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Spontaneous Rupture of the Liver Seen at Autopsy: A Case Report of a Rare Cause of Death in Custody and Literature Review

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Abstract

Death in custody is a death of a person in the custody of the police or other authorities or while in prison. When the causes are studied, they are usually from natural causes with the heart diseases constituting the majority of cases. We present a case of death in custody from spontaneous liver rupture, a rare condition with very few cases reported in literature. We are not aware of any reported case of death in custody secondary to spontaneous liver rupture. High index of suspicion is required for early diagnosis of spontaneous liver rupture and should be considered as a possible cause of death in custody. Adequate medical history of the detainee is important and crucial as they can detect fatal condition and the prison staff must act promptly to address any medical concerns of the inmates.

Introduction

Spontaneous liver rupture is rare and few cases have been reported in literature⁽¹⁾. Though often associated with pregnancy, it may occur in association with underlying liver pathology such as adenomas, primary and secondary malignancies and haemangioma⁽²⁾. It may also be related to conditions like hypertensive disorders and coagulation disturbances⁽³⁾. It may, though rare, also be seen in the absence of underlying pathology⁽⁴⁾.

Death in custody refers to all deaths in the custody of the police, prison service or other authorities. It is the death that

occurs while an individual is a prisoner or ward of the state⁽⁵⁾. Any death that occurs during arrest, in the backseat of a police car, in a rehabilitation facility or in a hospital, days, weeks or months qualifies as death in custody⁽⁵⁾. Death in custody remains a controversial subject, with the authorities often being accused of abuse, neglect, racism and cover-ups of causes of these deaths^(6,7). Deaths in custody always raise public apprehension because they reflect the human rights standing of the country⁽⁸⁾.

The manner of death in police custody may range from suspected homicide by member of the police, killings by other inmates, deaths due to physical or psychological abuse, capital punishment, suicide, accidental deaths or natural causes^(9,10).

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In the United States, the Bureau of Justice Statistics collects data regarding both the cause of death as well as medical and criminal records of those that die in police custody⁽⁷⁾. When these deaths were studied, over half of the deaths were attributable to natural causes^(11, 12, 13, 14). These natural causes were primarily due to heart disease; with others were atherosclerotic diseases, and seizure disorders⁽¹⁰⁾. A large proportion of the remaining deaths in custody are the result of suicide or acts of homicide and lethal violence⁽¹¹⁾. In many of these cases, the victim is simply found dead in the jail cell and apparent cause of death cannot be determined at the scene or during the autopsy⁽¹⁰⁾.

Spontaneous rupture of the liver is a rare condition and our search through the literature did not identify it as a well documented cause of death in custody. This index case illustrates a custodian death that raised questions about the cause and manner of death, which was resolved by autopsy.

Case Presentation

A middle- aged male, a known patient with hepatitis B, and peptic ulcer disease, reportedly complained of sudden dizziness after several hours in police custody, prompting his transfer to the police clinic where he was pronounced dead. At autopsy, body was that of a middle- aged male with negroid features, and in good state of post-mortem preservation. The body measures 156cm in length with an estimated weight of 70kg, pale, cyanosed with no pedal oedema.

Upon internal examination, all organs are in their normal anatomic positions with massive haemoperitoneum and blood clots of approximately 3.0 liters. The heart is enlarged, weighing 365g (range: 250-350g). The right ventricular free wall thickness measures 0.5cm (range: 0.3-0.5cm) while the left ventricular free wall thickness measures 2.5cm (range : 1.3-1.5 cm). The papillary muscles are thickened and measure 2.1cm. Serial sections of the coronary arteries reveal patent lumina, free of atherosclerotic plaques.

The liver is enlarged, has a macronodular appearance (Fig.1). It weighs 2006g (range: 1200-1600).



Fig.1 The liver is enlarged, and has a macro-nodular appearance

There is avulsion of the tip of a large nodule on the middle (quadrate) lobe of the liver (Fig.2).

