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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 occurrence with few reported cases, and it 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 was undergoing laparotomy for 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 service. 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 with a paucity of reported cases [5], it may lead to significant morbidity if overlooked.[6] However, 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 are presenting a case of a senior male elite wrestler who had a spontaneous small bowel perforation during a World Wrestling Championships. We discuss the importance and unique challenge of proper on-site physical examination and decision-making during a sports event and the critical role of international cooperation between the team doctor, international federation doctors and local medical services. We also have to emphasize that the decision was followed by urgent Hospital transfer, thorough investigation and urgent surgery which are also inevitable to reduce the recovery time and the further morbidity of a top athlete. Due to the rarity of small intestine injuries or perforation in athletes, information regarding the success of surgical interventions and return-to-play (RTP) standards are lacking.[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 World Wrestling Championships, organized in Beograd, Serbia.

The wrestler was 1.7 meters tall and had a BMI of 21.1 kg/m2. He experienced symptoms on the second day, just after participating in a bronze medal bout. The symptoms began a few minutes after the end of the bout, and he had not experienced anything similar 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

trauma. The wrestler also stated that he had no direct or blunt injury 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: computer tomography.

There were no gastrointestinal diseases or complaints, either the wrestler's or in his family's medical history. He did not have bloody or black stools, nor did he have any history of severe illness, abdominal operations, or seasonal or other viruses. As part of his weight cut for the competition, which he started two weeks earlier, he intentionally lost 3-4 kgs gradually, which is 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 and signs of peritoneal irritation. Additionally, bowel sounds were absent. 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 a computer tomography (CT), which showed a large amount of air in the abdomen (massive pneumoperitoneum) – Figure 1. An explorative laparotomy was performed, revealing a one cm diameter perforation of the antimesenteric side of the jejunum, located about 10 cm distal to the ligament of Treitz. There were no other 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.

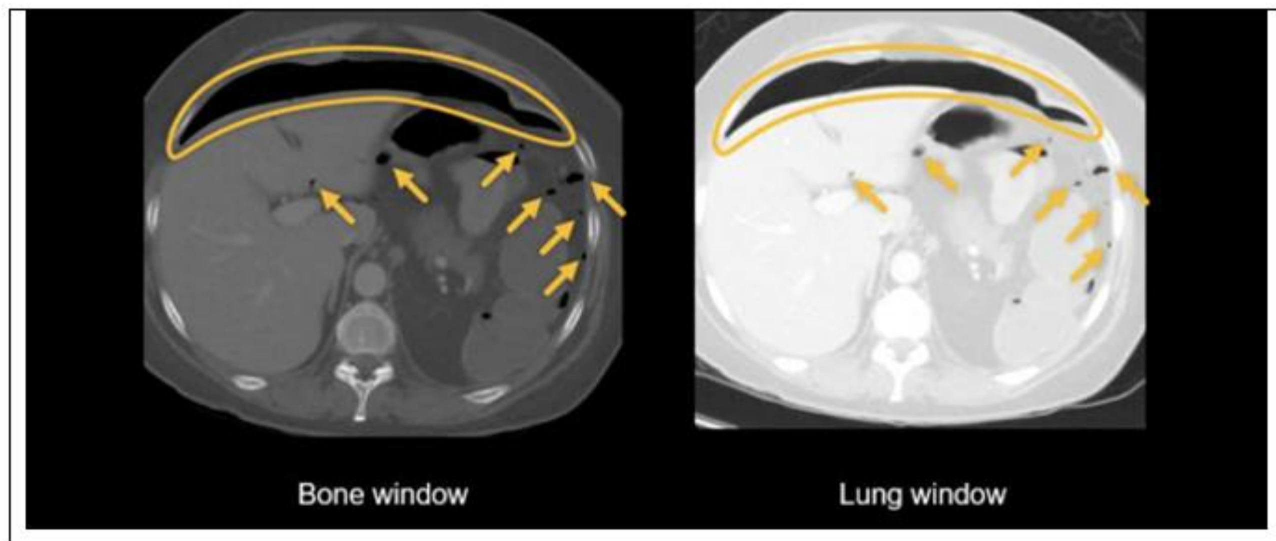

Figure 1: An example for pneumoperitoneum in computer tomography (CT). Pneumoperitoneum marked with yellow – lines and arrows. Bone and Lung window. Permission by Dr Mike Cadogan, *https://litfl.com/abdominal-ct-bowel-perforation/*

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 establish abdominal passage, which was recommended to follow after being discharged, along with proton pump inhibitor medication for a month. He returned to non-sport specific training in November (6 weeks later) as swimming, bicycle or jogging. He begun wrestling specific preparation in January (3 months later). He earned the 8th place of the European Championships 5 months later in his original weight (17-18th of Febr. 2024, Bucharest).

3.Discussion

Olympic wrestling is a high-demand contact sport that can lead to injuries [9,10]. Directly observing 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 has also a rare acute abdomen occurrence that can lead to critical conditions in a few hours. It is essential for all healthcare professionals working in sports medicine to be able to identify the obvious signs of a life-threatening condition in the field. Although sudden perforations in the small intestine are rare, it is imperative that medical professionals have the necessary knowledge and immediately take appropriate action to prevent the patient's condition from deteriorating. It should be noted that diagnosing small bowel perforation can be challenging, but it is crucial to avoid delayed treatment and an increase in 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 a paucity of reported cases and may be associated with significant morbidity if missed. In this case report we highlighted deeply, how important is to take an acute abdomen seriously. Every on-site healthcare professional must know the obvious signs of an acute abdomen, which is a life-threatening condition. We also mentioned that diagnosis of small bowel perforation is difficult but inevitable to avoid delayed treatment and increased mortality and morbidity We also discussed the unique challenge and importance of the proper on-site physical examination and decision with an international cooperation of the team doctor, International Federation doctors and the local Medical Service. Our outcomes (return-to-play in the same level) was achieved by this professional cooperation.

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 though 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 theoretic support by the United World Wrestling (International governing body for the sport of all amateur wrestling styles, including Olympic-style wrestling).

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Author Contribution: All authors passed four criteria for authorship contribution based on recommendations of the International Committee of Medical Journal Editors. The International (not Serbian) authors are working for the United World Wrestling (Author 1, 2 and 5) with cooperation of the local doctors (Author 3 and 4) who were 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 / 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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