ORIGINAL ARTICLE

Short Term Outcome of Patients with Liver Trauma at Tertiary Care Hospital

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Author`s Contribution

[1] Conceived the topic and review the study
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ABSTRACT

Objective: To determine the short-term outcome (mortality) in patients having liver trauma in surgical unit of tertiary care Hospital.

Study Design Case series

Place and Duration: The study was conducted in general surgery department of LUH, from January 2016 to September 2016

Methodology: All the cases having hepatic trauma were admitted in general surgery department. Complete routine laboratory investigations were carried out along with ultrasound and CT scan in cases those were needed. All the cases and their attendants were informed regarding possible outcome and management. Surgeries were done by consultant senior and skilled surgeons. Patients were followed for 2 weeks in the department after surgery as per policy of the department. We had observed the severity of injuries, and its association with short term mortality then findings were entered in proforma

Results: 62% cases were presented with abdominal blunt trauma which was the frequent cause of hepatic injury. Mostly cases 46% were found with Grade-III hepatic injury. Wound infection was noted as a commonest complication after surgical management. Mortality rate was found 10.0%, and was significantly associated with severity of injury (grade IV and V) p-value 0.001.

Conclusion: We concluded that short-term mortality 10% in patients having liver trauma, mortality was significantly associated with grade IV and V of injuries. The commonest cause of liver trauma was blunt abdominal trauma.

Key Words: Abdominal trauma, liver trauma, mortality.

Introduction

Liver is the biggest strong organ of the abdomen with the settled position. Liver is the highly-vascularized organ holding more than 25% lymphoid tissue of the body and having both functions of haematological and immunological. Liver injury is the second most common event during trauma of the abdomen and also a frequent cause of mortality estimately 20% to 40% patients.[1] The trauma of the liver is extremely regular in Pakistan because by gunshot and road traffic accident (RTA). 30% hepatic injuries associated with penetrating agents, while 15 to 20% associated with blunt trauma of the abdomen in the Pakistan.[2] While in developed nations trauma of the liver 20% due blunt abdominal trauma, and 30% hepatic trauma is associated gunshot and 40% due to the stab wound.[3] It is very important that the 50% hepatic traumas are without bleeding simple methods during Laparotomy as; haemostatic agents and suturing can manage the liver Injuries, but different high-grade hepatic traumas are very complicated and difficult in the management those were on high risk of the mortality.[4] Complication of the hepatic traumas are prevalent as 64%.[5] Principle objective of a managing "liver trauma" is early control of the hemorrhage and sepsis and ischaemia prevention.[6] Right hepatic lobe is frequently injured as

compare to left lobe because it is big in the size with less mobility.[7] 80% cases of liver traumas having other association of other injuries of the body.[8] In the current advance imaging studies and monitoring enhanced critical strategies had shifted the paradigm for the management of liver traumas.[9] Surgical management is the big challenge for Hepatic traumas to the surgeons.[10] Surgical techniques including simple hepatorrhaphy, hepatotomy, re-sectional debridement, hemostatic measures along with anatomical resection, direct suture ligation, pre-liver packing and transplantation of the liver. All of these surgical techniques depending on kind of liver trauma, its severity and good experience of skilled surgeons.[10] No such study has been conducted on short-term outcome in patients having hepatic trauma in LUMHS Jamshoro. This study has been carried out to see the short-term outcome (mortality) in patients having liver trauma admitted at a surgical unit of LUH Hyderabad/ Jamshoro.

Methodology

This was a case series study and has been conducted in the department of Surgery of LUH Jamshoro / Hyderabad. All the cases were selected on ultrasound-based diagnosis and clinical examination. Both genders were selected with age between 18 to 70 years. All the cases having other associated severe injuries specially head injuries, and those patients were managed conservatively were excluded from the study. Complete routine laboratory investigations were carried out along with ultrasound and CT scan in cases those were needed. All the cases and their attendants were informed regarding possible outcome and management. Written consent was taken from all the cases. Surgeries were carried out by skilled and senior surgeons. Cases were stayed in the Hospital for 2 weeks postoperatively as per departmental policies. We had observed the severity of injuries, and its association with short-term mortality then findings were entered in proforma. Data was analyzed by SPSS version 16. Simple frequency and percentage were calculated for qualitative variables and mean was calculated for quantity variables, chi-square test was applied to assess the association of short-term mortality with grades of injury. P-value was considered as significant > 0.05.

