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Case report

“Gunshot Injury to the pelvis”. The bullet voided through the urethra.

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ABSTRACT:

Gunshot injuries (GSIs) are considered an emergency as life threatening. The gunshots injuries in the urinary tract are uncommon. The high-velocity of bullet can cause both a penetrating injury to the target organs as well as a blast injury to nearby structures, in addition to thermal injuries. In most cases, laparotomy is required to remove the bullet and to repair the injuries. The phenomenon of spontaneous migration of retained bullet to different parts of the body has been described in medical literature. Here, we present a patient who sustained penetrating GSI to the pelvis, without organ injuries, including the bladder. The bullet initially was retained within peri-vesical fat and the bladder wall while the mucosa remained intact, then it migrated into the bladder and came out through the urethra during voiding on the sixth day of the injury.

Keywords: Bladder injury, Gunshot, Bullet, Cystogram.

INTRODUCTION

The bladder injuries can be due to blunt or to penetrating trauma; the penetrating trauma represents about 25% of all bladder injuries, and the majority of them are due to GSI [1]. GSIs are commonly associated with non-urollogic injuries such as rectal injury, and

have high incidence of morbidity; however the incidence of mortality may reach up to 22% [2]. The extent of intra-abdominal injuries associated with GSIs are difficult to predict because the paths of both primary and secondary missiles are unpredictable, as well as bone fragments or fragments of the bullet

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can inflict other injuries [3] so it is imperative to involve general surgeons in the evaluation of patients [4]. Hematuria represents only 50% of acute presentations of GSIs [5]. The absence of signs such as hematuria and normal diagnostic studies, along with apparently normal laparotomy do not always effectively rule out bladder injury, so a high index of suspicion may be necessary to make the diagnosis [6]. In the literatures, there are case reports of patients voiding the bullet spontaneously [7].

CASE PRESENTATION

A twenty-five year old man sustained a single GSI during crossfire. The patient was sitting in his car when he sustained the injury. He was received in the emergency room, and was conscious, oriented, hemodynamically stable, and complained of bleeding and pain at the site of inlet. The emergency team including urologist, general surgeon, orthopedic surgeon and neurosurgeon attended and examined the patient, and the physical findings were soft abdomen and no signs of peritonitis. Digital rectal examination revealed no bleeding per rectum. There were no neurological defect and no evidence of long bone fracture. Hemostasis from bullet inlet site was secured. Foley's Catheter was inserted and urine was clear. Imaging studies included plane X-ray of the abdomen and pelvis, Computerized Tomography (CT) and cystogram were performed to discover any hidden injuries. The patient was admitted to hospital for close observation.

RESULTS

Plain X-ray of abdomen and pelvis shows retained bullet (Figure 1).



Figure 1: Plain X-ray shows the bullet arrested in pelvis

A CT scan of the abdomen without contrast was performed immediately and showed normal findings apart from a high-resolution metal with artifacts posterior to the bladder in the peri-vesical fat in the pelvis, while the bladder mucosa remained intact [Figures 2 and 3].

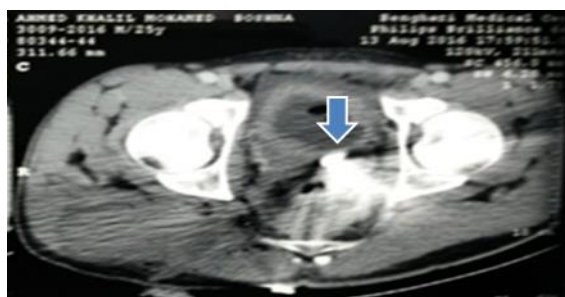


Figure 2: CT scan without contrast shows bullet arrested at left peri-vesical space between bladder and rectum. The bladder mucosa was intact.



Figure 3: CT scan without contrast shows high-resolution metal with artifacts posterior to the bladder.

Then computerized tomography scan with contrast was performed and revealed no injuries to any abdominal organs, and no extravasation of contrast [Figures 4 & 5].

