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Case Report

Small Intestine Perforation in An Elite Wrestler, A Case Report

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Abstract

Sport-related small bowel perforation is a rare condition with few reported cases, that may cause significant morbidity if missed. We present the case of an elite wrestler who sustained an acute abdomen after wrestling in a competition. The athlete had to undergo an emergency laparoscopy and was diagnosed with spontaneous small intestinal perforation. He underwent laparotomy for the primary repair of small bowel perforation. In this case report, we discuss the importance of proper on-site examination, monitoring and decision-making with the cooperation of the team doctor, international federation doctors and the local medical services. Delay in diagnosing and treating this condition increases morbidity and mortality.

Keywords: perforation; small intestine; wrestling; atraumatic

1.Introduction

Spontaneous free perforation of the small intestine is uncommon [1], especially if there is no prior history of visceral trauma.[2-4] Although there are a few reported cases in sports settings, there is a scarcity of reported cases.[5] This condition may lead to significant morbidity if overlooked.[6] Free perforation without direct or blunt trauma can also be a clinical presentation of an underlying intestinal inflammatory disorder such as celiac or Crohn's disease.[7,8] In some cases, it can also result from a new acute infection process (e.g., caused by different infectious agents) or a longstanding and unrecognized disorder (e.g., congenital, metabolic, and vascular cause).[3] We present a case of a senior male elite wrestler who experienced a spontaneous small bowel perforation during a Wrestling World Championships. We discuss the importance of proper on-site physical examination and decision-making during a sports event and the critical role of collaboration between the team doctor, international federation doctors and local medical services. We must emphasize that the decision was followed by an urgent hospital transfer, thorough investigation, and immediate surgery. These measures were necessary to reduce the recovery time and further morbidity of a top athlete. Due to the infrequency of small intestine injuries or perforations in athletes, there is a lack of information regarding the success of surgical interventions and return-to-play (RTP) standards.[6]

2.Case Report

A 28-year-old male elite wrestler from Georgia competed in the 61-kilogram category of freestyle wrestling on the 16th and 17th of September 2023 at the Wrestling World Championships, organized in Belgrade, Serbia. The wrestler was 1.7 meters tall and had a BMI of 21.1 kg/m2. After participating in a bronze medal bout, he started experiencing symptoms. The symptoms started a few minutes after the match ended; he had never experienced anything like this before. Upon reviewing the video footage of the match, no signs of complaints or pain were observed throughout the match, and there was no evidence of direct trauma. The wrestler also stated that he had not experienced any direct or blunt trauma to his abdomen (Table 1.)

Time / Data	Day 0					Day 1-5	Day 10	6 weeks	5 months
	18:45	19:00	19:15	19:30-20:30	22:00				
28-y.o.male, 61 kg, 1.7 m tall, BMI 21.1 (kg/m^2)	Symptoms after bronze medal bout: diffuse abdominal pain, dizziness, vomiting.	On-site examination and immediate referral to the medical room in the Sports Hall.	Symptoms of acute abdomen still exists. Immediate transfer to the local hospital.	Investigation (lab., ultrasound and CT). Lab: leucocytosis, ↑ liver enzymes, ↑↑ CRP, pyuria in urine.	Surgery (laparotomy)	Postop. care	Emission. Return to home by commercial flight.	Non-sport specific training.	Participating in the European Championships

Table 1: Time-lapse and data – detailed in section 2. „Case Report". CRP: C-reactive protein. ↑: slightly elevated. ↑↑: highly elevated.

CT: computed tomography.

There were no gastrointestinal diseases or complaints in the wrestler's or his family's medical history. He did not have bloody or black stools, and he had no history of severe illness, abdominal operations, or seasonal or other viruses. As part of his weight cut for the competition, he started two weeks earlier and intentionally lost 3-4 kgs gradually, which was usual for him. He didn't restrict his water intake, didn't consume alcohol, and didn't take any medications except for vitamins and minerals. After leaving the mat, he experienced diffuse abdominal pain, dizziness, and vomiting. He was examined on-site immediately and then taken to the medical room in the sports hall. Despite being stable in terms of cardiopulmonary function, he continued to display symptoms of acute abdomen, and as a result, he was immediately transferred to the emergency department of a local hospital. At the emergency department, the patient presented with abdominal guarding, signs of peritoneal irritation, and absent bowel sounds. Laboratory investigation showed leucocytosis, slightly elevated liver enzymes, highly elevated C-reactive protein (CRP), and massive pyuria in the urinary analysis. A normal electrocardiogram was also performed, and an ultrasound scan of the whole abdomen found no abnormalities. The next diagnostic step was taking a CT scan, which showed a large amount of air in the abdomen (massive pneumoperitoneum) - Figure 1. An exploratory laparotomy was performed, which revealed a one-centimeter diameter perforation on the antimesenteric side of the jejunum, located approximately 10 centimeters distal to the ligament of Treitz. There were no changes in the mucosa and serosa of the perforated intestine. The intestinal wall was sutured in two layers, and the abdominal cavity was thoroughly washed with a saline solution.

