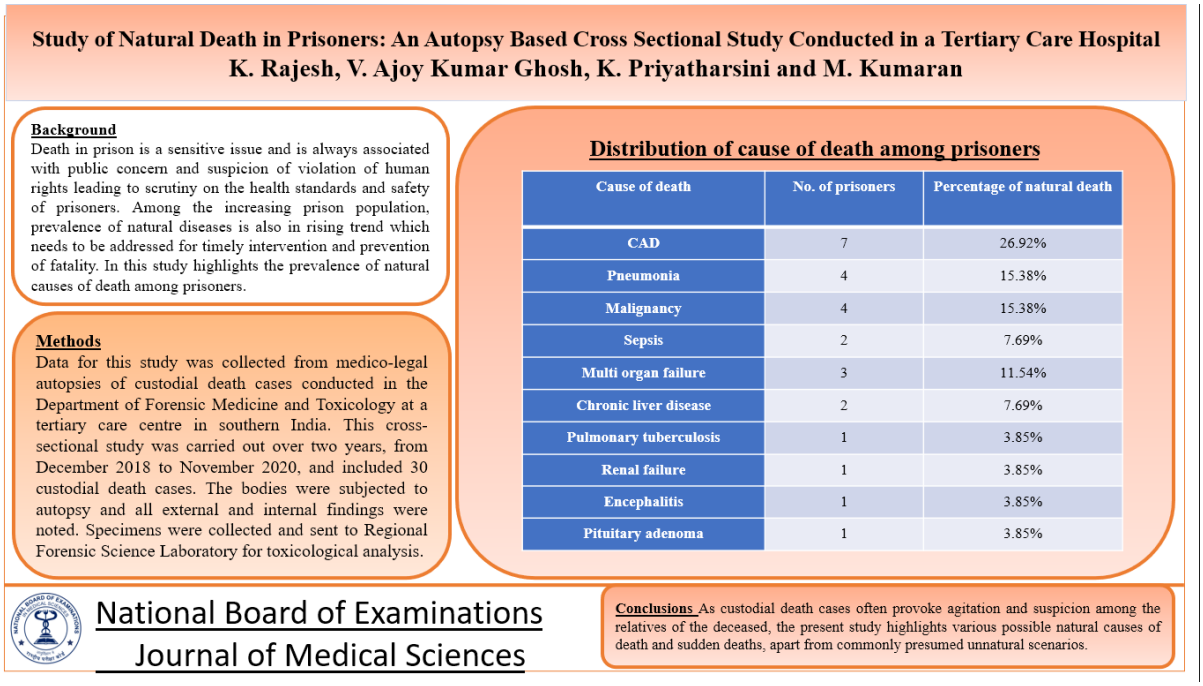
Graphical Abstract



Introduction

Death in prison is a sensitive issue and is always associated with public concern and suspicion of violation of human rights leading to scrutiny on the health standards and safety of prisoners. Apart from the allegation of torture, deprivation of medical care is of considerable importance. Owing to the increase in the prison population, there is a significant increase in the death rate among prisoners. In legal terms, custody is defined as any point in time when a person's freedom of movement is denied by law enforcement agencies such as during arrest, transportation to remand, prosecution, sentencing and confinement [1]. Death occurring in some form of custodial detention such as police cell or prison is commonly known as death in custody or custodial death [2]. In other words, death at any point ranging from arrest of a person, imprisonment including transit of prisoners to court. Everyone in prison or custody has the right to proper health care and to be treated humanely. Although there is no suspicion about the circumstances, death in prison raises the suspicion of torture and human rights violations among the relatives, the public and the media. Relatives of the deceased may express concerns about the propriety of police behaviour, and this anxiety may generate additional public disquiet.

According to section 196(2) of BNSS, Magistrate inquest should be carried out in cases of deaths in Police custody. During this inquest the body of the deceased is autopsied, and the process is video graphed. The National Human Rights Commission (NHRC) in India contends that a team of forensic experts conduct the autopsy and deposit the postmortem examination report [3].

