World Journal of Research and Review (WJRR)
ISSN:2455-3956, Volume-2, Issue-6, June 2016 Pages 24-28

On Traumatic Lesions of The Pancreas

Giorgio Maria Paolo Graziano, Federica Castelli, Prof Antonino Graziano

Abstract— **Traumatic injuries affecting the pancreas have a statistic or percentage of between 2 and 12% of all injuries in the abdomen (1) in 2/3 of the cases caused by road accidents and a third of cases from wounds, the purpose of this work is to expose the experience gained in a retrospective review of the cases treated pancreatic traumatic pathology asking the guidance and direction to the disease treatment**

Materials and methods :In the first group were observed 12 patients cu n n n 4 8 blunt trauma and penetrating trauma, injuries associated n 2 cases related to the spleen, liver n 4, n 1 n 1 duodenum transverse colon. In the second group we were n is observed 6 cases of which was present in 4 cases n: n 1 a laceration of the body, n 1 case laceration of the tail, n 2 cases a complete resection of the pancreatic duct observed In cases where were present the traumas blunt: treatment in No 8 cases in which there was a bruise or tear without parenchymal involvement product was done by a simple drainage with a residual n 2 pancreatic fistulas treated with NPT and healed in n n 1 respectively in 30 days , and in 'more in 90 days. In the remaining 10 patients in n n 6 cases in which there was a laceration body and tail with complete detachment of the pancreatic duct associated with the irreparable injury of the spleen we proceeded to a distal pancreatic resection with splenectomy. Results :in the choice of treatment was carried out with a distinction and evaluation of the following criteria: A) evaluation of bruising or tearing, B) the absence or complete or incomplete rupture of the pancreatic duct. c) destruction of the pancreatic head and involvement of the common bile duct. the stage I and II (65-75%). The initial symptoms were absent due to the failure to irritation of the posterior peritoneum, whereby the abutment of the blunt trauma pancreatic at early stage was observe initially following the repairs of the associated lesions. (Colon.milza, bleeding. Instrumental examinations which the CT, MRI, have reduced diagnostic time and rendered obsolete the echo abdomen and video laparoscopy, surveys that collect indirect signs. the lesions of the duct ductal with loss of enzymes resulted in the castings, like cysts and relapsing pancreatitis . lL surgical treatment required further evaluation of parameters such as the site of the lesion, the age that has guided the conservative treatment in young people. Discussion. The instrumental exams (CT and MRI) have reduced the diagnostic and obsoleted times the echo abdomen and video laparoscopy, surveys that collect indirect signs (loss of the contour of the psoas muscle, bleeding retroperitoneal) of the lesion. It is still useful in cases of perforation of the duodenum associated with the X-ray with gastrografin. . The decision on the type of treatment remains bound to the experience, the technical skills, to 'clinical analysis of the case of the' surge capacity of choice related by the possibilities of success when the traumatic event is evolving. The success of the surgical treatment had need of complementary therapy. The NPT with the suspension of food transit, pharmacological reduction of pancreatic secretion, the contribution of parenteral nutrition with a low-fat diet has provided advantages in terms of reduction of complications. during surgery mortality ranges from a statistical check by 12.3% to 29.6% depending on whether it's a simple drainage or DPC. In the cases it considered the values were slightly higher from 16.2% to 32.5% Conclusions The incidence of pancreatic trauma is steadily increasing due to the presence of a massive motorization that involves an increase in the number of road accidents. the use of digitized diagnostic (CT and MRI) has reduced the time and diagnostic delays especially in blunt trauma, with the identification of the major pancreatic duct lesions. It remains to define the problem of identification of minute lesions due to pancreatic fistulas. The success of surgical treatment remains anchored to trauma treatment in the developmental phase, associated with the experience and technical and analytical ability to choose what and when to implement the most appropriate therapeutic treatment.

