

## Death following consumption of ethyl alcohol in police custody

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### ABSTRACT

Sudden and unnatural death of a person in custody is a very sensitive issue for the government as there are always allegations of custodial torture, human rights violations, and deliberate ill-treatment by the authorities to the deceased person. Death of a person following alcoholic intoxication in a police/judicial custody is rare because liquor is not available in custody for arrested person to consume. We are presenting a case where the male person died due to consumption of ethyl alcohol in custody.

**Keywords:** police custody; ethyl alcohol; post mortem examination; cirrhosis of liver; cerebral and cerebellar oedema, chemical analysis.

### INTRODUCTION

Sudden and unnatural death of a person in custody is a very sensitive issue for the government as there are always allegations of custodial torture, human rights violations, and deliberate ill-treatment by the authorities to the deceased person. Whenever such death occurs, as per the guidelines of National Human Rights Commission, New Delhi, it is mandatory that inquest should be done by the executive magistrate and post-mortem examination should be carried out at government medical college and hospital by the panel of forensic pathologists and video shooting of post-mortem examination should be carried out. The aim of autopsy should be to rule out any custodial torture as to the cause of death. Here we are presenting a case where the male person died due to consumption of ethyl alcohol in custody.

### CASE-REPORT

A 36yr old male prisoner who was in judicial custody was produced from the jail before the district session court at 11.00am through police escort. After production of said prisoner in the court, the police escort returned the said prisoner to the gate of the prison at 4.45pm. But at the time of admission inside the prison, the said prisoner was suspected of drinking alcohol by the prison authority. Hence, the prison authority decided to send the accused through police escort to district hospital for medical check-up to ensure whether the said prisoner had drunk

alcohol or any other narcotic substance. The prisoner was admitted at 5.15pm in a drowsy and disoriented state. His relatives were called and they gave history about his alcohol addiction habit. He was addicted to alcohol since 10yrs. He was not responding to verbal commands, his pupils were dilated and reacting to light with vital parameters as pulse 94/min, BP 130/90 mm Hg, respiratory rate 18/min. On auscultation respiratory system showed air entry equal on both sides and cardiovascular system appeared normal. His random blood sugar level was 56mg%. His blood and urine samples were collected and forwarded for chemical analysis for detection of intoxicating substance. Blood was collected from peripheral vein and surgical spirit was not used to clean the area. Sodium fluoride was used as preservative (50mg/5ml). He was given injection of atropine, adrenaline, deriphylline, emset and dextrose normal saline. At 7pm the patient became unconscious, dyspnoea with sluggish reaction to light with tachypnea noted. He died on the same day at 7.30pm. The provisional diagnosis regarding death of the person was given as “consumption of unknown substance” by the treating doctor.

The post-mortem examination was conducted by a panel of doctors from dept of Forensic Medicine & Pathology at government medical college and hospital and video shooting of the post-mortem examination was carried out. On external examination the deceased was moderately built, his cloths were intact and rigor mortis was well marked and was present all over body, Post-mortem lividity was present over back, buttocks & loin except over pressure area & fixed. No signs of decomposition were present. There was no injury to body. We carefully looked for injury to palms of both hands & soles of both feet & genitals. Both eyes were closed, pupils dilated & fixed. Mouth closed, tongue clinched in-between teeth. Oozing of whitish froth from nostrils was seen (**Fig.1**). No purging present. A therapeutic injury was noted in the form of puncture wound of intravenous injection present over right forearm, antero-lateral aspect at middle 1/3rd of size 0.1cm x 0.1cm (**Fig.2**).

On internal examination all organs were intact and congested. Brain (wt 1400gm), lungs (wt right 500gm &

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left 450gm) were oedematous. Heart (wt 300gm) was intact and apex of heart was pointing towards the left, epicardial fat was present. Right coronary artery 30% blockage was seen and in left circumflex artery 70% blockage was seen. Liver (wt 1400gms) spleen (wt 200gms) & both kidneys (wt 150gms each) were intact. The stomach was intact and contained 300ml semi-digested food material; mucosa of stomach was congested & haemorrhagic at places with abnormal sweetish smell like alcohol perceived.

The opinions as to the cause of death was reserved and following samples were preserved for chemical analysis.

- I. Blood and urine samples (when the deceased was alive, quantity 5ml each and preservative for blood

**Fig 1:** Oozing of whitish frothy discharge per nostrils of the deceased.



sodium fluoride)

- II. Viscera  
Bottle no. 1: Stomach, intestine & its contents (preservative sat. sol. of common salt) Bottle no. 2: 1/3rd liver, 1/2 spleen, 1/2 kidney each (preservative sat. sol. of common salt) Bottle no. 3: Brain for detection of cerebral poison (preservative sat. sol. of common salt) Bottle no. 4: Blood (collected from peripheral vein)
- III. Pieces of brain, both lungs, heart, liver, spleen and both kidneys preserved for histopathology examination.