The prison population comprises people of various ages, socio-economic and educational status. The prevalence and duration of chronic diseases among the prisoners vary grossly. Some may have initiated treatment before coming to the

prison while some may be screened and started treatment in the prison hospital. But poor knowledge about the usefulness of regular and continuous treatment for their diseases or early reporting of health issues and morbidity among prisoners increase despite adequate medical facilities round the clock. In this study we have analysed the natural death among prisoners and its correlation with demographic profile, prevalence of communicable and non-communicable disease, lifestyle medical and autopsy records. The forensic pathologist can consider these causes to clear the air of all suspicion and give a clear idea about the cause of death.

Aims and Objectives

1. To study the natural causes of death in prisoners.
2. To assess the prevalence of communicable and non-communicable diseases in cases of natural death in prisoners.

Materials and Methods

Data for the present study was collected from the medico-legal autopsies of custodial death cases conducted in the Department of Forensic Medicine and Toxicology in a tertiary care setup in southern-India. This cross-sectional study was undertaken for a period of two years from December 2018 to November 2020 and 30 cases of custodial death were examined. The bodies were subjected to autopsy and all external and internal findings were noted. Specimens were collected and sent to Regional Forensic Science Laboratory for toxicological analysis. Tissue bits from various organs were preserved and sent to Department of Pathology for histopathological examination. For all the cases informed consent was taken from the next of kin. For all the cases studied, medical history and details of the case were collected from the hospital records, prison records and from relatives of deceased prisoner. All cases of unnatural death in jail or police custody, prison or judicial custody and convict ward were excluded from the study. Descriptive data in the present study was expressed as frequency/percentage.

Results

Out of the 30 cases autopsied during the study period, 26 cases had natural cause of death. The details pertaining to these cases were collected from the Magistrate inquest report, prison record furnished during autopsy, hospital records from Medical Records Department, autopsy report, photographs taken at autopsy, chemical analysis report and histopathological examination report. These data were recorded in the proforma for each prisoner and tabulated in the master chart. The master chart was analysed, and results were tabulated category wise. In the present study, among the 30 cases of custodial death, 26 were natural deaths and 4 were unnatural deaths, majority of the natural deaths occurred in the age group of 51–70 years (n=12, 46.16%) followed by 31 to 40 years (n=5, 19.23%), 41 to 50 years (n=4, 15.38%), 19 to 30 years (n=2, 7.69%), 71 to 80 years (n=2, 7.69%). Least number of cases were found in the age group of 81 to 90 years (n=1, 3.85%). Male preponderance was noted in this study contributing to 92.31% (n=24) of natural deaths in the prisoners and females contributing to 7.69% (n=2).

Among the 26 cases of natural death, majority of them were unskilled workers (n=7, 26.92%), four cases were semiskilled (15.38%), four cases were

clerks (15.38%), four cases were semi-professionals (15.38%), three cases were skilled workers (11.54%), two of them were professionals (7.69%) and two of them were unemployed (7.69%).

Considering the scores of modified Kuppuswamy classification for education, occupational and income status the socioeconomic class was calculated. Most of the cases belonged to the 'upper lower' socioeconomic class with 11 cases, contributing to about 42.31% of natural death cases in prisoners. Seven cases belonged to the 'lower middle' class (26.92%), six cases belonged to the 'upper middle' class (23.08%) and the least number of cases belonged to 'upper' and 'lower' socioeconomic status with 1 case, contributing 3.85% each.

On account to the place of death of the prisoners, 20 prisoners died during treatment in the hospital (76.92%), five prisoners died en-route to the hospital (19.23%) and one person died in a private hospital (3.85%).