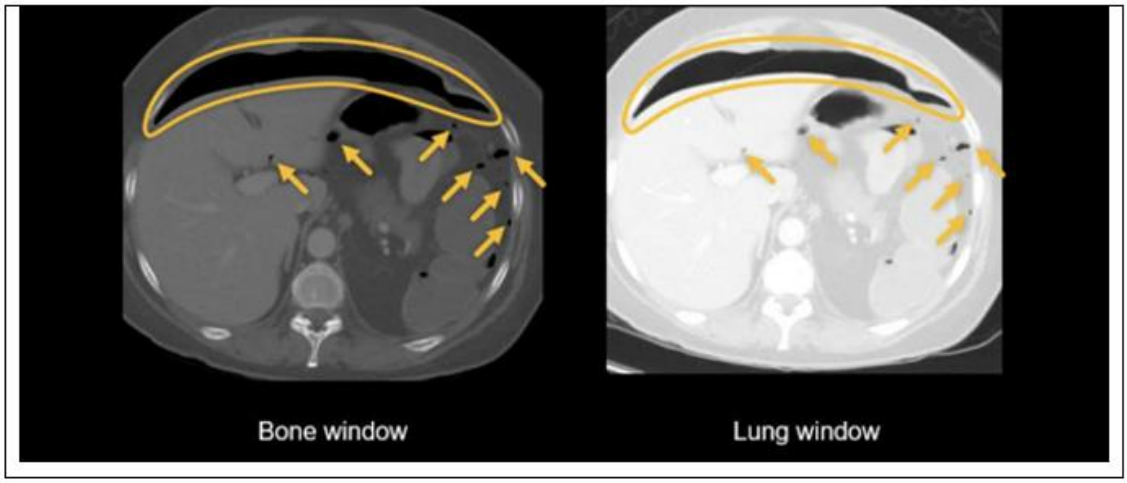

Figure 1: An example for pneumoperitoneum in computer tomography (CT). Pneumoperitoneum marked with yellow – lines and arrows. Bone and Lung window. Permission by Dr Mike Cadogan, *https://litfl.com/abdominal-ct-bowel-perforation/*

Following the surgery, the patient had two abdominal drains, a urinary catheter, and a nasogastric tube. These were removed sequentially after three to five days while the patient stayed in the hospital for 10 days post-surgery. The patient started a light diet to facilitate abdominal passage, which was recommended to follow after being discharged, along with proton pump inhibitor medication for a month. He resumed non-sport-specific training, including swimming, cycling, and jogging, six weeks later. He began his wrestling-specific preparation in January, three months later. He earned 8th place at the European Championships in his original weight category on February 17-18, 2024, in Bucharest.

3.Discussion

Olympic wrestling is a high-demand contact sport that can lead to injuries [9,10]. Direct observation of injuries during competitions and conducting follow-up assessments afterward are crucial for the precise diagnosis, classification, and effective treatment of sports injuries. [11] The severity of wrestling injuries is classified by the United World Wrestling Medical, Prevention, and Anti-Doping Commission (UWW-MC). [12,13] Any injury that puts the wrestler's life in danger, such as in this case, is classified as a "Critical" injury.[14] Although acute abdomen is rare in wrestling, any suspicion of this condition should be taken seriously. Athletes must be thoroughly examined and monitored and never left unsupervised until the condition is fully investigated. Sport- or wrestling-related small bowel perforation is a rare occurrence that can lead to a critical condition in a few hours, causing acute abdomen. It is crucial for all healthcare professionals in sports medicine to be able to recognize the obvious signs of a lifethreatening condition in the field. Although perforations in the small intestine are rare, it is crucial for medical

professionals to have the necessary knowledge and take appropriate action to prevent the patient's condition from deteriorating. It is important to note that diagnosing small bowel perforation can be challenging. However, it is crucial to avoid delayed treatment, which can increase mortality and morbidity rates.[15,16] Due to the rarity of small intestine injuries or perforation in athletes, there is a lack of information on the success of surgical interventions and standards for return-to-play (RTP).[6]

4.Conclusions and recommendations

Sport-related small bowel perforation is a rare occurrence with few reported cases and may be associated with significant morbidity if missed. This case report emphasizes the importance of taking an acute abdomen seriously. Every on-site healthcare professional must recognize the obvious signs of an acute abdomen, which is a life threatening condition. Diagnosis of small bowel perforation is difficult but necessary to avoid delayed treatment and increased mortality and morbidity. We also discussed the unique challenge and importance of proper on-site physical examination, observation, follow-up and decision-making in collaboration with the team doctor, international federation doctors, and the local medical services.

Limitations: Most of the athlete's medical history information was collected retrospectively from the athlete and from the national medical staff, which was a limitation of this case report. Another limitation is that, although spontaneous free perforation of the small intestine is uncommon and there are a few reported cases in sports settings, this patient was managed as with most acute abdomens (with an excellent outcome).

Ethical Approval: Permission, ethical approval, and theoretical support provided by the United World Wrestling (UWW), the international governing body for all amateur wrestling styles, including Olympic-style wrestling.

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Author Contribution: All authors have met the four criteria for authorship contribution as recommended by the International Committee of Medical Journal Editors. The authors from international organizations, not from Serbia, work for the United World Wrestling (Author 1, 2, and 5) in cooperation with local doctors (Author 3 and 4) appointed by the organizing country. The event contracted the Military Hospital of Beograd, Serbia, as a background hospital where the ambulatory and surgical cases were transferred for further investigation and treatment.

• No conflict of interest.

• The manuscript has been read and approved by all authors.

• No redundant publication of the same or similar work.

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