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Pattern Of Infections In Custodial Deaths - A Forensic Autopsy Study

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Abstract

Background: In a country like India, the prisoner cells are not well structured. For instance prisons are known to be a high risk environment for infections like tuberculosis (TB), HIV, HCV, HBV etc. due to overcrowding, low levels of nutrition, poor infection control and lack of accessible healthcare services. This study is an effort to know about the pattern of infections in custodial death cases detected during post mortem examination. **Aims and Objectives:** To determine the common infections and to know the mortality caused by infections among prisoners in custody, people in police custody and mentally ill patients in mental health institute in Punjab. **Methods:** This cross sectional study of 100 cases of custodial deaths from 1st Jan 2019 to 4th May 2021, was carried out in the Forensic Medicine department in collaboration with department of Microbiology, Govt. Medical College, Amritsar. **Results:** Klebsiella Pneumoniae (37.5%) is more common in age group of 10-30 years while Staphylococcus Aureus (35.9%) infection was more common in the age group of 31 to 50 years. Incidence of positive growth of infections was slightly more in female inmates (76.9%) as compared to the males (75.9%). Inmates from urban area background showed more growth of Staphylococcus Aureus (35.7%) than from rural area background(25%). **Conclusions:** Timely medical diagnosis and treatment of each prisoner with availability of good doctors are the important issues relating to the healthcare of the individuals in custody.

Keywords:- Custodial deaths, Infections, Mental Hospital Deaths, Custody, Overcrowding.

INTRODUCTION

Death in custody is a sensitive phenomenon, as the person is solely dependent on the custodial authority for all of his constitutional rights, including access to health care. It creates a lot of hue and cry among the general population and sometimes causes public unrest and agitations after such incidences.[1]

Custody is defined as, at any point when a person's freedom of movement has been denied by law enforcement agencies, such as during transport before registering a case, or during arrest, prosecution, sentencing, and correctional confinement.[2,3] Owing to increasing crime rates, rise in population, and a more authoritative judicial system leading to higher conviction rates, this makes the prison environment rather unhealthy and it serves as

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"hot-spots" for infectious disease transmission.[4,5,6]

NHRC Report from 2001-02 to 2006-7 showed an increase in custodial deaths all over India which is of great concern.[7]

Factors that lead to spread of various vector-borne communicable diseases are unhygeinic environment, overcrowding, malnutrition and non-availability of health facilities, bloodborne diseases and sexually transmitted diseases. Besides these, inmates are also prone to various non-communicable diseases such as cardiovascular diseases, respiratory diseases, mental disorders, neurological disorders, substance abuse disorders and cancers.

In a developing country like India, the prisoner cells are not well structured. For instance prisons are known to be a high risk environment for infections like tuberculosis (TB), HIV, HCV, HBV etc.

Aims and Objectives

To determine the pattern of the common infections and to know the mortality caused by infections among prisoners in custody, people in police custody and mentally ill patients in mental health institute in Punjab.

MATERIAL AND METHODS

This cross sectional study of 100 cases of custodial deaths was carried out from 1st Jan 2019 to 4th May 2021, in the Forensic Medicine department in collaboration with department of Microbiology, Govt. Medical College, Amritsar whose post mortem examination was conducted in the department of Forensic Medicine and Toxicology. Data regarding the postmortem reports, histopathological examination report, chemical examination report, hospital treatment record from Jail /hospitals /GNDH Amritsar and culture swabs reports from Microbiology department were analysed. Two culture swabs were collected from spleen of the deceased by using aseptic techniques for gram staining and culture.

The specimen was inoculated in Blood Agar, MacConkey 's agar and Brain heart Infusion broth (BHI) medias.

Ethical Clearance – Study was conducted after obtaining clearance from the institutional ethical committee.

RESULTS

The study was undertaken over a period of 2 years and 4 months from January 1st ,2019 to May 4 ,2021. A total of 100 custodial deaths were randomly selected from police stations, mental hospitals and central jails of the region (Amritsar, Gurdaspur, Kapurthala, Hoshiarpur, Jalandhar) to figure out the pattern of infections on the basis of splenic swabs.