Out of 30 cases examined 26 cases had natural causes of death (86.67%). Majority of the prisoners died due to complications of coronary artery disease (n=7, 26.92%). Four prisoners died due to pneumonia (15.38%), four individuals died due to complications of malignancy (15.38%) which included a case of squamous cell carcinoma of larynx, squamous cell carcinoma of tongue, adenocarcinoma of gall bladder and pituitary adenoma. Two individuals died of sepsis (7.69%), three died due to multi organ failure (11.54%), two died of chronic liver disease (7.69%), one person died due to pulmonary tuberculosis (3.85%), one died due to renal failure (3.85%), one person died due to encephalitis (3.85%) (Table 1)

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Table 1. Distribution of cause of death among prisoners.

Cause of death	No. of prisoners	Percentage of natural death
CAD	7	26.92%
Pneumonia	4	15.38%
Malignancy	4	15.38%
Sepsis	2	7.69%
Multi organ failure	3	11.54%
Chronic liver disease	2	7.69%
Pulmonary tuberculosis	1	3.85%
Renal failure	1	3.85%
Encephalitis	1	3.85%
Pituitary adenoma	1	3.85%

In studying the prevalence of non-communicable diseases among the prisoners, isolated systemic hypertension was noted in three individuals (11.5%), isolated diabetes mellitus was present in three individuals (11.5%), and a combined prevalence of diabetes and hypertension was present in six people (23.08%). Respiratory ailments such as bronchial asthma or COPD were prevalent in 2 prisoners (7.69%), two cases were known epileptic patients (7.69%), four prisoners had malignancy (15.38%%), two of them had chronic kidney disease (7.69%) and two prisoners (7.69%) were suffering from decompensated liver disease with portal hypertension (Table 2). In the study nine prisoners died within 24 hours of the terminal event, two between 24-48 hours, one survived for 2-3 days, four survived for 4-5 days and nine survived for a week (Table 3). In five prisoners' sudden death occurred within 24 hours without any pre-existing medical illness. Out of five prisoners with sudden death one died of chronic pyelonephritis three died of coronary disease and one due to organising pneumonia.

Table 2. Distribution of non-communicable diseases among prisoners.

Non-communicable diseases	No. of prisoners	Percentage
Isolated systemic hypertension	3	11.5%
Isolated diabetes mellitus	3	11.5%
Hypertension with diabetes	6	23.08%
Bronchial asthma/COPD	2	7.69%
Epilepsy	2	7.69%
Cancer	3	11.54%
Chronic kidney disease	2	7.69%
DCLD with portal hypertension	2	7.69%

Table 3. Period of survival from onset of terminal event to death

Duration	No. of prisoners	Percentage
<24 hours	9	34.62
24 – 48 hours	2	7.69
2 – 3 days	1	3.85
3 – 4 days	0	0.00
4 – 5 days	4	15.38
5 – 6 days	0	0.00
6 – 7 days	0	0.00
>7 days	9	34.62

On studying the prevalence of communicable diseases among the natural deaths, six prisoners were infected with HIV (23.08%), one person was infected with tuberculosis (3.85%) and four cases suffered from pneumonia (15.38%). In the present study, all cases of natural death in prisoners with HIV infection had been diagnosed before imprisonment and were on Anti-retroviral therapy. But there was history of irregular treatment in 2 cases. Identifying the prevalence of HIV-AIDS among prisoners is critical in preventing spread of other opportunistic infection due to their immune-compromised state.