Index Terms— **trauma pancreatic surgery**

I. Introduction

Traumatic injuries affecting the pancreas have a percentage or statistic that oscillates between, 2 and 12% of all trauma in the abdomen (1.2) in 2/3 of the cases caused by road accidents and by a 1/3 of cases from penetrating puncture wounds and d 'firearm. the seat of the lesion usually affects, the body (65%), followed by the head (27%) and tail (8%), due, probably, most of the exposure of the glandular body and the resistance offered by the spine posteriorly. Given the anatomical site of the retroperitoneal pancreas it is surrounded by important organs, so it is necessary that the trauma has a significant kinetic force and a significant violence, because in 50-98% of cases regularly involve adjacent structures (duodenum, colon , spleen, liver, bile ducts, vena cava and portal vein, kidney, stomach). (3,4,5) the trauma then acts implementing a compression between the body and the vertebral bodies that would result in injuries ranging from bruising to partial detachment or complete the mesenteric vessels left the body for a median direction trauma, while crushing injuries to the head, tail, duodenum and spleen are present for injuries from the left. (6,7) the crushing produces a contusion followed the hematoma inside the parenchyma, the next outbreak digested for the 'activation of the enzymes, which produce serious injuries, up to the complete section of the pancreatic gland. (8.9). In the classification of the type of injury sec. Lucas (1977) identifies four paintings of increasing anatomical and clinical severity: • lesions of 1 ° type: simple contusion of the parenchyma or distal small tear without compromising ductal; • injuries of 2nd type: tearing or complete lesion of the distal section with pancreatic ducts; • injury of 3rd type: tearing or complete proximal section with ductal injury; • lesions of 4th type: severe pancreatic injury (laceration, proximal section with ductal injury) associated with severe duodenal injury or other intra-abdominal organ This evolutionary dynamic need for careful evaluation with

Giorgio Maria Paolo Graziano, Dpt Sciences Medical Surgery and advanced technologies " G Ingrassia" University of Catania Medical School Italy.

Federica Castelli, MD Department of Radiology, Hopital "G.Fracastoro" San Bonifacio, ULSS 20, Verona

Prof Antonino Graziano, Aggregate professor University of Catania, Medical School Italy Azienda, Policlinico , Dpt Sciences Medical Surgery and advanced technologies " G Ingrassia".

seriated controls., A thorough examination of viable surgical strategies, and complementary treatments aim of this work through a retrospective review of cases treated pancreatic traumatic pathology regarding the incidence, morbidity, classification, complications, surgical strategies, complementary treatments, during surgery, morbidity. It is to ask directions and guidelines to treatment Surgical.

II. Materials and Methods

The 88 review of clinical cases involve watching you two time periods the first and understood from 1981- 1994 with cases found at the II Surgical Clinic and emergency surgery dell 'Garibaldi, the second period from 1995 to 2010 the cases detected at III and II Surgical Clinic of 'Az .Policlinico Catania. In the first group we were observed n 12 patients whose blunt trauma No. 8 and No. 4 penetrating trauma, injuries associated n 2 cases related to the spleen, liver n 4, n 1 n 1 duodenum transverse colon. In the second group were n is observed 6 cases mentioned in No. 4 cases was this: No 1 a laceration of the body, No 1 in tearing of the tail, n 2 cases complete resection of the pancreatic duct. associated lesions related n 2 n 1 LL cases duodenum case the spleen. The mean age of patients was 38 years (8-68 in) .The male was the most affected 78% of cases. the statistical percentage of the membership lesions was 68% of the observed cases. symptomatology of isolated pancreatic lesions are frequently pauci symptomatology , a late manifestation, and often remain undetected. The lesion glandular follows pancreatitis with indistinct symptoms and often insidious. The involvement of other abdominal organs is responsible, on the other hand, the early manifestations, ranging from hypovolemic shock resulting in to the interest of vascular organs (liver, spleen) and large vessels, to peritonitis from lesion of hollow organs. The initial symptoms consists mesogastrico and epigastric pain, sometimes radiating "a" or "bar on the belt" to the sides and rear. These symptoms may experience premature spontaneous remission and then reappear a few hours away. Fever, jaundice (erratically), less frequently manifestations of bowel obstruction high are late symptoms. In cases where there were the blunt trauma: Treatment in No 8 cases in which there was a bruise or tear without parenchymal involvement product was done by a simple drainage with a residual n 2 pancreatic fistulas treated with NPT and healed n respectively into n 1 case in 30 days, and in 'other in 90gg. In the remaining 10 patients in n n 6 cases in which there was a laceration body and tail with complete detachment of the pancreatic duct associated with the irreparable injury of the spleen we proceeded to a distal pancreatic resection with splenectomy. (Fig 3 ab) In case No. 1 is left over a pancreatic fistula resolved with NPT 60gg..for remaining cases n 2 n 4 cases was this injury contused lacerated cephalic and duodenal ulcer treatment was to have repaired the pancreatic duodenal lacerations and with easy drainage and digestive derivation. (Figure 2 ab) in the last n 2 LL cases blunt trauma has produced a crush of the head and body with pancreatic lesions associated with the transverse colon and liver resection .Treatment with DPC and biliary-digestive derivation of loop sec Roux and resection of the transverse mechanical anastomosis TL, (fig 1 and b) required in one case reoperation for pancreatic abscess and fistula with resolutions of these complications in 6ogg. Complications accounted for 25% of the treated cases. Morbidity affected 35% of cases.