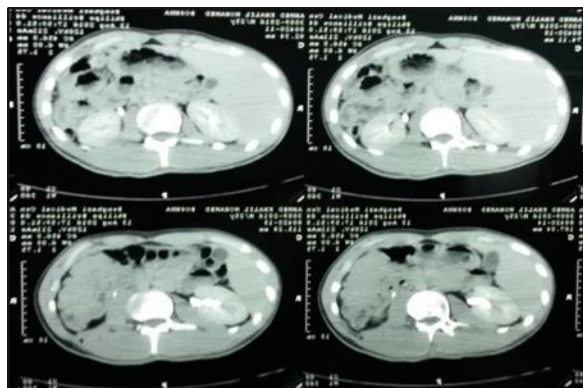


Figure 4: CT scan abdomen shows no free peritoneal fluid, liver and both kidneys were normal, no extravasation of contrast.

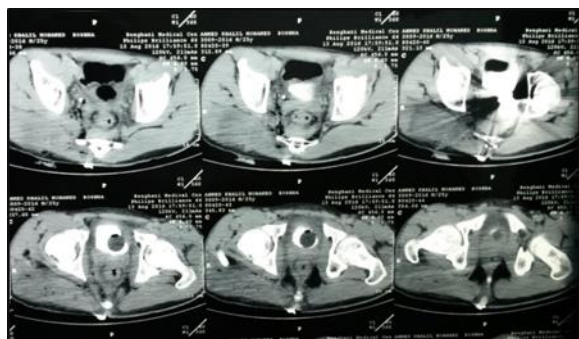


Figure 5: CT scan with contrast in which the extravasation of contrast cannot prove because of the overlaps of the contrast shadow and the effects of CT scan radiation on the metallic material of bullet.

The patient was admitted to hospital for observation and monitoring of vital signs as well as for receiving parenteral antibiotics and dressing of inlet wound. On the fourth day plain X-ray of the pelvis and cystogram were performed to ensure there were no extravasation in order to remove the catheter and discharge the patient [Figures 6 & 7].

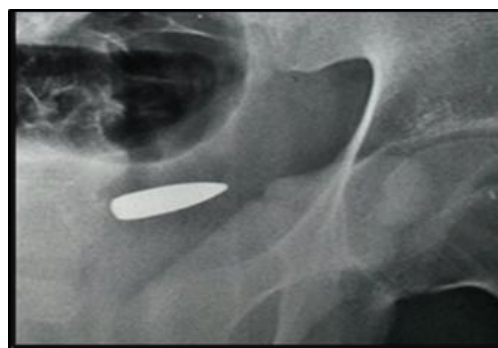


Figure 6: Plain X ray bullet in place



Figure 7: Shows no Extravasation.

From previous figures 6, 7 we didn't notice that the bullet orientation was changed; the catheter was removed and decision of discharging the patient on the next day was taken. Unfortunately the patient developed an increase in frequency, a strong desire of micturition, and pain at the course of the urethra requiring administration of analgesic. Then eventually he passed the bullet through the urethra [figure 8 &9].



Figure 8: shows the bullet.



Figure 9: X-ray pelvis shows no foreign body.

The patient was discharged after 48 hours of observation and was followed up for 2 weeks without any unwarranted sequels.

DISCUSSION

Injuries to the genitourinary system among civilians sustaining GSI are uncommon, and represent up to 10.5% of all cases [8]. In our country (Libya), since the revolution, the number of cases sustaining GSIs incredibly increased and became the most common cause of urinary tract injuries. The peri-vesical bullet rarely migrates into the bladder and less than 20 cases were reported in the past 100 years, and the time of presentation after initial injury ranged from immediate [9] to approximately a decade later [10]. The timing of presentation depends on the initial tissue injury; those patients having missed bladder injury and the bullet either retained in bladder wall or within the lumen of the urinary bladder itself may present soon after injury [11]. Whereas in the case of retained peri-vesical bullet, the presentation may be delayed because the erosion and inflammatory change occurring in the bladder wall may take a long time [12]. Migrated bullet to the bladder may pass spontaneously through the urethra during voiding [13], or obstruct the urethra resulting in acute urinary retention [14]. We reported that the patient spontaneously expelled the bullet from the