Discussion

Treatment for critical illness of prisoners in this central prison is usually given at our hospital in a separate convict ward. This had helped us to analyse various cases of custodial deaths. In the study period of 2 years, a total of 30 cases of custodial death were autopsied and natural cause was noted in 26 cases with a prevalence of 86.67%. This is in concordance with the studies conducted by Satinder pal Singh et al. [4], Bansal et al. [5] and Volkanunal et al. [6] with a prevalence of 80%-90%. This implies that death due to natural cause is more frequent than unnatural causes in custodial deaths. In the present study, natural deaths were more in the age group of 51 to 70 years. This is in concordance with the study conducted by Fazel et al. [7] where most cases of natural death occurred in the age group between 50–59 years. This can be related to the fact that natural deaths are more common in elderly prisoner population. In the present study, percentage of natural deaths in males was 92.31% and percentage of natural deaths in females was 7.69% which is in concordance to the study conducted by Sharad Kuchavar et al. [8]. This indicates the preponderance of male population indulging in crimes. In the present study, about 5 cases (19.23%) died while transporting the patient to the hospital and were declared brought dead to the hospital. The remaining 20 natural deaths (76.92%) died in the convict ward of our hospital. This is contradictory to a study conducted by Kuchavar et al. [8] where 31.59% of

cases were natural deaths which occurred inside prisons. In the present study, prevalence of HIV was noted in 6 cases (23.08%) of cases. This is high when compared to Indian study conducted by Bansal et al.(5) which included only 11% of natural death cases died of AIDS. In an USA based study conducted by Okoye et al. [9] the prevalence of death due to AIDS among prisoners was very low such as 2%. In our study, among the cases with single system involvement, majority of cases had cardiovascular system involvement with 26.92% prevalence followed by 19.23% with respiratory system involvement. This is in concordance with studies conducted by Okoye et al. [9], Wu et al.(10) and Aline Desesquelles et al. [11]. But few Indian studies such as Kulkarni et al. [12], Jadhao et al. [13], had proved respiratory diseases are more common than cardiovascular diseases followed by other system involvement. This indicates the need for screening and follow up of cardiovascular and respiratory diseases among prisoners to prevent mortality. Sudden death in prison is an entity which can trigger restlessness among the relatives raising suspicion of custodial torture. In our study we found that this pattern of sudden death was not uncommon among the prisoners. 5 cases sustained sudden death without any previous medical illness. The cause of deaths in these cases are attributed to coronary disease, pneumonia and renal failure United States is the leading country with high numbers of incarceration. In a recent study conducted by the Leonard Davis Institute of Health Economics (LDI) it was established that 30 % of cardiac patients did not receive any diagnostic tests and presented as sudden death in prisons [14]. In the present study, most common cause of death was coronary artery disease (26.92%) followed by pneumonia (15.38%). This is in concordance with a Chinese study conducted by Wu et al. [10] where the author reported coronary artery disease (26.23%) as the most common cause of death followed by pneumonia (13.93%). Indian studies conducted by Kuchavar et al. [8] and Vijaykumarvohra et al. [15] also imply that coronary artery disease is the most common cause of natural death among prisoners. Coronary artery disease stands the commonest cause of natural death among in India and worldwide. This indicates the necessity of intense healthcare and follow up of prisoners with risk factors or history of coronary artery disease. In the present study, all cases of death due to coronary artery disease were males and were in the age group of 35 to 55 years of age.–The youngest man to die of coronary artery disease was 39 years of age. Of the seven cases of death due to coronary artery disease, all cases had history of mixed diet, smoking, alcohol abuse and one case had history of tobacco intake.

In the present study, death due to cancer was noted in three cases (11.54%). All cases of death due to malignancy were males and were in the age group of 60 to70 years of age. This denotes the need for increased cancer screening and management among elderly prisoners. Similar results were observed in the studies conducted by Fazel et al. [7] Aline Desesquelles et al. [11], and Okoye et al. [9].

Wendy L. Wobeser et al. [16] conducted a Canadian study in which death due to malignancy was only second to cardiovascular diseases which analogized with our study.

Conclusion

According to 'article 21' of constitution of India, every person has right to life. In the event of conviction and imprisonment the freedom of a person is restricted by the government, and it becomes the duty of the government to protect his/her human rights and health. Also, regular medical check-up in prison from time to time to review the prisoner's disease status and monitoring intake of prescribed medications will help greatly in controlling the disease and preventing mortality. The National Human Right Commission has prescribed a formal medical screening format for the prison authorities to follow whenever a new prisoner arrives.