Fig 1 (a) Resection DPC

Fig1(b) TC lesion pancreas ,hepatic,duodenal

Fig 2(a) TC lesion spleen end pancreas

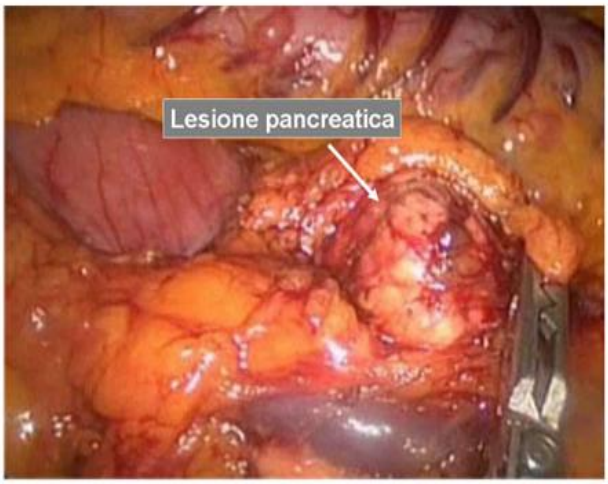

Fig 2(b) lesion pancreas

Fig 3 (a) Pancreas e spleen

Fig 3(b) lesion pancreas

III. RESULTS

In the choice of treatment was carried out with a precise distinction and evaluation of the following criteria: A) evaluation of bruising or tearing, B) the absence or complete or incomplete rupture of the pancreatic duct. c) destruction of the pancreatic head and involvement of the common bile duct. Such parameters that the classification sec Lucas takes into account with a percentage of lesions encountered which oscillates between stage I and II (65-75%). The initial symptoms were absent due to the failure to irritation of the posterior peritoneum, whereby the abutment of the blunt trauma pancreatic at early stage was initially detected following the repairs of the associated lesions. (Colon.spleen, bleeding). Subsequently, in relation to the dynamics of the accident, and in the presence of an irrelevant soreness in the abdominal we proceeded to serial controls with CT and MRI first negative in the early hours but after 50-58 hours was positive yield, or alternatively is realized a failure to display a portion of the pancreas which indicated the need for surgery. The diagnosis is based on medical history data (abdominal trauma), on pain relief evoked the deep palpation in the epigastric region and on laboratory tests and instrumental (ultrasound, CT). Clinic, blood tests and conventional radiology prove non-specific in detecting pancreatic lesion; Ultrasonography is Units. Use either SI (MKS) or CGS as primary units. (SI units are strongly encouraged.) English units may be used as secondary units (in parentheses). This applies to papers in data storage. For example, write “15 Gb/cm2 (100 Gb/in2).” An exception is when English units are used as identifiers in trade, such as “3½ in disk drive.” Avoid combining SI and CGS units, such as current in amperes and magnetic field in oersteds. This often leads to confusion because equations do not balance dimensionally. If you must use mixed units, clearly state the units for each quantity in an equation.

The SI unit for magnetic field strength H is A/m. However, if you wish to use units of T, either refer to magnetic flux density B or magnetic field strength symbolized as µ0H. Use the center dot to separate compound units, e.g., “A·m2.” useful for this purpose, but it is the TC ascertain with greater specificity. An examination essential analyte for the diagnosis and monitoring the evolution of the pancreatic lesion is the serum amylase. It presents high in 90% of cases of pancreatic injury; It can detect a late rise in values in 6-12 hours after the traumatic event; consistently high levels are predictive for the formation of pseudocysts. The lack of specificity of the symptoms associated with an isolated pancreatic injury causes, despite the advanced diagnostic capabilities, its discovery can still be a random finding in the course of laparotomy imposed by penetrating trauma. In blunt trauma often they have greater evidence associated lesions, which end up masking the pancreatic involvement with dangerous diagnostic delays which seriously affect the prognosis (greater morbidity and mortality). It 'important, therefore, in case of abdominal penetrating trauma or closed and particularly violence close above the navel, do not overlook the possibility of a pancreatic lesion. Abdominal trauma in the diagnostic and therapeutic attitude in the suspicion of a pancreatic involvement, is aimed at early detection of glandular lesion that, in unstable medical condition does not allow time for tests and imposes exploratory laparotomy in order to identify and amend the lesion causal, otherwise lethal. Where the clinical picture is