It was observed that growth of Klebsiella pneumoniae (37.5%) was more common in age group of 10-30 years, Staphylococcus aureus (35.9%) is more common in age group of 31- 50 years and also in age group above 50 years (31%). Overall, positive growth of organisms namely Klebsiella pneumoniae, Staphylococcus aureus, Pseudomonas aeruginosa and E coli was seen in age group of 31 to 50 years in 31% cases. [Table 2]

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Incidence of positive growth of microbial infections was slightly more common among female inmates (76.9%) as compared to the males (75.9%).

Inmates from urban area background showed more growth of Staphylococcus aureus (35.7%) as compared to rural area background (25%). Rural area background inmates reported more cases of Klebsiella Pneumonia (31.8%) as compared to urban population (25%). [Table 3]

Positive growth of organisms was more prevalent in (71.1%) in custodial inmates during a period of 1 to 3 days between death and autopsy followed by 15.8% cases in a period of 6 to 24 hours.

Table 1: Pattern of infections according to age of deceased

Age group (years)	**Organism**					
	Staphylococcus aureus	**Klebsiella pneumoniae**	**Pseudomonas aeroginosa**	**E.coli**	**No growth**	**Total (N=100)**
10-30	8(25.8)	12(42.9)	2(25.0)	3(33.3)	7(29.2)	32(32.0)
	(25.0)	(37.5)	(6.3)	(9.4)	(21.8)	
31-50	14(45.2)	12(42.9)	4(50.0)	1(11.1)	8(33.3)	39(39.0)
	(35.9)	(30.8)	(10.3)	(2.5)	(20.5)	
>50	9(29.0)	4(14.2)	2(25.0)	5(55.6)	9(37.5)	29(29.0)
	(31.0)	(13.8)	(6.9)	(17.3)	(31.0)	
Total	31	28	08	09	24	100

(Figures in parenthesis are percentages) (c^2=9.2; P value>0.05)

Table 2: Gender wise distribution of cases according to positive growth and no growth of microbes

Gender	**Growth**	**No growth**	**Total**
Male	66(86.8) (75.9)	21(87.5) (24.1)	87
Female	10(13.2) (76.9)	3(12.5) (23.1)	13
Total	76	24	100

Table 3: Distribution of growth of organism according to time between death and autopsy

Time since death	**Growth**	**No growth**	**Total (N=100)**
6-24 hours	12 (15.8)	3 (12.5)	15
1-3 days	54 (71.1)	19 (79.2)	73
3-7 days	6 (7.9)	0 (0.0)	6
7 days-1 month	4 (5.3)	2 (8.3)	6
Total	76	24	100

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(Figures in parenthesis are percentages)

