

Homicidal Blunt Abdominal Trauma with Isolated Laceration of the Small Bowel Mesentery

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Summary. Nonpenetrating abdominal trauma rarely causes isolated mesenteric lacerations with fatal hemorrhages. When this does happen, it is often the result of compression by a lap seat belt or a steering wheel, only extremely rarely is it the result of a homicidal act.

In the present paper, two homicide victims with resulting mesenteric tears and fatal bleeding due to sagittal compression are described. A high blood alcohol concentration may in both cases have contributed to the fatal outcome. The cases support the assumption that direct rather than indirect trauma causes this kind of lesion.

Key words: Blunt abdominal trauma, homicide – Mesenteric laceration

Zusammenfassung. Stumpfe Bauchtraumen bewirken nur selten isolierte mesenteriale Verletzungen, die tödliche Blutungen nach sich ziehen. Wenn dies jedoch geschieht, dann meist als Folge einer Quetschung durch einen Sitzgurt oder ein Lenkrad, nur selten als Folge einer Körperverletzung mit Tötungsabsicht.

In der vorliegenden Arbeit wird über zwei Totschlagsopfer berichtet, bei denen mesenteriale Zerreißen und Blutungen mit tödlichem Ausgang infolge einer sagittalen Quetschung auftraten. Eine hohe Blutalkoholkonzentration mag in beiden Fällen zum tödlichen Verlauf beigetragen haben, was zu der Vermutung Anlaß gibt, daß eher ein direkt als indirekt verursachtes Trauma Ursache dieser Art von Verletzung ist.

Schlüsselwörter: Bauchverletzungen, stumpfe – Traumatologie, stumpfe Bauchtraumen

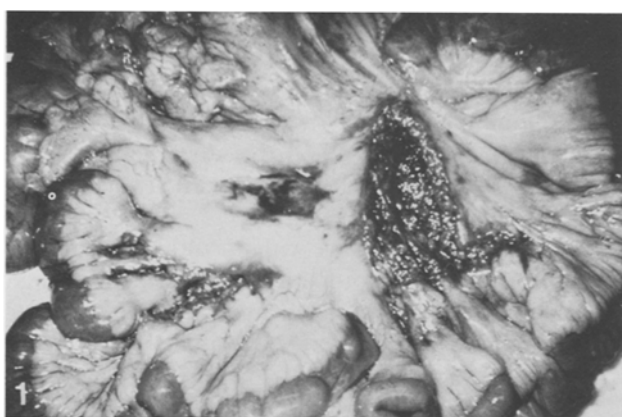
Nonpenetrating abdominal trauma frequently results in serious injuries of the spleen, kidney, liver, pancreas, gastrointestinal, urinary, and biliary tracts. Injury of the superior mesenteric vessels is, however, a rare complication. In the present paper, two cases are presented in which drunken brawls led to rupture of the superior mesenteric vessels.

Case Reports

Case 1

A 56-year-old chronic alcoholic was punched, kicked, and struck with a broom stick during a fight. He was found dead a few hours later.

The autopsy revealed two s.c. hemorrhages compatible with blunt abdominal trauma, one situated near the navel and the other in the right medioaxillary line. There were fractures of the left 8th and 9th ribs at the skeleto-cartilaginous border without dislocation. In the peritoneal cavity there was 900 ml partially clotted blood. In the jejunal mesentery there was a 15×6 cm large laceration perpendicular to the small bowel, with rupture of several major branches of the superior mesenteric vessels. This laceration extended through the full thickness of the mesentery. Furthermore, a laceration 6 cm in diameter and a contusion 4 cm in



Figs. 1 (Case 1) and 2 (Case 2). Both figures show central lacerations of the small bowel mesentery with major injuries to the mesenteric vessels

diameter were found in the ileal mesentery. The peripheral border of the first laceration was situated 2 cm from the small bowel, that of the latter 8 cm from the small bowel. In the i.p. cavity, there were no other lesions, but there were secondary hemorrhages in the retroperitoneal fat tissue.

In addition, the autopsy revealed minor excoriations and s.c. hemorrhages on the face and extremities. The liver was severely steatotic. Blood ethanol concentration was 3.7 g/l and urine ethanol 4.7 g/l.

