DISCUSSION

BAT may represent a life threatening condition requiring rapid diagnosis and treatment. [23] The presence of lesions on the retroperitoneum generally worsens the prognosis in traumatic pathology. [8] RPI were among the most challenging and serious emergencies, and necessitate a maximum of attention and expertise which often means saving the patient's life. [7]

During this period the total numbers of BAT patients were 278. Among those there were 81 cases diagnosed to have RPI which presents 29.1%. There were 197 cases diagnosed to have non retroperitoneal injury (non-RPI) which presents 70.9%. This was considered slightly a higher rate in comparison to the study of Daly et al [6] who reported that RPI occur in a significant minority (12%) of abdominal trauma cases. This may be explained because the study of Daly et al was on hemodynamically stable patients only.

As regards the RPI patients' ages, in our series the majority of the patients belonged to 20-30 years age group (30 patients out of 81 of the total number) with the percent of 37%. This comes in agreement with study conducted by Asuquo et al who reported that RPI affected mainly young patients who constitute an active and productive segment of the society with greater mobility with increased risk of accidents. [19]

As regards the RPI patients' gender, the male presentation was predominant with the percent of 74.1% while 25.9% were females. This comes in agreement with study conducted by Muftuoglu et al [5] who reported 105 male and 42 female patients and comes in agreement with astudy conducted by Salomone et al [18] who reported that male to female ratio is 3:2. As the males are more active and tend to engage in activities so have a greater chance for injuries.

Regarding the causes of RPI in our study, it was found that road traffic accident (RTA) was the commonest causes in the whole series. It represented (66.7%) followed by fall from high (22.2%) and physical assault (11.1%).This comes in agreement with study conducted by Claude et al [123] who reported that RTA (61%), followed by falls (19%), others (11%), and physical assault (10%). A report from Yeo et al [12], Jennifer et al [13], conducted that MVC occurred in 75% of RPI cases.

Regarding initial physical examination in RPI patients In our series, the percentage of RPI patients presented with abdominal tenderness and rebound tenderness was 85.2%, those presented with abdominal guarding and rigidity was 74.1%, who presented with abdominal pain was 72.8%, who presented with contusion of abdominal wall and back and abdominal distention was 64.2%, who presented with pallor 51.9%, who presented with hematuria was 42% and who presented with vomiting 23.5%. However in our present study the majority of patients had shown positive clinical signs and symptoms for RPI. The clinical picture of RPI patients after BAT if absent this didn't exclude presence of abdominal injuries. Investigation was needed in every patient with BAT whether he was showing clinical signs and symptoms or not.

A report from El-Gamal et al said that the initial physical examination in BAT patients detected abdominal tenderness in 85% of patients. [124] Matar et al agrees with that and reported that 84% presenting with abdominal pain. [125] Burch et al reported that the abdomen is a diagnostic black box. Physical examination of the abdomen in RPI patients was unreliable. [25] In agreement with Abdulqadir et al who reported that identification of serious RPI often challenging, many injuries may not manifest during the initial assessment and treatment period.[126] Salimi et al reported that the clinical history and physical examination alone were usually unreliable, as nearly half the patients may have no complaints or external signs of abdominal injury on admission to hospital. [23]

In our series, FAST and CT were performed in all BAT patients as a routine step. Ultrasound diagnosis of 278 cases with BAT, (89.6%) patients had intra peritoneal fluid, (23.7%) patients had splenic injury, (23.3%) patients had retroperitoneal hematoma, (18.7%) patients had liver injury and (12.6%) patients had kidney lesion. Friese et al and Jurkovich et al reported that Bedside tests such as DPL and FAST can yield negative findings or fail to help detect signs of retroperitoneal injury, even in the presence of significant retroperitoneal injury and computed tomography (CT), played a central role in the assessment of retroperitoneal structures following blunt trauma. [30][31]

Regarding CT diagnosis of patients with proven RPI, retroperitoneal hematoma was the commonest retroperitoneal injury (80.2%) and the most common location was zone III which usually due to fracture pelvis, this comes in agreement with study conducted by Sultan et al who reported that pelvic fracture is the most common cause of retroperitoneal hematoma in zone III.[127] Also Muftuoglo et al agreed with that and reported that pelvic hematoma was 68% and was the most common location.[5] Retroperitoneal free fluid (blood) was the second lesion in retroperitoneal space (49.3%) in our study. Madiba et al reported that retroperitoneal hemorrhage may arise from injuries to major vascular structures, hollow viscera, solid organs, or musculoskeletal structures or a combination thereof.[72] The kidney injury was the third lesion in retroperitoneal space (43.2%) in our study. this comes in agreement with study conducted by COX who reported that the kidney is the most common injured retroperitoneal and genitourinary organ.[65]

George et al reported in his series 26.7% patients with multiple organ injuries. [128] This was in agreement with our study which reported that the incidence of the associated non-RPI with patients with proven RPI was intra peritoneal free fluid (90.1%), splenic injury (23.4%), liver injury (18.5%) and bladder injury (3.7%) and more than one lesion could be present in the same patient.

Regarding the incidence of the associated injury in patients with proven RPI in the present series, (60.5%) had head injury, (56.8%) had extremity injury, (45.7) had chest injury and (40.7%) had pelvic injury. This comes in agreement with study conducted by Isenhour et al. [13] who reported that blunt abdominal trauma is always found in patients with severe trauma, and associated with orthopedic, thoracic, or CNS injuries.

