



Sports-Related High-Grade Renal Injury: A Case Report

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Abstract

Sport is defined as a set of movements that improve an individual's health status, physical ability and performance. While sports-related injuries mostly affect the musculoskeletal system, soft tissue, bone and nerve tissue elements are also injured in different forms and degrees. It has been found that sports injuries often cause muscle tendon injuries in the lower extremities. In this paper we report a case of sports-related high-grade renal injury because of that he did not have a solitary kidney and was during football makes it unusual among sports-related renal injuries, which are rare.

Keywords: Athletic injuries, kidney, injury

Introduction

Sport is defined as a set of movements that improve an individual's health status, physical ability and performance¹. In the literature, it has been shown that regular sports activities of moderate intensity increase physiological, psychological and social capacity. On the other hand, sports are intensively applied in the prevention, treatment and rehabilitation of diseases in the direction of preventive medicine¹. Football is the most common sports branch in the world and in our country for professional, amateur and health purposes². Sports injuries include damage caused by exceeding the endurance limits as a result of the whole or a part of the body encountering a force greater than normal.

It is reported that the probability of being injured in sports is one in 4,000 people, the death rate is one in 40,000 people, and the rate of encountering a major accident is one in 40 people. While sports-related injuries mostly affect the musculoskeletal system, soft tissue, bone and nerve tissue elements are also injured in different forms and degrees¹. It has been found that sports injuries often cause muscle tendon injuries in the lower extremities².

In this report we aimed to present the case of severe renal injury that occurs during amateur football game.

Case Report

A 23-year-old male patient was brought to our clinic with the complaint of his friend's knee hitting the flank region

during amateur football game. The patient had right flank pain at the time of admission and had difficulty in breathing. His medical history was unremarkable. Among the initial vital signs, arterial blood pressure was 111/75 mmHg, heart rate was 87/min, and oxygen saturation was 98%. Thoraco-abdominal physical examination was unremarkable except for tenderness in the right flank. Bladder catheter was inserted, and gross hematuria was observed. From laboratory tests, hemoglobin 15 g/dL hematocrit was evaluated as 45.3. Other biochemical and hematological tests were unremarkable. Computed tomography with intravenous contrast was performed. It showed major vascular damage and an appearance suggesting active bleeding in the right kidney hilum and laceration and separation from the middle part of the right kidney, also there was a fragmented appearance in the cortex. Diffuse retroperitoneal and subcapsular fluid due to hematoma was observed around the right kidney. Two hours after the first test, the hemogram was 13.7 g/dL and the hematocrit was 40.2. Patient was hospitalized with the diagnosis of grade 5 renal injury for close follow-up and if necessary, right nephrectomy (figure 1). The hemoglobin and hematocrit values measured 2 hours apart after hospitalization were 13.9 g/dL and 39.2, 11.8 g/dL and 35.5, and 12 g/dL and 36.1, respectively. No hypotension or tachycardia was observed during this period. Nephrectomy was not performed because the hemodynamics was stable during the patient's hospitalization. After 11 days of hospitalization, the patient was discharged without any complications.

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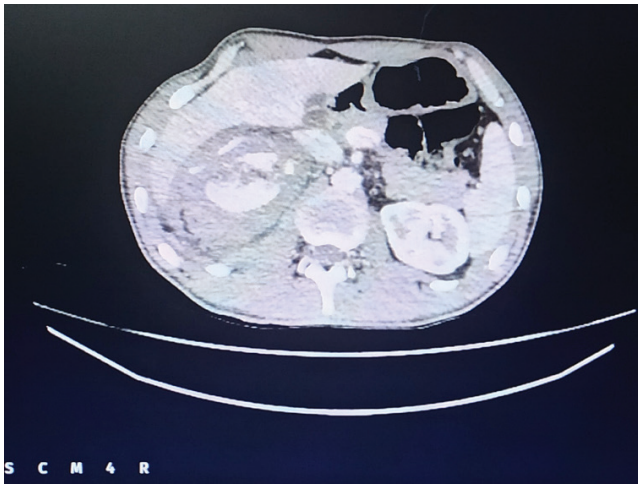


Figure 1: Grade 5 renal injury

Discussion

Sports are accepted as an integral part of a healthy life. Every day, new studies are added to the studies showing the positive effects of sports on health. A balanced exercise and diet is considered the key to a healthy life. However, sports activities can cause various injuries. The increase in the number of athletes and the spread of competitive sports activities bring about an increase in sports-related injuries². Every year, sports injuries, which are expressed in millions in number, reduce the benefits of sports, but also make it debatable.