The death was attributed to exsanguination due to lacerations of the superior mesenteric vessels. The high blood alcohol concentration may have contributed to death.

Case 2

A 40-year-old chronic alcoholic was punched, possibly also kicked, during a fight which another chronic alcoholic, and was found dead about 1 h later.

The autopsy revealed a few excoriations on the abdomen and two fresh s.c. hemorrhages near the navel. In the abdominal cavity there was 1,200 ml partially clotted blood. In the base of the small bowel mesentery there was a laceration, measuring 11 × 5 cm, perpendicular to the small bowel and extending through the full thickness of the mesentery. Many of the major branches of the superior mesenteric vessels were ruptured. Apart from moderate hemorrhages in the retroperitoneal fat, there were no additional traumatic lesions in the abdomen.

In addition, there were several minor excoriations and subcutaneous hemorrhages on the head and extremities. The liver was severely steatotic. Blood alcohol levels were 2.4 g ethanol/l and 1.3 g methanol/l.

Death was attributed to exsanguination due to lacerations of the superior mesenteric vessels. The high blood alcohol levels may have contributed to death.

Discussion

A review of several reported series of blunt abdominal trauma revealed that injuries to the mesentery occurs in 2.3% of the cases (Killen 1964). Although differentiation of injuries of the small bowel mesentery and injuries of the superior mesenteric vessels is perhaps arbitrary, injuries to the superior mesenteric vessels were encountered in only 0.2% in this review. Because of the difficulty in establishing the diagnosis of contusions and lacerations of the superior mesenteric vessels, its true incidence is not known. Obviously, however, such lesions are indeed rare (MacLeod and Nicholson 1969; Bolton et al. 1973; McCullough 1976; Myers 1976).

The majority of cases of mesenteric lacerations previously presented have occurred in car or aircraft accidents and have been attributed to the lap-strap of lap seat belts (Killen 1964; Fish and Wright 1965; MacLeod and Nicholson 1969; Williams and Kirkpatrick 1971) or to the rim of a steering wheel (McCullough 1976; Myers 1976). Solitary cases have also been attributed to wrongly adjusted 3-point-belts (Ljungström 1978). Fall from a height may also result in mesenteric lacerations, generally with other lesions, however (Vock 1980). The mechanism of these injuries may be either compression between an external force and the lumbar spine or a shearing on the root of the small bowel mesentery, with avulsion of the superior mesenteric vessels themselves or their primary branches (Killen 1964; Percy 1970; Williams and Kirkpatrick 1971; McCullough 1976; Vock et al. 1980). In the two present cases, which are almost identical, the mechanism was a direct sagittal force which compressed the

mesentery against the lordotic lumbar spine. In this way, lacerations of the mesenteric vessels resulted in fatal intra-abdominal and retroperitoneal hemorrhages. These cases thus seem to confirm the assumption that injuries of the small bowel and mesentery are caused by direct rather than indirect trauma (Vock 1980; Vock et al. 1980).

Several authors have pointed out that lacerations of the superior mesenteric artery rapidly lead to exsanguination and death and that repair of the injuries must be prompt if life is to be saved (Killen 1964; Fish and Wright 1965, their case 4). Such lacerations are more dangerous the more proximally situated they are. The survival times in the present cases are not fully known, but did not exceed 3 h in one case and 1 h in the other. In the present cases, the survival time may also have been influenced by the high blood alcohol levels. These high blood alcohol levels may have contributed to death both by decreasing the defence action of the abdominal muscle tonus and later by depressing the cardiac function (McCullough 1976, his case 1).

As pointed out above, isolated mesenteric tears rarely result from blunt trauma. Only extremely rarely, however, have such lesions been recorded as resulting from a homicidal act. Vock et al. (1980) described a 2.5-year-old boy who was punched and kicked and whose death was attributed to intra-abdominal and retroperitoneal hemorrhages from a mesenteric laceration. In this case, as well as in the present two cases, the lesions resulted from direct rather than indirect trauma. Of course, such a conclusion is very important when suspected homicidal attacks are investigated.

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