**Fig 2:** A puncture wound of intravenous injection present over right forearm.



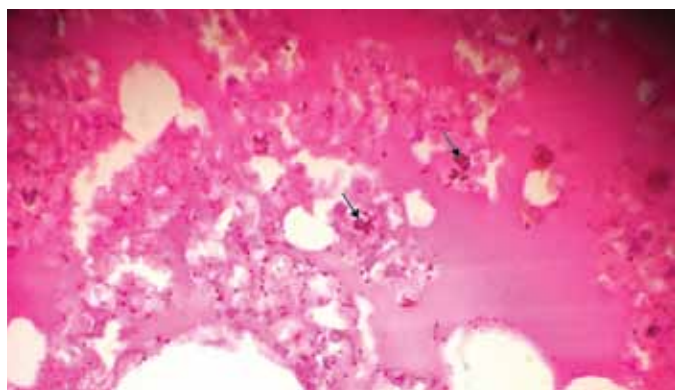
**Table 1:** The result of chemical analysis

SI No	Specimen	Quantity of ethyl alcohol
1.	Blood (ante-mortem)	57 mg/ 100ml of blood (0.057% W/V)
2.	Urine (ante-mortem)	Results of the tests for the detection of tranquilizer/ sedative drugs like diazepam, oxazepam, lorazepam, nitrazepam, and Narcotic drugs like morphine, dia-acetyl morphine (Heroin) and cannabis constituents were negative. Chemical analysis for detection of ethyl alcohol not done.
3.	Stomach, intestine & its contents	120 mg of ethyl alcohol/ 100 gms
4.	1/3rd liver, 1/2 spleen, 1/2 kidney each	117 mg of ethyl alcohol/ 100 gms
5.	Brain for detection of cerebral poison	104 mg of ethyl alcohol/ 100 gms
6.	Blood (post-mortem)	124 mg/ 100ml of blood

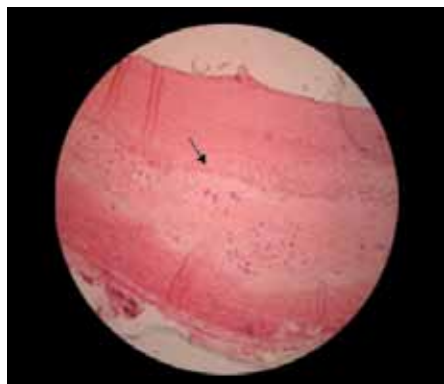
The result of histo-pathological examination (**Fig. 3-5**) showed cerebral, cerebellar and pulmonary oedema. Multiple sections of heart studied showed right coronary artery showing concentric thickening by athero-sclerotic plaque occluding 30% of lumen, left circumflex artery showing atherosclerotic thickening occluding 70% of lumen showing calcification. Left anterior descending artery showed atheromatous changes. Mitral valve showed degeneration. Section from liver showed portal to portal fibrous septae giving nodular appearance. Fibrous septae and portal triad infiltrated by lymphocytes. Hepatocytes showed micro-vesicular fatty change, suggestive of early changes of cirrhosis of liver.

Thus by considering clinical history, post-mortem findings and laboratory investigation we issued the final

**Fig.3:** Showing lung photomicrograph with pulmonary oedema and plenty of hemosiderin laden macrophages (H&E stain).



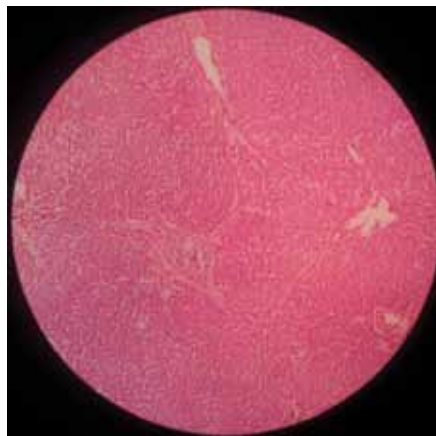
**Fig 4:** Photomicrograph of thoracic aorta showing areas of atherosclerosis with areas of calcification (H&E Stain).



cause of death of deceased as “cerebral and cerebellar edema following consumption of ethyl alcohol associated with coronary artery disease and cirrhosis of liver in a person who was addicted to alcohol.”

Based upon our post-mortem report and our final cause of death report, the police investigated the case. The person was chronic alcoholic and it was found that on the day of his death, during lunch time of session court, between 02:30pm to 03:30pm, the deceased had consumed “Tango Punch” country liquor brought by his friends. To avoid suspicion of escort police, it was mixed with curd. The deceased drank it fast and drank it without diluting it. He consumed 360 ml of liquor in about 30 min along with food.