In studies conducted in Turkey, it was determined that the sports branches in which injuries are most common are football (10%), wrestling (6.0%), handball and boxing (3.0%), athletics (1.0%) and skiing (0.5%)³. The type and nature of the sport can affect the type and severity of the sports injury that may occur. sports injuries: It occurs in a wide spectrum ranging from bone fractures due to acute impacts, muscle, tendon or ligament ruptures to head traumas. Sports-related injuries can have serious physical, professional and financial consequences⁴.

Hematuria is the most common manifestation of kidney injury. Its presence in athletes may indicate a benign presence, such as exercise-induced hematuria, or, in the presence of trauma, a more serious injury⁵. Exercise-induced hematuria can originate from the kidney, bladder, urethra, or prostate. The type of activity, duration and intensity of activity also contribute to its development. If hematuria

lasts longer than 24-72 hours, a broad differential diagnosis should be considered. Trauma to the kidney may result from a direct blow or deceleration; contact and collision sports are the most common. Fortunately, most sports-related kidney injuries are mild and can be managed conservatively. A sports injury rarely results in a nephrectomy⁵. Despite the Grade 5 renal injury in our case, conservative follow-up was decided because the hemodynamics remained stable. The patient was discharged without nephrectomy.

Patel et al., in their study investigating sports-related renal injuries, showed that renal injury is isolated in sports injuries⁶. They reported that blunt kidney trauma was more likely to occur in isolation without other abdominal or thoracic injuries as in our case. They suggested that clinicians have a high suspicion of kidney injury with significant side impacts during sports activities.

In a study investigate sports-related high-grade renal injuries, conducted by Gerstenblunt et al., the most common cause was found to be cycling⁷. Solitary kidney was reported as a risk factor for high-grade renal injury. Team contact sports have been identified as a rare cause of high-grade kidney injury. The fact that our case did not have a solitary kidney and was during football makes it unusual among sports-related renal injuries, which are rare.

As a conclusion, we recommend that clinicians be careful about high-grade renal injuries in team-contact sports, especially in blunt trauma to the flank region.

References

1. Türker T, Koçak N, İstanbulluoğlu H, Yıldırım AO, Kır T, Açıkkel C, et al. Tıp fakültesi öğrencilerinin spor yapma alışkanlıkları ve spor yaralanmalarının değerlendirilmesi. *Gülhane Tıp Dergisi*, 2011; 53: 94-8.
2. Dvorak J, Junge A. Football injuries and physical symptoms. A review of the literature. *Am J Sports Med.* 2000; 28: 3-9.
3. Sakallı FMH. Sporda sporcuların yaralanması ve risk faktörleri. *Fırat Sağlık Hizmetleri Dergisi* 2008; 3:143-54.
4. Holmes FC, Hunt JJ, Sevier TL. Renal injury in sport. *Curr Sports Med Rep.* 2003 Apr;2(2):103-9.
5. McAleer IM, Kaplan GW, LoSasso BE. Renal and testis injuries in team sports. *J Urol.* 2002;168(4 Pt 2):1805-7.
6. Patel DP, Redshaw JD, Breyer BN, Smith TG, Erickson BA, Majercik SD, et al. High-grade renal injuries are often isolated in sports-related trauma. *Injury.* 2015;46(7):1245-9.
7. Gerstenbluth RE, Spirnak JP, Elder JS. Sports participation and high grade renal injuries in children. *J Urol.* 2002;168(6):2575-8.

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