Results

Total 50 cases were incorporated in the study after diagnosis of hepatic injuries, mostly young patients were involved, their mean age was found 35.6+15.4 years, male were found in the majority 39(78.0%), while female were 11(22.0%). The clinically distended abdomen was found in 22.0% of the cases, movement with Respiration was noted in majority of the cases 62.0%, wound or bruise were found in 40% patients while 10.0% cases were normal clinically. (**Table I**)

Table I: Demographic characteristics of the patients (n=50)

Characteristics	Frequency (%)
Age (Mean + SD)	35.6+15.4
Gender	
Male	39(78.0%)
Female	11(22.0%)
Abdominal presentation	
Normal	05/(10.0%)
Distended	11/(22.0%)
Movement with Respiration	31/(62.0%)
Wound or Bruise	20/(40.0%)

Blunt abdominal trauma was the most common cause of hepatic injury in 58% cases while penetrating trauma was found in 42% patients. (**Figure 1**)

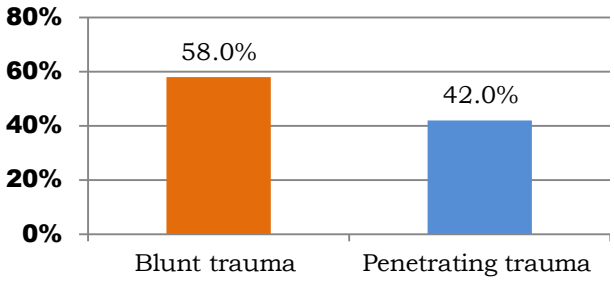

Figure1. Distribution of the patients according to mode of injury (n=50)

Mostly 46.0% cases were assessed with Grade-III of hepatic injury following by Grade I, Grade II, IV and V with percentage as 6.0%, 24.0%, 20.0% and 2.0% respectively. (**Figure 2**)

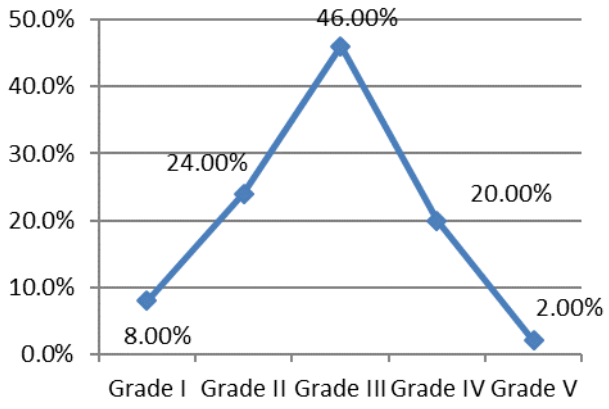

Figure 2. Grade of injury (n=50)

In this study rate of the mortality was found 10.0%, while 90% cases were found alive. Hospital stay was calculated as 12.9+3.5 days. **(Table III)**

In this study we found short-term mortality significantly associated with severity of injury (grade IV and V, P-value 0.001. **(Table III)**

Table II: Short term mortality and Hospital stay (n=50)

Mortality	N. of pt/(%)
Alive	45/(90.0%)
Death	05/(10.0%)
Hospital stay(days)	12.9+3.5 days

Table III: Short term association with grade of injury. (n=50)

Grades of injury	Short term mortality		
	Alive	Death	P-value
Grade I	04	00	
Grade II	12	00	0.001
Grade III	22	01	
Grade IV	07	03	
Grade V	00	01	

Discussion

Liver is the highly vascular and the vital organ of the human body.[11] Usman Ali et al,[12] stated that out of 364 cases, male were in majority with a ratio as: (M: F ratio 5:1) and range from 20 to 60 years, and further he reported that mean age of the cases was 35 years. Similarly, in our study male were found in the majority 78% on the comparison of female's 22%, and patient's mean age was found 35.6+15.4 years with a range of the 18 -70 years. Mostly young age male was involved, this may due to young males are more involved in the outdoor activities as compare to females.

