Trauma and reconstruction

Scrotal gunshot injury: A case report

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Abstract

Incidence of firearm injuries generally and scrotal injuries specifically varies between regions and countries. Patients admitted to the emergency department for gunshot wounds to external genitalia require a thorough assessment. We report the case of a 33-year-old patient who was shot in the thigh and scrotum resulting in a unilateral orchidectomy. In this article, we detail key elements of care for this type of injuries.

Introduction

Scrotal firearm injuries are a frequent occurrence for urologists. Their incidence is variable and their management relies in early debridement and repair depending on the extent of the lesions to avoid any infectious complications. Some injuries may need secondary interventions for functional or esthetic purposes. We report the case of a young patient who was shot twice with a bird-hunting shotgun resulting in unilateral orchidectomy.

Case presentation

We report the case of 33-year-old male patient with no medical history who was admitted to the emergency department after being shot twice in the pelvis with a bird-hunting shotgun at close range. During the initial assessment, the patient was tachycardic at 107 bpm and his blood pressure was at 124/82 mmHg. The examination found a large detla on the right thigh, scrotum and pelvis. No vascular injury was noted on CT-angiography (Figs. 1 and 2).

The patient received fluid resuscitation and antibiotics then underwent an abdominopelvic computed tomography scan. The CT-scan showed the presence of multiple round formations of metallic density on the right thigh, scrotum and pelvis. No vascular injury was noted on CT-angiography (Figs. 1 and 2).

The patient was later admitted to the operating room. The exploration found a ruptured epididymis and tunica albuginea on the right testis and a laceration of the tunica albuginea of the left testis with no involvement of the epididymis or the spermatic cord (Fig. 3). We performed a right total orchidectomy and a resection of the necrotic pulp with a suture of the tunica albuginea on the left testis. Testicular sperm extraction was proposed to the patient in an effort to retain his future reproductive potential, but he refused. A Delbet drain was left. A retrograde urethrogram was performed and found no involvement of the lower urinary tract. Vascular surgeons were consulted for the debride-ment and closure of the wound on the patient’s thigh.

The post-operative care was simple. The drain was removed on the second day after surgery and the patient was discharged on day three with an eight day course of oral antibiotics.

The patient was last seen a year later. He reported normal erectile and ejaculatory function. His testosterone level was in normal range and scrotal doppler ultrasound showed a hypotrophic left testicle with normal arterial and venous vascularization. Semen analysis found oligoasthenoteratozoospermia. The patient’s lead blood level was at 48mcg/dL.

Discussion

Firearm related injuries incidence vary widely among countries and across demographic subgroups. Six countries (Brazil, United States, Mexico, Colombia, Venezuela and Guatemala) accounted for 50,5% of deaths from firearm injuries in 2016. Between 2007 and 2015, a total of 8030 patients with scrotal trauma were identified in the USA. A penetrating mechanism was seen in 50,5% of the patients, 75,8% of them were caused by firearms.

Patients admitted to the emergency department for gunshot wounds to external genitalia require a thorough assessment. Upon admission, the physician should inquire about the range, caliber, number of shots fired, their direction and the type of weapon used to evaluate the energy transferred and the amount of damage done. The focus should be put on
treating life threatening conditions first, and only then focus on the genital trauma. Initial assessment of gunshot victims should be approached in the same way as other acute trauma by following the Advanced Trauma Life Support protocol. Unstable patients with active bleeding that does not respond to initial fluid resuscitation require immediate exploratory surgery in the operating room. Otherwise, the management course of the injury depends on the entry and exit wounds and the presumed trajectory.

The contribution of radiological explorations can be valuable. Scrotal ultrasound can show a disruption of the tunica albuginea, an hematocoele or testicular contusion. Retrograde urethrocystography can show the damage done to the lower urinary tract. An angioscan should be obtained when the presumed trajectory of the projectile crosses or goes near a major vascular axis.

Urethrocystoscopy can be of value to diagnose any injury to the urethra or bladder.

In penetrating genito-urinary trauma, the main objective of surgery is to assess the damage, excise devitalized tissue, preserve viable tissue and assure hemostasis and urinary diversion. Leaving behind pellets exposes the patient to a higher risk of infection theoretically. Cases of pellet migration either causing reoccurring symptoms or being spontaneously passed have been reported. When scrotal involvement is present, exploratory surgery is the gold standard of care. It allows to directly evaluate the testicular damage and decide on the best course of action. It’s main objective is to excise any necrotic testicular tubules, close the tunica albuginea, evacuate blood clots and remove foreign bodies if necessary. Depending on the extent of the injury, primary repair of the testis and scrotum can be performed after thorough irrigation. In most cases and due to the elasticity of scrotal skin, the primary closure of a scrotal injury is often possible. If a disruption of the spermatic cord is found, approximation of the ends of the vas deferens without anastomosis may be considered. Secondary vaso-vasostomy can be performed, although only few cases have been reported. If reconstructive surgery of the injured testis is not feasible or the patient is hemodynamically unstable, orchidectomy is recommended. The management of penetrating scrotal trauma includes prophylactic antbiotherapy, although data to support this approach is scarce.

In unilateral orchidectomy, endocrine function doesn’t seem to be perturbed. Some studies report an elevation of FSH and LH, but testosterone levels often stay in normal range. In the other hand, exocrine function is altered and oligospermia is frequently reported. Two aetiologies to explain this phenomena have been described, either by mechanical trauma to the testis or by an auto-immune reaction secondary to a break in the blood testis barrier.

**Conclusion**

The evaluation of patients admitted for ballistic injuries follows the one for any trauma victims as detailed in the Advanced Trauma Life Support protocol. Radiological explorations could be of help to diagnose...
associated injuries. Exploration and debridement remains the gold standard of care for these injuries.

Author contribution

All authors have contributed to this work and have read and approved the final version of the manuscript.

Declaration of competing interest

The authors declare no conflict of interest.

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