This study reveals a different perspective on the causes of death among prisoners. Even the prisoner may sustain sudden death due to a natural cause. As custodial death cases often provoke agitation and suspicion among the relatives of the deceased, the present study highlights various possible natural causes of death and sudden deaths, apart from commonly presumed unnatural scenarios. Forensic pathologists should always consider these possibilities while evaluating and interpreting cases of custodial death.

Statements and Declarations

Conflicts of interest

The authors declare that they do not have conflict of interest.

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Ethical approval

Ethical approval was obtained from institutional ethics committee, Govt. Stanley Medical College & Hospital Chennai-01

References

1. Gill J, Koelmeyer TD. Death in custody and undiagnosed central neurocytoma. Am J Forensic Med Pathol. 2009;30:289–291.
2. Reddy KSN, Murthy OP. The essentials of forensic medicine and toxicology. 34th ed. New Delhi: Jaypee. 2014:279-280.
3. https://nhrc.nic.in/sites/default/files/review_guidelines_enquiryin_CDCR May_2024_0.pdf.
4. Singh SP, Singh D, Aggarwal A, Oberoi SS, Aggarwal KK. Profile of Disease Related Deaths in Custodial Cases An Autopsy Based Experience. J Indian Acad Forensic Med. Medicine. 2015 Dec 1;37(4):392–5.
5. Bansal YS, Rao M, Singh D. Custodial Deaths - An Overview of the Prevailing Healthcare. J Indian Acad Forensic Med. 2010 Oct 1;32:315–7.
6. Ünal V, Özgün Ünal E, Çetinkaya Z, İmalı M, Gürler S, Koç S. Custody and prison deaths autopsied in Istanbul between 2010 and 2012. J. Forensic Leg. Med. 2016 Apr 1;39:16–21.
7. Fazel S, Benning R. Natural deaths in male prisoners: a 20-year mortality study. Eur J Public Health. 2006 Aug;16(4):441–4.
8. Kuchewar SV, Bhosle SH, Shrigiriwar MB, Padole TO. Custody-related deaths in Maharashtra state of India - Analysis of autopsies performed at a medical Teaching Institute during the period 2000-2018. J Forensic Leg Med. 2020 Feb;70:101915.

9. Okoye M, Kimmerle EH, Reinhard K. An analysis and report of custodial deaths in Nebraska, USA. J. Clin. Forensic Med. 1999.
10. Wu S, Ren L, Pan M, Qiu X, Ding Z, Wang Y, et al. Retrospective analysis of 172 cases of custodial deaths in China between 1999 and 2016: forensic experience in China. Int J Legal Med. 2020 Jul;134(4):1487–93.
11. Desesquelles A, Kensey A, Meslé F. Circumstances and causes of death among prisoners in France: The preponderance of violent deaths. 2018 Nov 30.
12. Kulkarni CV, Panchonia A, Dadu SK, Tiwari NP. Histopathological Study of Prisoners Autopsy Viscera: A 3 Year Study. J. evid. based med. healthc. 2015;51(2):8594-5.
13. Jadhao VT, Tatiya HS, Taware AA, Punpale SB, Bandgar AL. An overview of custodial deaths in pune six years retrospective study. J Indian Acad Forensic Med. 2015 Sep;37(3):268-71.
14. LDI Researchers Warn of Rising Cardiac Prison Deaths. Penn LDI. 2025 Sep 8. Available from: https://ldi.upenn.edu/our-work/research-updates/penn-ldi-researchers-warn-of-rising-cardiac-deaths-in-prisons/
15. Vohra VK, Singh D, Malik S. Custodial Death: A Two Years Prospective Study. Medico-Legal Update. 2016 Jan 1;16(1).
16. Wobeser WL, Datema J, Bechard B, Ford P. Causes of death among people in custody in Ontario, 1990-1999. CMAJ. 2002 Nov 12;167(10):1109–13