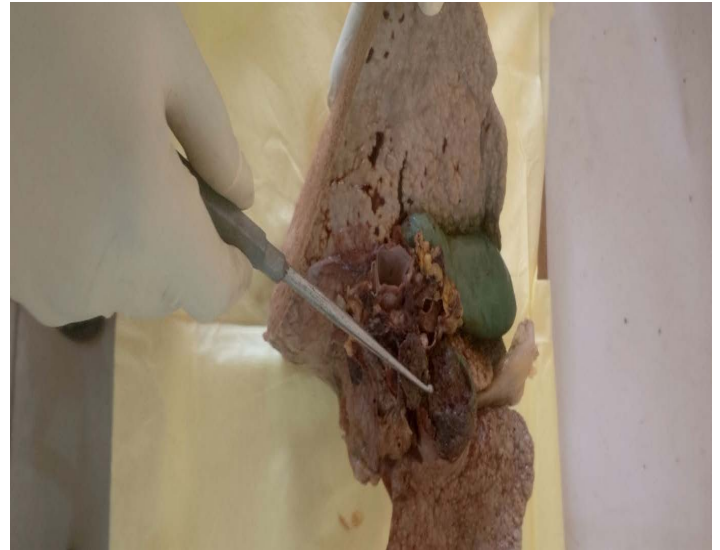


Fig.2. There is an avulsion of the tip of a large nodule on the middle (quadrate) lobe of the liver

Cut sections through the liver reveal pale grayish nodular surfaces. The spleen is dark brown with wrinkled capsules. All other internal organs were grossly unremarkable. Histological sections taken from the liver shows narrow compacted fibrous septa separated by islands of intact hepatic parenchyma (Fig.3).

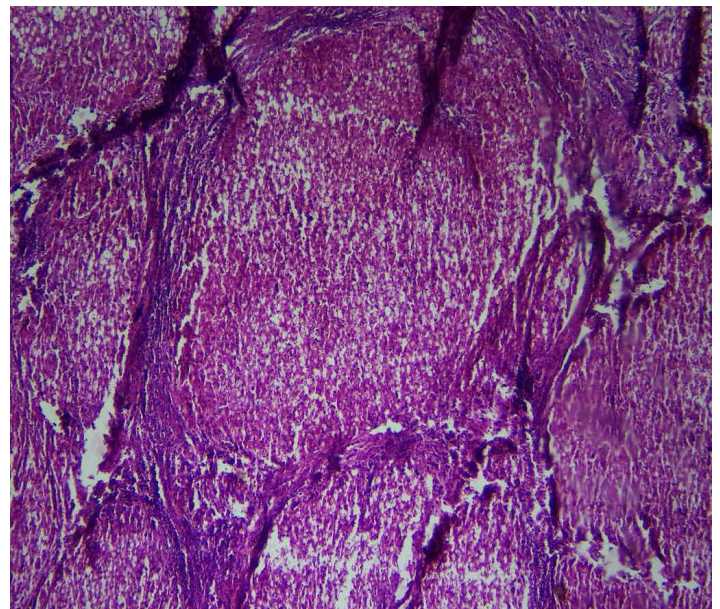


Fig. 3. Histological sections taken from the liver shows narrow comfibrous septa separated by islands of intact hepatic pa(HX40).

The cause of death was given as follows:
 Part 1. Exsanguination Massive haemoperitoneum.
 Avulsion of the tip of a large nodule of the liver.
 Liver cirrhosis.

Part 2. Cardiomegaly with left ventricular hypertrophy.

Discussions

The word “custody” originates from the Latin word “custos odis”, meaning guardian⁽⁸⁾. Custodial deaths are not limited to deaths that happened while a person is under the control of law enforcement agencies, it includes deaths of prisoners dying in hospitals as well as deaths that occurs during the processing, apprehension, imprisonment, lock up or jails, questioning or deliberate carelessness on the part of the investigating agency⁽¹⁵⁾.

When these deaths are studied, the majority of them are secondary to natural causes^(11, 12, 13, 14). These natural causes are primarily due to heart diseases, others are atherosclerotic diseases and seizure disorders⁽¹⁰⁾. Spontaneous hepatic rupture as a cause of custodian death is not well documented. This is probably because non traumatic liver rupture is rare.⁽¹⁾ It is difficult to diagnose and tends to occur in pregnant women with haemolysis, elevated liver enzymes, and low platelet count (HELLP). It can occur with other liver pathologies including primary, benign and malignant tumours, liver cirrhosis, amyloidosis, malaria, venous stasis, secondary tumours in the liver and hypereosinophilic syndrome and, vary rarely, in isolation^(4, 16). The index case tested positive for Hepatitis B virus, and gross and surgical pathology of the liver was in keeping with liver cirrhosis.

Several theories have been postulated for the spontaneous rupture of the liver⁽¹⁾. In hepatocellular carcinoma and other malignant liver lesions, the pathogenesis of spontaneous liver rupture may be due to overlying normal liver parenchyma splitting from expanding tumour growth⁽¹⁷⁾. Liver enlargement, rigidity of hepatic parenchyma and vascular fragility are responsible for thromboses in amyloidosis⁽¹⁸⁾. In pregnancy, vasospasm from increased sensitivity to circulating vasopressors during pregnancy and vascular injury from endothelial damage leading to the formation of micro-vascular thrombi resulting in rupture are associated with HELLP syndrome⁽¹⁹⁾.