In our study blunt, abdominal trauma was the most common in 62% patients and a frequent cause of the hepatic injury. Similarly, in different other studies, it is reported that, blunt abdominal trauma is frequent cause of the hepatic injuries.[14-17] In the favor of our study, Gurs et al[18] demonstrated that high mortality rate was in patients those having blunt trauma of abdomen. On other hand inconsistency, the of this study Usman Ali et al,[12] stated that 75% patients presented with penetrating abdominal trauma and Asensio et al[13] demonstrated that 79% cases had hepatic injuries due to penetrating abdominal trauma.

In our study, mostly 46.0% cases were assessed with Grade-III of hepatic injury following by Grade I, Grade II, IV and V with percentage as 6.0%, 24.0%, 20.0% and 2.0% respectively. Similarly, Usman Ali et al,[12] demonstrated that majority of cases was with grade II, III, IV, percentage as; 16.66%, 58.8% and 21.6% respectively. Ali et al[19] reported that mostly patients had grade III hepatic injuries as 58.8% and 21.6% cases had grade IV hepatic injuries.[19]

In our study short term mortality rate was 10%. Similarly overall mortality rate 12% in and causes of death were some complications reported as; haemorrhage, sepsis, coagulopathy and renal failure.[12] Mohr et al[21] also found similar findings. Gao and associates[22] demonstrated that mortality rate was 11.8% and it is associated with grade IV and V hepatic injuries. Buddhaboriwan[20] stated that survival rate was 76.6%. Bonariol et al[23] found mortality rate as 15%. Vatanaprasan,[24] demonstrated death rate as 12.1%.

In this study, we found short-term mortality significantly associated with severity of injury (grade IV and V, P-value 0.001. In the favor of this study Bala M et al [25] reported that patients having hepatic injury grade 5, those were significantly associated with high rate of mortality p-value 0.001. In some other studies also reported that low rate of the complications was associated with low grade of injury.[26,27]

Conclusion

We concluded that short-term mortality 10% in patients having liver trauma, mortality was significantly associated with grade IV and V of injuries. Most common cause of liver trauma was blunt abdominal trauma. It is mostly in the middle age male population.

References

1. Munawar Jamil, Tariq Hassan Choudry, Tahir Minhaas, Tahir Idrees, Humera Sobia. Surgical management of liver trauma. J Surg Pak Jul - Sep 2011;16(3):109-13.
2. Zahid M. Role of Selective Hepatic Artery Ligation (SHAL). Thesis of MS Surg 1995:98-101.
3. Carrillo EH, Platz A, Miller FB, Richardson JD, Polk HC Jr. Non-operative management of blunt hepatic trauma. Br J Surg. 1998 Apr;85(4):461-8.
4. Jarkovich GJ, Cassico CJ. Trauma: Management of Acutely Injured Patients In: Sabistun DC Jr Text Book of Surgery; The Biological Basis of Modern Surgical Practice 15th ed. Philadelphia Saunders, 2008; 296 – 339.
5. Miller PR, Croce MA, Bee TK, Malhotra AK, Fabian TC. Associated injuries in blunt solid organ trauma: implications for missed injury in nonoperative management. J Trauma. 2002 Aug;53(2):238-42.