stable it will proceed to blood chemistry and instrumental analysis that can target in the presence of pancreatic lesions and other organs for surgery or observation in his absence. When in doubt of pancreatic ductal injury is shown performing a cholangiography RNM .The imaging studies (CT and MRI) have reduced the echo abdomen diagnostic time and rendered obsolete and video laparoscopy, surveys that collect indirect signs (loss of contour of the psoas muscle, bleeding retroperitoneal) of the lesion. It is still useful in cases of perforation of the duodenum associate the X-ray with gastrografin. The blood test of amylase and isoamylase was not specific, for which in the presence of an increase in their we proceeded instrumental examination. The during surgery evaluation included a mobilization of the duodenum sec Kocher and detection of hematoma, or a connective bile staining close pancreatic such significant elements of . glandular hematoma lesion was always open, and then we proceeded to a Wirsung-graphy using the cystic or cistifella and displaying the hepatic duct and the common bile duct in order to detect any undiagnosed injury. The post-traumatic complications such as haemorrhage, acute pancreatitis, and sepsis were present but was found a difficulty to recognize minute hemorrhagic lesions that are due to the evolution towards an infection that was detected on average after 3 weeks. The lesions of the duct ductal with loss of enzymes resulted in the castings, similar cysts and relapsing pancreatitis. lL surgical treatment required further evaluation of parameters such as the site of the lesion, the age that has guided the conservative treatment in young people.

IV. DISCUSSION

The difficulty to implement an early diagnosis of pancreatic injury, impacts heavily on the surgical treatment outcomes that is burdened by postoperative morbidity and mortality that, in different series, ranging between 50 and 70% in the first; from 9 to 25% the second .. The evolution of a pancreatic trauma can be dramatic, when coexist important vascular lesions that lead to hypovolemic shock and are a cause of immediate death in 3-8% of cases. minimum pancreatic lesions heal without sequelae; the occurrence of early and late complications of surgical treatment of initial or injury (pancreatitis, hemorrhage, peritonitis, similar cysts, collected in abdominal, fistulas) is responsible for the deaths "late." The medical treatment of pancreatic trauma, consistent with that for pancreatitis, is aimed at containing the parenchymal damage and the prevention of septic complications. It is the only treatment as in the case of injury or minimal medium with benign evolution and in the cases under observation. It is the administration of blocking enzymes , longastatina, anti H2 drugs, antibiotics and analgesics NPT. (10) The planning of the surgery takes into account several factors: • Time: the surgical approach in emergency is imposed in case of unstable conditions, rapidly evolving, in which recognize and promptly amend the causal lesion is equivalent to contain the number of early deaths; • general factors such as age, poor conditions, preexisting comorbidities, may increase the operative risk, influencing the choice of surgical tactics (11) (interventions "minor" rather than demolition; • Local factors: the location of the lesion (head, body, tail, proximal or distal) and type (simple or injuries associated; parenchymal and / or ductal) affect the choice of the type of intervention to be implemented. the surgical treatment in pancreatic lesions. the 'surgery of the external drain (68%) affected patients with bruises and hematoma sub capsular and parenchymal lesions with pancreatic duct unscathed. the drainage of the pancreatic loggia was executed by the affixing of silicone tubes of large diameter, with the suture of the parenchyma and the capsule, carefully avoiding sutures in depth. the subsequent presence in some cases of pancreatic fistula were treated with NPT. the caudal pancreatic resection has found indications in the tearing of the body and tail of the pancreatic duct. (12,13) surgery always performed in urgency with presence of additional irreparable injury to the spleen that have also led to an associated splenectomy. in lesions affecting the body and the head of the pancreas with lesion of the right axis the DPC portal duct resection with anastomosis loop Y sec Roux was the procedure of choice, making sure that when the pancreatic resection was interested in the 10cm (70-80%) of parenchyma has decided for a left pancreatectomy with ductal pancreatic stump closed and no jejunal anastomosis. This surgery provides good results (14, 15) and is assessed in relation to the case and what the injury resection limit, for savings of the duodenum with adjoining portion of the gland. For cephalic and duodenal lesions in the presence of bleeding the intervention of DPC becomes necessary it is urgent, always performed within 24 hours from the trauma, with better security in the packaging pancreatic duodenal anastomosis due to the failure to inflammation that affects the parenchyma and the capsule , but with difficulty t he anastomosis mucosa mucosus for the presence of a pancreatic duct not dilated, and a bile duct also not dilated it is preferable to the closure of the common bile duct and a downstream bilio digestive cholecysto-jejunal derivation. (16-17, 18) In the pancreatic duct injuries in the cephalic internal drainage with application of a loop isolated Roux sec and a silicone suction drain placed in the duct in the vicinity of the lesion represents an alternative to the DPC. Finally in the lesions combined cephalic and cephalic isolated duodenal or pyloric exclusion with the intervention of gastroenterostomy and external drainage of pancreatic loggia allows to exclude the duodenum from the food transit favoring cicatrization and associating a therapy that causes a marked reduction in the pancreatic secretions so as to facilitate the healing of pancreatic lesions then reserving the DPC only in case of severe tissue destruction. (19:20) The decision on the type of treatment remains bound to the experience, the technical skills, to 'clinical analysis of the case of the' surge capacity of choice related by the possibilities of success when the traumatic event is evolving. The success of the surgical treatment had need of complementary therapy. The NPT with the suspension of food transit, drug reduced pancreatic secretion, the contribution of enteral nutrition with a low-fat diet has provided benefits in terms of reducing complications. During surgery mortality ranges from a statistical check by 12.3% to 29.6% depending on whether it's a simple drainage or DPC. In the cases it considered the values were slightly higher from