Though natural causes are the most common causes of death in custody, with the heart as the source of primary pathology in majority of cases, spontaneous liver rupture should also be considered and can happen as a cause of death in custody.

Conclusion

A high index of suspicion is required for early diagnosis of spontaneous liver rupture and should be considered as a cause of death in custody. Adequate medical history of the detainee is essential as it can detect fatal conditions and the prison staff must act promptly to address any medical concerns of the inmates.

Declarations

Ethical Approval and Consent to participate.

Ethical approval was obtained from the ethical review board of Benue State University Teaching Hospital along with consent from the decedent’s family for the manuscript publication of the manuscript.

Consent for Publication

All authors agreed and gave their consents for publication.

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List of Abbreviations.

Fig-Figure.

H&E –Haematoxylin and Eosin stains.

References

- Yacob M, Jesudason Mr, Nayak S. Spontaneous liver rupture: A report of two cases. *J Emerg Trauma Shock* .2013; 6:50-2.
- Golan A, White RG. Spontaneous rupture of liver associated with pregnancy. A report of 5 cases. *S Afr Med J*.1979; 56: 133-6.
- Cozzi PJ, Morris DL. Two cases of spontaneous liver rupture and literature review. *HBP Surgery*1996; 9: 257-60.
- Mascarenhas R, Mathias J, Geoghegan J and Traynor O. Spontaneous hepatic rupture: a report of five cases. *HBP* 2002; 4(4):167-170.
- David Dolinak, Evan Matsher, Emma Lew, *Forensic Pathology, Principle and Practice*, New York, Elsevier, 2005, 297-306, 71-72.
- Zheng Zhen, *Assessing Inmate Case of Death: Death in Custody Reporting Program and National Death Index*, U.S Department of Justice, Bureau of Justice Statistics, Technical Report, 2016, NCJ249568.

- Karch SB, Stephens BG. Drug abusers who die during arrest or in custody, *Journal of Royal Society of Medicine*, 1999, 29:110-115.
- Sathish K, Vinod Ashok Chaudhar and Sathish Ayyappan. A case of sudden natural death in custody: medico-legal perplexity in determining the manner of death. *IJFCM*.2024. Available online @<https://orcid.org/0000-6289-9267>.
- “Data Collection: Deaths in Custody Reporting Program (DCRP)” Office of Justice Programs, U.S Department of Justice, Bureau of Justice Statistics, 2014, March 14.
- Ross Darrel, *Sudden Deaths in Custody*, Totowa, N.J. Humana Press, 2006, 15-130.
- Reay DT, *Deaths in Custody*, *Clinics in Laboratory Medicine*, 1998, 18 (1),1-4.
- Adelson L, Huntogton RW JJJ. Reay DT, A Prisoner is dead: a survey of 91 sudden and unexpected deaths which occurred while the decedent was either in police or penal detention, *Police*, 1968, 13: 49-53.
- Copeland AR, *Deaths in custody*, *American Journal of Forensic Medicine and Pathology*, 1984, 5,211-214.
- Frost RF, Hanzlick R, *Deaths in custody*, *American Journal of Forensic Medicine and Pathology*, 1988, 9, 207-210.
- FH Mirza, AA Memon, SE Adil, HA Paryar . Audit of custodial deaths in Karachi –An autopsy based study. *J Pak Med Assoc*. 2012 Aug; 62(8):752-5.
- Cheung YS, Lee KF, Wong J, Lai PB. Spontaneous liver rupture in hypereosinophilic syndrome: a rare but fatal complication. *World J Gastroenterol*.2009;15:5875-8.
- Lai EC, Lau WY. Spontaneous rupture of hepatocellular carcinoma. A systematic review. *Arch Surg* .2006; 141:191-8.
- Tam M, Seldin DC, Forbes BM, Connors LH, Skinner M, Oran B, et al. Spontaneous rupture of the liver in a patient with systemic AL amyloidosis undergoing treatment with high-dose melphalan and autologous stem cell transplantation: a case report with literature review. *Amyloid*; 2009; 16:103-7.
- Levine RJ, Maynard SE, Qian C, Lim KH, England LJ, Yu KF, et al. Circulating angiogenic factors and the risk of pre-eclampsia. *N Engl j Med*.2004; 350:672-83.