urethra on the 6th day after injury where he was managed conservatively. Management of the retained bullet is variable from conservative management to exploration depending on the nature of injury, on physical findings, on laboratory and imaging studies results as well as availability of operative surgeon, providing that the patient is hemodynamically stable and there are no signs of peritonitis. Many prospective and retrospective studies described successful conservative management of retained bullet in extraperitoneal peri-vesical space by continuous drainage of bladder by Foley catheter; [15] however this is not suitable for retained intravesical bullet. The fate of retained bullets are either spontaneous passage of retained intravesical bullets through urethra during voiding, and in these patients the bladder injury usually is not recognized [16], or obstructing the urethra and causing urinary retention [17], or calculus formation due to incrustation [18]. The options of treatment of intravesical bullet resulting in urinary retention, is retrieval of the bullet via cystoscopy or by open means. Spontaneous expelling of bullet via the urethra was recorded 5 days after negative abdominal laparotomy [6]. In contrast to the high velocity GSI, the stab wound injuries are usually more predictable with regard to injured organs [3]. Nevertheless, a high index of suspicion must be maintained to avoid missing occult injuries in cases of GSIs [19]. Any penetrating injuries to urinary tract are suspected to be associated with rectal injury and this should be fully evaluated to avoid severe complications [20]. Despite pre-operative and intraoperative diagnostic tools, the end results sometimes are unpredictable

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[6]. In hemodynamically stable patients, and when there is any doubt regarding abdominal cavity violation, CT scan becomes particularly useful because by it the trajectory can be confirmed [21]. In cases of penetrating abdominal trauma without visceral injuries, the rate of negative laparotomies are high; however an alternative diagnostic procedure to exclude any significant intra-abdominal injuries is laparoscopy [22].

CONCLUSION

Treatment options of genitourinary penetrating injuries are complex and depend on the severity, site and type of injury and on patient's general condition, as well as on presence of concomitant injuries. In case of GSIs, the exploratory laparotomy is mandatory. However, when the bullet enters the pelvis at low velocity and is retained at peri-vesical space or within the bladder wall while the bladder mucosa remains intact, and the patient is hemodynamically stable, it can be managed conservatively because negative laparotomy with missing bullet adds insult to the initial injury

CONFLICT OF INTEREST

The author declares that he has no conflict of interest.

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ملخص باللغة العربية

" إصابة منطقة الحوض بعبارة ناري " الرصاصة تخرج من خلال مجرى البول أثناء التبول

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تعتبر الإصابة بالأعيرة النارية حالة طواري ويمكن أن تكون مهددة للحياة. الإصابات بالأعيرة النارية في المسالك البولية غير شائعة ولكن السرعة العالية للرصاصة يمكن أن تسبب إصابة إختراقية للأعضاء التي في مسارها، أو يمكن أن تسبب إصابات إنفجارية للأنسجة القريبة بالإضافة إلى الإصابة الحرارية (الحروق). معظم الحالات تتطلب تدخلاً جراحياً لازالة الرصاصة وكذلك إصلاح الإصابات الناتجة عنها. ظاهرة الهجرة التلقائية للأجسام الغريبة داخل الجسم مثل العيار الناري في أجزاء مختلفة من الجسم قد وصفت في الدراسات الطبية. هنا، نقدم حالة نادرة لمريض أصيب بعبارة ناري اخترق منطقة الحوض مع عدم وجود إصابات في أجهزة البطن بما في ذلك المثانة. الرصاصة استقرت في البداية في الدهون المغلفة للمثانة وجدارها، ثم هاجرت إلى داخل المثانة وخرجت من خلال مجرى البول أثناء التبول في اليوم السادس بعد تعافيه من الإصابة.