**Fig.5:** Photomicrograph of liver showing early changes of cirrhosis (H&E Stain).



## DISCUSSION

Death of a person following alcoholic intoxication in a police/ judicial custody is rare because liquor is not available in custody for arrested person to consume. Alcohol is known to affect cerebrum and cerebellum and hence when death occurs following alcoholic intoxication, cerebrum and cerebellar edema is not uncommon. Very rarely it happens that reports of blood are available in ante mortem and post-mortem samples of the same case to arrive at the final cause of death. There is wide variation in the fatal blood alcohol concentration among different authors. Post-mortem diffusion of unabsorbed alcohol from the stomach to the surrounding tissues cannot be ruled out. There are studies of formation of ethyl alcohol in decomposed bodies<sup>1,2</sup> In this case the dead body was not decomposed and post-mortem examination was carried out within 18hrs of death. It is possible that analysis of viscera may show a positive report for alcohol

even when the deceased had not consumed alcohol prior to death. However such “post -mortem alcohol” levels will never exceed 50mg%.<sup>3</sup> The fatal dose of ethyl alcohol depends largely upon of habit and age of the patient, and the nature and strength of the liquor taken. Death usually occurs from a large quantity taken in a short span of time. About 150 to 250ml of absolute alcohol is considered fatal for an adult.<sup>4</sup> In our case, the police investigation revealed that the deceased had consumed 360ml of liquor in about 30 minutes.

Usual fatal dose of ethyl alcohol is best expressed as blood alcohol level. Over 500mg% is usually taken to mean that death is inevitable. But survival has been recorded even with a blood alcohol level of 1500mg%. Death can also occur at levels much lower than 500mg%.<sup>5</sup> In our case, the ante-mortem blood alcohol level of ethyl alcohol was 57mg/ 100ml and post- mortem blood alcohol level of ethyl alcohol was 124mg/ 100ml. Stomach, intestine & its contents ethyl alcohol level was 120 mg/ 100gms, liver, spleen and kidneys ethyl alcohol level was 117 mg/ 100gms and for cerebrum it was 104 mg/ 100gms. The ante mortem blood samples were analyzed by chemical analyzer for presence of ethyl alcohol after about 12 days of death. That may be the one reason why ante mortem blood ethyl alcohol level is less than the post- mortem blood ethyl alcohol level in this case. The ante mortem samples and post-mortem samples were analyzed by different chemical analyzers at a different time. That also may be one of the reasons in disparity between the level of ethyl alcohol detected when the person was alive and when he was dead. It must be kept in mind that only alcohol that has passed into the blood stream has any effect on behavior; also there is a possibility of diffusion of alcohol from the stomach into the blood and tissues after death.<sup>6</sup> If the ethyl alcohol remains unabsorbed in the stomach at the time of death, this raises the possibility of continued local diffusion into surrounding tissues and central blood after death. A person’s blood alcohol concentration and state of inebriation at the time of death is not always easy to establish owing to various post- mortem artifacts.<sup>7</sup> The qualitative and quantitative determination of ethyl alcohol in post-mortem specimens has become a relatively simple analytical procedure and accurate, precise and specific results are possible.<sup>8,9</sup> However, interpreting post-mortem blood alcohol concentration results and drawing correct conclusions about ante-mortem levels and the person’s state of inebriation and degree of behavioral impairment at the time of death is fraught with difficulties.<sup>10-13</sup> The condition of the body, the time between death and autopsy, the environmental conditions (temperature and humidity) and the nature of

specimen collected for analysis are important factors to consider.

The usual fatal period of death following ethyl alcohol consumption is 12 to 24hrs<sup>14</sup>. In our case study the person died within 5 to 6hrs following consumption of ethyl alcohol. Chronic alcoholics often suffer from serious medical condition such as cardio-myopathy, pancreatitis, hepatitis and cirrhosis, all of which might contribute to or accounted for their demise.<sup>15</sup> In our case study, the deceased was chronic alcoholic and on histo-pathological examination of liver, hepatocytes showed micro-vesicular fatty change, suggestive of early changes of cirrhosis of liver. Authors have given various explanation for the differences in blood ethyl alcohol concentration in alcoholism deaths such as chronic tolerance, alcohol related organ and tissue damage (cirrhosis, pancreatitis) positional asphyxia or suffocation by inhalation of vomit, exposure to cold coupled with alcohol induced hypothermia, as well as various metabolic disturbances such as hypoglycemia and ketoacidosis.<sup>16</sup> Bardale et al<sup>17</sup> mentioned one case of a person who was in custody who died due to alcohol intoxication. We did not get a single reference in which in a same case, both ante-mortem as well as post-mortem samples were studied for ethyl alcohol concentration. In this way, this case study is unique. Moreover, we preserved viscera for histo-pathological examination and we found cerebral edema, cerebellar edema and early changes of cirrhosis of liver, suggestive of “death following consumption of ethyl alcohol in a chronic alcoholic”

Therefore it is necessary that a strict watch should be kept on the arrested person regarding the consumption of any addictive substance. While giving entry to the arrested person in to the lock-up/ prison, he should be thoroughly checked for consumption of such substance by the police officer. If signs of consumption of intoxicating substance is noted, the person should be immediately referred to the nearest well equipped hospital to save his life.

## CONFLICTS OF INTEREST

Declared none.

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