Over the past fifteen years, there had been a major shift from operative to selective non-operative management (NOM) of solid organ injuries in blunt abdominal trauma (BAT). [129] Nonoperative management of blunt traumatic injuries is well established, and strategies based on CT scan diagnosis and the hemodynamic stability of the patient are now being widely used in the treatment of solid organ injury as well as pelvic injuries. In RPI selective nonoperative management had become the standard of care.[130]

Conservative treatment was a safe and very effective method in the management of RPI patient in our series this translated to a reduction in hospital stay, the risk of blood transfusion as well as attendant morbidity and mortality. It was successful in 76 cases which represent 93.8% of the patients which the number of patients with operative management was 5 cases which represent 6.2%, two out of the five patients were operable due to RPI (vascular injury and pancreatic laceration) and three operable due to associated non RPI (liver laceration, splenic laceration and gut rupture). Norman et al reported that 55% were managed conservatively with a low failure rate.[131] this was in agreement with the following studies Yanar et al (75%) [132], Notash et al (81.5%) [133] and Al-Mulhim et al (82.5%).[134]

The incidence of blood transfusion in our study was 72.8% (59 patients) which is considered a higher rate in comparison to other studies. Giannopoulos [128], George et al [39], El-Gamal et al [124] and Bismar et al [135], 20%, 58%, 40%, 37.5% respectively. In Asuquo et al study the patients received parenteral iron while others were given oral iron tablets so no patient had blood transfused.[17] The absences of definite protocol may cause this high result. Formulating definite protocol and definite indications for blood transfusion will decrease the incidence, hazards of blood transfusion and decrease the cost.

Bismar et al [135], Malhotra et al [136] and Schroeppel et al [137] reported that nonoperative management significantly improved outcomes in terms of decreased abdominal infections and decreased lengths of stay. This translated in our study to a reduction in hospital stay; reduce the risk of blood transfusion as well as attendant morbidity and mortality associated with laparotomy. The ranging hospital stay of patients was from 7-9 days this presented 43.2%.

As regards to the morbidity during follow up and tertiary survey of patients with proven RPI in this study, (19.8%) of the patients had chest infection, (14.8%) of the patients had wound infection, (3.7%) of the patients had superficial thrombophlibits, (2.5%) of the patients had post operative complication and (1.2%) of the patients had a missed injury (pancreatic injury). This comes in agreement with study conducted by Daly et al [6] who reported, as respiratory complication, wound infection, small bowel obstruction and paralytic ileus as post operative complication and Avery [37] reported that pancreatic injuries may not be identified on initial CT scans but generally are found on follow-up examinations performed on high-risk patients.

As regards to the mortality of patients with proven RPI, There were 12 patients who died, this presents 14.8%. 3(25%) of the patients who died due to RPI (one due to vascular injury and two due to pancreatic lesion) and 9 (75%) out of the patients who died due to associated injury to RPI (3 due to head injury, 3 due to liver injury, 1 due to splenic injury, 1 due to gut rupture, 1 due to chest injury). This comes in agreement with study conducted by Rosemary et al who reported that delay in diagnosis and treatment is a major contributing factor to mortality, which is often due to hemorrhage, sepsis, and multiple organ injury. Howell et al reported that there was high mortality rate associated with multiple abdominal organ injuries than with single organ injuries. [15] Jansen et al reported that BAT is one of the most common causes of preventable, trauma-related deaths and the presence of lesions on the retroperitoneum generally worsens the prognosis. [28]

SUMMARY

Blunt abdominal trauma can cause significant and sometimes life-threatening injuries to retroperitoneal structures. Imaging, particularly computed tomography (CT), plays a central role in the assessment of retroperitoneal structures following blunt trauma.

This was a prospective study carried out on patients with BAT with proven retroperitoneal injuries (RPI) who were admitted to the Emergency Department Alexandria Main University Hospital between 1st of October 2013 to 1st of April 2014. During this period the total number of BAT patients was 278. Among those there were 81cases diagnosed to have RPI (29.1%).

Road traffic accident was the most common mechanism of RPI in our study It represented (66.7%) followed by fall (22.2%) and physical assault (11.1%). Males were predominantly affected by RPI after BAT; the study included 60 (74.1%) males and 21(25.9%) females. RPI affects mainly the young patients belonging to the age group (20-30) years in our series.

In our study the majority of patients had shown positive clinical signs and symptoms. The percentage of the patients who presented with abdominal tenderness and rebound tenderness was 85.2% while those with abdominal guarding and rigidity was 74.1% and who with abdominal pain was 72.8%. In our series retroperitoneal hematoma was the commonest RPI (80.2%) and the most common location was zone III which is usually due to fracture pelvis and the associated non RPI were Intra peritoneal free fluid (90.1%), Splenic injury (23.4%), Liver injury (18.5%). RPI was found in patients with severe trauma, and associated with orthopedic, thoracic or CNS injuries.

Nonoperative management has become the standard of care in RPI it was successful in 93.8% of the patients and number of patients with operative management was 5 cases only which represent 6.2%. This translated to a reduction in hospital stay; reduce the risk f blood transfusion as well as attendant morbidity and mortality associated with laparotomy.

The percentage of blood transfusions received by patients was 72.8%. The range of hospital stay varied from 1 to15 days. The morbidity during follow up and tertiary survey of patients with proven RPI was due to chest infection, wound infection, superficial thrombophlibits, post operative complication and a missed injury (pancreatic injury). There were 12 patients who died which present 14.8%, three of them died due to RPI and 9 patients who died due to an associated injury.

CONCLUSIONS

- Retroperitoneal traumatic lesions are the most challenging and serious emergencies, and necessitate a maximum of attention and expertise by the surgical team involved.

- Imaging, particularly computed tomography (CT), plays a central role in the assessment of retroperitoneal structures following blunt trauma.

- Retroperitoneal hematoma was the commonest retroperitoneal injury and the most common location was zone III which is usually due to fracture pelvis.

- Non operative management has become the standard of care in retroperitoneal injury.