UNUSUAL CASE OF THE FOUR ILIAC VEINS INJURIES BY GUNSHOT: CASE REPORT AND REVIEW OF THE LITERATURE

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Multiple injuries of iliac veins are uncommon and frequently fatal. An unusual case in which there were injuries of the four iliac veins by gunshot is described. A review of literature of this condition and a discussion about the diagnosis , treatment and factors affecting mortality rate is presented. No other such case has been found reported.

ILIAC VESSEL INJURIES constitute approximately 10 percent of all vascular trauma.

The high mortality rate is because of the massive degree of exsanguination and the high frequency of associated injuries.

Iliac vein injury occurs generally isolated or in association with arterial lesion. Multiple injuries of iliac veins are uncommon and frequently fatal.

We describe an unusual case , in which there were injuries of the four iliac veins by gunshot. A review of literature of this condition and a discussion about the diagnosis , treatment and factors affecting mortality rate is presented. No other such case has been found reported in english literature.

CASE REPORT

I.M.L., an 18-year old man, was admitted to our Emergency Department, two hours after being shot. There was an entrance wound in the right lateral position and below the umbilicus. No exit wound was found.

He was admitted with a systolic blood pressure of 80 mm Hg, his pulse rate was 76 beats per minute, and respirations were 32/min. There was no loss of consciousness, he was alert and oriented (RTS = 7.8408; TS = 16; ISS = 18 and TRISS-CAN = 0.99) 1,2.

Abdominal examination revealed moderate lower abdominal tenderness and normal bowel sounds. Rectal examination detected no blood. The patient was taken to the Radiology Department after insertion of a Foley catheter and intravenous line, with stable vital signs. X-ray study located the bullet at pelvis.

A celiotomy revealed a bilateral retroperitoneal hematoma. The right retroperitoneal hematoma was entered and evacuated . A laceration of both internal and external right iliac veins were found, and bleeding was controlled only with their ligation due to the complexity of the lesions. The patient's blood pressure fell to 40 mm Hg systolic. Exploration of the left retroperitoneal hematoma revealed a laceration of both external and internal left iliac veins. The patient started to have episodes of hypotension throughout the procedure despite vigorous volume resuscitation with crystalloid, blood and coagulation products. Because of the likelihood of persistent extensive retroperitoneal hemorrhage and the complexity of the vein injury, ligation of both iliac veins was elected. Since the bleeding could not be controlled after several attempts, we decided to pack the retroperitoneal area and close the abdomen. The pack was removed 2 days later, after the patient's hemodynamic and coagulation status had normalized. The postoperative course was complicated by renal failure that needed dialysis, mild pulmonary insufficiency and lower extremity edema.

The patient was discharged in good condition 40 days after admission, with no edema. The patient has been seen for a follow-up visit three months after discharge with no edema and returned to his full time job.

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DISCUSSION

Abdominal venous injuries are one of the most lethal forms of trauma because of the massive degree of exsanguination and the high frequency of associated injuries. Mortality rates in many series exceed 30 % 3.

The diagnosis of major venous injury may be difficult because of the associated hypotension, which necessitates urgent laparotomy. With the exception of hypotension, there are few physical findings associated with abdominal venous injuries. At laparotomy massive retroperitoneal hematomas may indicate major venous injuries, often with associated arterial hemorrhage4.

Ryan et al. identify clinical characteristics of patients at high risk for iliac vessel injuries that include entrance wounds below the umbilicus, positive abdominal examination, and hypotension5. Our patient had all of these signs with exception of hypotension.

Successful operative therapy depends on prompt control of hemorrhage. When the injury is confined by a non expanding retroperitoneal hematoma, proximal and distal control is best obtained before opening the hematoma. When a freely bleeding iliac injury is found , direct manual tamponade of the injury site followed by control of the abdominal aorta is indicated5. Our patient had a complex injury and it was not possible to control the hemorrhage with distal and proximal dissection.

Initial packing of these injuries can temporize bleeding, but occluding the involved vessel distal and proximal to the injury is necessary in order that repair may be carried out. Unfortunately this frequently is not obtained until after the loss of blood and operative time. Howell and Ingram described a technique employing Foley catheter introduced through the femoral vein in the groin6.

Rich emphasized a more aggressive approach to the repair of injured veins, particularly of the lower extremities, in an attempt to reduce the incidence of acute venous hypertension and to prevent the sequelae of chronic venous hypertension7.

The supporters of ligation postulate an increased incidence of thrombophlebitis and pulmonary embolism following venous repair but there was no clinical evidence of these complications after venous repair in any site8.

The critics of venous repair believe that all such veins ultimately thrombose, yet Phifer et al reported on a small series of patients in which venous patency was proved by venography 6 to 20 years after femoral vein repair. Furthermore, even transient patency in venous repairs may allow time for the development of collateral circulation9.

Aitken et al had shown that, even after the development of extensive collaterals, vein function generally remains abnormal even though the immediate catastrophe of limb-threatening edema or venous gangrene is avoided10.

If at all possible the venous injury is primarily repaired, but ligation may be necessary in the case of multiple venous injuries or in the patient whose condition is unstable5. In our case both conditions were present.

Minor injuries may be repaired by lateral venorrhaphy, but often the lumen was narrowed by this technique and if there has been any tissue loss a vein patch should be used. In all major injuries a saphenous vein graft from the opposite limb should be harvested but the donor is often too narrow for direct use and a panel graft must therefore be fashioned. End-to-end anastomosis had a poor prognosis in Aitken series10.

Wilson et al. report a series with a high mortality rate with iliac vein injuries : 51%. The factors associated with this significantly increased rate were : Trauma Score < 11, initial operating room systolic blood pressure < 70 mm Hg, ISS > 28, no obtainable blood pressure on admission to the emergency department and 10 or more units of blood in the first 24 hours11. Of these factors, only the last was present in our patient. Trauma scores were not capable to predict the severity of the case reported.

Although repair of iliac veins is recommended whenever possible, these vessels should just be ligated if the injury is extensive, if the patient is unstable, or if there are multiple other severe injuries. As long as leg swelling is prevented in the postoperative period with appropriate leg elevation and carefully fitted stockings, ligation is usually well tolerated in young, previously healthy individuals12. In the postoperative period, our patient developed limb edema that was greatly reduced by the time he was discharged. This report shows that the ligation of the four iliac veins may be well tolerated and the surgeon should not hesitate to perform this kind of operation whenever life of the patient is threaten by massive bleeding.

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