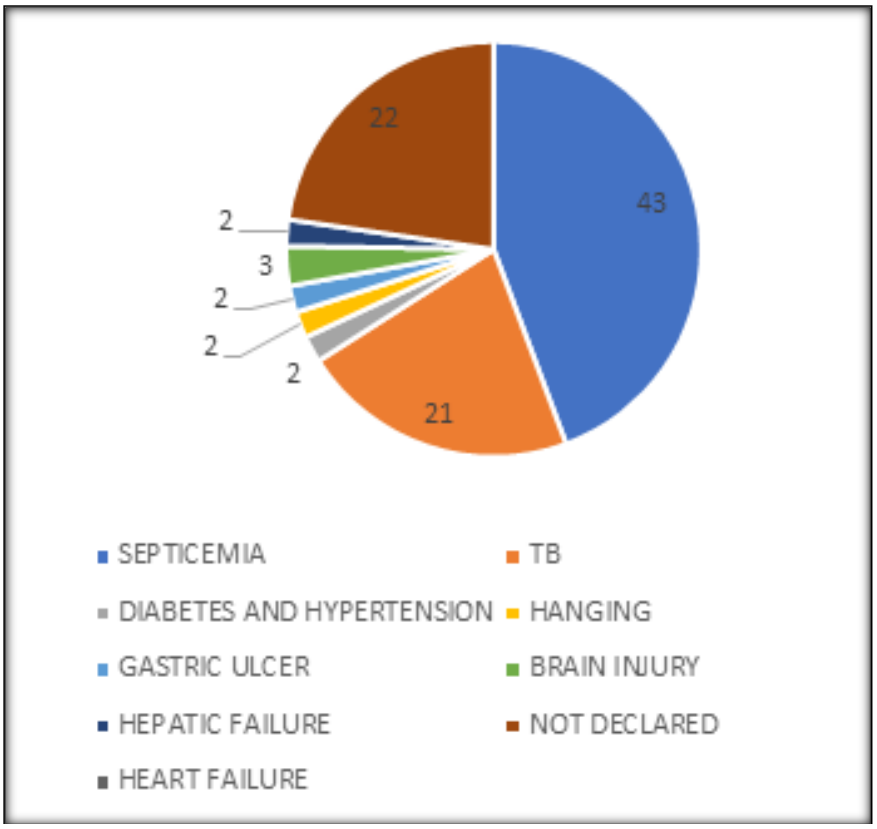

Figure 1: Percentage of Cause Of Death In Custodial Deaths

The most common cause of death observed was septicemia in 43% cases followed by Pulmonary Tuberculosis in 21% cases while cause of death could not be declared in 22% cases due to pendency of various reports.

DISCUSSION

It was observed that the positive growth of microbes was more common in the age group of 31-50 years (31%) closely followed by 10-30 years (25% cases).[8] Similar findings were observed in another study conducted by Mittal et al(2019)8 in which maximum deaths (32%) occurred in the young age group of 26-35 years. However, contrasting findings were observed in another study conducted in UK by Grant J et al (2007) where 65-74 years age group was found to be most frequently affected.[9]

In this study, incidence of positive growth of microbial infections was more in female inmates (76.9%) as compared to the males (75.9%) and it was also found in the present study that urban inmates (56%) are more as compared to rural inmates (44%) which coincides with the study of Mittal et al (2019).[8]

In this study, maximum natural deaths due to growth of micro organism (76%) were reported

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with positivity of Staphylococcus aureus (31%) in forensic autopsies which is consistent with findings of the study of Vohra et al (2016),[10] who observed that most of the deaths occurring in custody in this part of India are natural (78%) mainly infectious and patients have succumbed to their illness. In an other study conducted by Mittal et al (2019),[8] majority (95.65% cases) inmates have died due to natural causes while (4.35% cases) died due to unnatural causes. Majority of the cases studied died due to natural causes, which is in accordance with global scenario.[11] In an other study conducted by Gill J et al (2009),[12] in Ontario showed 41% natural deaths whereas a study in California by Grant J et al(2007),[9] showed that natural causes constituted 62% of the custodial deaths. The findings of Bardale R et al (2011),[13] 82.85% inmates in custody have died due to natural causes. Singh SP et al (2015),[14] and Jadhao VT et al (2015),[15] in their studies respectively done at Chandigarh and Pune, also reported the proportion of natural deaths between 80-85% of total custodial deaths. However, Wobeser et al (2002),[16] and Frueshwald et al (2002),[17] also found that majority of deaths were due to cardio-vascular diseases which is consistent with the present study. Felker et al (1996),[18] found that standardized mortality ratios for both natural and unnatural causes of death and among the natural causes of death, infection ranked high.

The most common cause of death was septicemia in 43% cases followed by Pulmonary Tuberculosis, However in the study of Bansal et al,[19] deaths due to pulmonary tuberculosis were more common and followed by septicemia which were compounded by the presence multiple infections like HIV/AIDS and hepatic failure. In the present study, most of the growth of microorganism was reported in a period of 1 to 3 days after death which is consistent with the studies conducted by Kurtin (1958),[20] and Mittal et al (2019),[8] who had observed similar findings of the detection of the micro-organisms on autopsy.

Limitations

More studies with large sample size and of longer duration is required. Short period (2 year) of study and small sample size of 100 custodial deaths cannot be justified. Final causes of deaths could not be ascertained due to pendency of histopathological examination reports and chemical examination reports in 22% cases.

CONCLUSIONS

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Recommendations

1. Timely medical diagnosis and treatment of each prisoner with availability of good doctors are the important issues relating to the healthcare of the individuals in custody.
2. Improvement in design and structure of prison cells and their decongestion as well.
3. Health education for people in jails/mental hospital.

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