16.2% to 32.5% .The morbidity included abscesses, pancreatitis and pancreatic fistulas and duodenum, and also led to reoperation for anastomotic dehiscence pancreatic duodenal , who had an incidence comparable to the series. (18,19,20,21,22) the dehiscence was caused by anastomosis in urgent need for the presence of extensive inflammation which was followed by necrosis in the pancreas suddenly anastomosed . The prognostic risk in urgency is frequent with a more or less long healing evolution in 50% of cases.

V. Conclusion

The incidence of pancreatic trauma is steadily increasing due to the presence of a massive engine that involves a statistical increase in the number of road accidents. the use of digitized diagnostic (CT and MRI) has reduced the time and diagnostic delays especially in blunt trauma, with the identification of the major pancreatic duct lesions. It remains to define the problem of identification of minute lesions due to pancreatic fistulas. In the cases observed higher incidence of traumatic lesions of the pancreas belonged to stage I and II by Lucas .In such cases implemented conservative treatment was an obvious choice. In the body and tail lesions hemodynamically unstable treatment with distal pancreatectomy has provided good results. In cases of cephalic trauma with bleeding and lesions associated treatment with DPC it was necessary, but it remains an indication that in young patients it is preferable to implement an internal drainage of jejunal loop or a gastroenterostomy, surgeries that are not burdened of Excessive morbidity and mortality, and by allocating the surgery resection only in the presence of multiple lesions, hemorrhagic. signs with the guidelines that emerge in our experience of pancreatic trauma are: • the diagnosis is often random in penetrating trauma, late in the closed ones • an inquiry into specific diagnostics is the CT • the prognosis is often severe because of gravity of lesions and the diagnostic-therapeutic delay Therefore, in order to improve the prognosis in such patients, it is necessary to make every effort to achieve: • diagnosis and early treatment • careful assessment of the indications operating • careful monitoring to limit complications, mobility and mortality the success of surgical treatment is then anchored to trauma treatment in the developmental phase, associated with the experience and technical and analytical ability to choose what and when to implement the most appropriate therapeutic treatment. Recent studies (10) have confirmed as the trauma is responsible for sudden biochemical changes that occur upon impact. The severity can be classified by measuring the biochemical-specific changes such as: depression of energy metabolism, gene expression alteration with the understanding of the multidimensional cascade of injuries .These mechanisms offer treatment options such as the management of ventilatory mechanics, you can realize through the pharmacological intervention to reduce the excitotoxicity. The unpredictability of the pathophysiology of the person requires constant monitoring in order to adapt the treatment depending on the specific status of the patients. The Future advances in the understanding of the biochemical changes applied to determine the clinical delineation of specific results with targeted strategies, involved in the early stages of trauma with reduced severity of trauma.