6. Tai NR. Boffard KD. Groosen J. A 10 Years' Experience of Complex Liver Injuries. BJ Surg 2007: 89:1532 - 37.
7. Feigin E, Aharonson-Daniel L, Savitsky B, Steinberg R, Kravarusic D, Stein M, Peleg K, Freud E.Conservative approach to the treatment of injured liver and spleen in children: association with reduced mortality. Pediatr Surg Int. 2009;25:583-6.
8. Ali U, Noor A, Shah MM, Alam WJ. Trauma management in a tertiary care hospital in Peshawar, Pakistan. Ayub Med Coll Abbottabad. 2008;20:112-6.
9. Ahmed N, Vernick JJ. Management of liver trauma in adults. J Emerg Trauma Shock. 2011 Jan;4(1):114-9.
10. Hussain MI, Alam MK, Al-Akeely MH, Mohammed AA. Operative management of liver trauma. A 10-year experience in Riyadh, Saudi Arabia. Saudi Med J. 2009 Jul;30(7):942-6.
11. Strong RW. The management of blunt liver injuries. In: Johnson TCD, editor. Recent advances in surgery. 24th ed. Edinburgh: Churchill Livingstone; 2001.p125–37
12. Usman Ali, Ashab Noor, Mian Mujahid Shah*, Waqar Alam. Trauma Management In A Tertiary Care Hospital In Peshawar, Pakistan. J Ayub Med Coll Abbottabad 2008;20;3;112-116.
13. Asensio JA, Roldan G, Petrone P, Rojo E, Tillou A, Kuncir E, *et al*. Operative management and out comes in 103 AASTOIS grades IV and V complex hepatic injuries: trauma surgeons still need to operate, but angio-embolization helps. J Trauma 2003;54:647–53.
14. Buddhaboriwan T. Management of liver injuries in Pahalpolpay Uhasena hospital. J Med Assoc Thai 2003;86:103–10.
15. Brammer RD, Bramhall SR, Mirza DF, Mayer AD, McMaster P, Buckels JA. A 10 years' experience of complex liver trauma. Br J Surg 2002;89:1532–7.
16. Claridge JA, Young JS. A successful multimodality strategy for management of liver injuries. Am Surg 2000;66:920–5.
17. Richardson D, Franklin GA, Lukan JK, Carrillo EH, Spain DA, Miller FB, *et al*. Evolution in the management of hepatic trauma: a 25-year perspective. Ann Surg 2000;232:324–30.
18. Gur S, Orsel A, Atahan K, Hokmez A, Tarcan E. Surgical treatment of liver trauma (analysis of 244 patients). Hepatogastroenterology 2003;50:2109–11.
19. Ali, U., Noor, A., Shah, MM., & Alam, W. Trauma management in a tertiary care hospital in Peshawar, Pakistan. J Ayub Med Coll Abbottabad, (2008); 20(3).
20. Buddhaboriwan T. Management of liver injuries in Pahalpolpay Uhasena hospital. J Med Assoc Thai 2003;86:103–10.
21. Mohr AM, Lavery RF, Barone A, Bahrampour P, Magnotti IJ, Osband AJ, *et al*. Angiographic embolization for liver injuries: low mortality, high morbidity. J Trauma 2003;55:1077–81.
22. Gao JM, Du DY, Zhao XJ, Liu GL, Yang J, Zhao SH, *et al*. Liver trauma: experience in 348 cases. World J Surg 2003;27:703–8.
23. Bonariol L, Massani M, Carztozozolo E, Recordare A, Callegari P, Antoniutti M, *et al*. Selection criteria for nonsurgical treatment of liver injury in adult poly traumatized patients. Chir Ital 2002;54:621–8.
24. Vatanaprasan T. Operative treatment of hepatic trauma in Vachira Phuket hospital. J Med Assoc Thai 2005;88:318–28.
25. Bala M, Gazalla SA, Faroja M, Bloom AI, Zamir G, Rivkind AI, Almogy G. Complications of high grade liver injuries: management and outcomewith focus on bile leaks. Scandinavian journal of trauma, resuscitation and emergency medicine. 2012 Mar 23;20(1):20.
26. Kozar RA, Moore JB, Niles SE, Holcomb JB, Moore EE, Cothren C, Moore FA. Complications of nonoperative management of high grade blunt hepatic injuries. Journal of Trauma and Acute Care Surgery. 2005 Jan 1;58(1):222.
27. Carrillo EH, Spain DA, Wohltmann CD, Schmieg RE, Boaz PW, Miller FB, Richardson JD. Interventional techniques are useful adjuncts in nonoperative management of hepatic injuries. Journal of Trauma and Acute Care Surgery. 1999 Apr 1;46(4):619-24.