References

[1] R. H. Wilson Current management of trauma to the pancreas British Journal of Surgery Volume 78, Issue 10, pages 1196–1202, October 1991
[2] Amarotti c et al trauma pancreatici urgenza radiagnosica e terapeutica chirurgia ogg 10 97-103 1993.
[3] Becelli S trauma del pancreas arch ed atti soc ital chir. 91 congss 7 11-30 1989.
[4] Moore EE,et al Organ injury scaling, II: Pancreas, duodenum, small bowel, colon, and rectum Department of Surgery, Denver General Hospital, CO 80204-4507. The Journal of Trauma [1990, 30(11):1427-14.
[5] Kenneth D. et al. Brooks Pancreatic trauma — injuries to the pancreas and pancreatic duct European Journal of Surgery Volume 166, Issue 1, pages 4–12, January 2000
[6] Mr T. E. Madiba* Favourable prognosis after surgical drainage of gunshot, stab or blunt trauma of the pancreas British Journal of Surgery Volume 82, Issue 9, pages 1236–1239, September 1995
[7] A. Berg al Duodenal fistula. Its treatment by gastrojejunostomy and pyloric occlusion Ann Surg, 45 (1907), pp. 721–729 2005
[8] T.D. Martin et al. Severe duodenal injuries. Treatment with pyloric exclusion and gastrojejunostomy Arch Surg, 118 (1983), pp. 631–635
[9] P.P. Lopez, R. et al. Recent trends in the management of combined pancreatoduodenal injuries Am Surg, 71 (10) (2005), pp. 847–8
[10] A Graziano V Calabrese et al Hormesis and vitagenes in aging and longevity: mitochondrial control and hormonal regulation Horm Mol Biol Clin Invest 2013; 16(2): 73–89.
[11] Cavallaro M, Paolo Graziano GM 2, Cavallaro A, Graziano A (2015) The Stent Evolution in Colo-Rectal Emergencies. J Surg Surgical Res 1(3): 045-048.
[12] Graziano A, Cavallaro M, Cavallaro A, Paolo Graziano GM 3 (2015) The Neuroendocrine Cancer. Personal Comments and Operational Remarks. J Surg Surgical Res 1(3): 053-054.
[13] Paolo Graziano GM, Cavallaro M, Graziano A (2016) The Familial Adenomatous Polyposis. A Difficult Problem, Between Prevention and Treatment. J Surg Surgical Res 2(1): 005-009.
[14] Giorgio Maria Paolo Graziano,1 et al Clinical and Molecular Anatomy of Gastrointestinal Stromal Tumors (GIST) International Journal of New Technology and Research (IJNTR) ISSN:2454-4116, Volume-2, Issue-4, April 2016 Pages 110- 114
[15] Jansen JO, Thomas R, Loudon MA, Brooks A (2009) Damage control resuscitation for patients with majortrauma. BMJ 338:b1778
[16] Fang JF, Wong YC, Lin BC et al (2006) Usefulness of multidetector computed tomography for the initial assess- ment of blunt abdominal trauma patients. World J Surg 30:176–182
[17] Huber- Wagner S, Lefering R, Qvick LM et al; Working Group on Polytrauma of the German Trauma Society(2009) Effect of whole- body CT during trauma resuscitation on survival: a retrospective, multicentre study.Lancet 373(9673):1455–1461
[18] Wallis A, Kelly MD, Jones L (2010) Angiography and embolisation for solid abdominal organ injury inadults—a current perspective. World J Emerg Surg 5:18
[19] Zealley IA, Chakraverty S (2010) The role of interventional radiology in trauma. BMJ 340:c497
[20] Dabbs D, Stein DM, Scalea TM (2009) Major hepatic necrosis: a common complication after angioembolization for treatment of high grade liver injuries. J Trauma 66:621–629
[21] Hong MS, Feezor RJ, Lee WA, Nelson PR (2011) The advent of thoracic endovascular aortic repair is associated with broadened treatment eligibility and decreased overall mortality in traumatic thoracic aortic injury. J VascSurg 53:36–42
[22] Fabbri A, Servadei F, G Marchesini et al. Which type of observation for patients with high-risk mild head injury and negative computed tomography? Eur. J Emerg Med 2004: 11:65-69.