Case Report

Rare case of a patient with testicular torsion complicated by acute pneumonia, requiring emergency surgery, during the COVID-19 pandemic

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Abbreviations & Acronyms
CDU = color Doppler ultrasonography
CT = computed tomography
NR = normal range
PCR = polymerase chain reaction
TT = testicular torsion

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Introduction: The COVID-19 pandemic has been causing delay in patient arrival at hospital and starting surgery. We report a delay in a case of testicular torsion complicated by acute pneumonia during the COVID-19 pandemic in Japan.
Case presentation: A 17-year-old Japanese boy presented to our emergency room with acute left scrotum pain and fever in January 2021. It took 2.5 h to transfer him. Physical examination and color Doppler ultrasonography revealed left testicular torsion. Chest computed tomography indicated acute pneumonia. He successfully underwent surgical detorsion 7.5 h after symptom onset, with COVID-19 preventive measures in place. A negative polymerase chain reaction test result for COVID-19 was revealed after surgery.
Conclusion: We experienced a rare case of testicular torsion complicated by acute pneumonia during the COVID-19 pandemic. Special attention should be paid to preventing infection and surgery delay to avoid testicular loss.

Key words: acute pneumonia, COVID-19, emergency surgery, surgical delay, testicular torsion.

Keynote message

During the COVID-19 pandemic, it may not be possible to provide essential medical care at the right time due to delays in transfer to the hospital and preparation for surgery. Here, we present a case of TT complicated by acute pneumonia. We should pay attention to the potential delays and prepare for emergency surgery for TT to ensure testicular preservation, particularly during the COVID-19 pandemic.

Introduction

Although TT requires immediate surgery to preserve testicular function,[1,2] delay in surgery is possible during the COVID-19 pandemic compared to the pre-COVID-19 era.[3,4] Herein, we report a case of TT complicated with acute pneumonia suspected to be COVID-19, with a delay in transfer to the hospital and subsequently in provision of surgery.

Case presentation

A 17-year-old boy presented to the emergency room of our institution with a complaint of left scrotal pain and swelling in January 2021. He had a history of left intermittent TT at the age of 14 years, which recovered spontaneously and was followed up at a local hospital. He experienced sudden left scrotal pain and requested an emergency service to transfer him to the hospital, but he was not accepted because the hospital was devoted to COVID-19 patients. He was eventually admitted to our hospital, 2.5 h after the onset of pain. There were no subjective symptoms such as dysuria. On palpation, the left testis was swollen, hard, and tender. According to the Testicular Workup for Ischemia and Suspected Torsion Scoring System,[5] the scoring was 6/7 points, indicating a high risk of TT. Color Doppler ultrasonography

(CDU) confirmed the loss of blood flow in the left testis (Fig. 1) and a diagnosis of left TT was made. He had no significant medical history, had not travelled abroad, had close contact with someone who had a laboratory-confirmed COVID-19 diagnosis, or participated in large groups of dinners and events in the last 2 weeks. However, he had started to experience a persistent cough, sore throat, and low-grade fever 3 days before the onset of the scrotal pain. At the time of the visit, the fever had increased to 38.5°C. Coarse crackles were identified on auscultation of the left lung, and the oxygen saturation was 96% (in room air). Blood biochemical tests revealed an increased white blood cell count of 13 800/μL (NR: 3600–9000/μL) and an elevated C-reactive protein 5.56 mg/dL (NR ≤0.30 mg/dL). Chest CT showed infiltration in the dorsal aspect of the left lung, suggestive of acute pneumonia (Fig. 2). We performed a SARS-CoV-2 antigen test and PCR test immediately. The possibility of SARS-CoV-2 infection necessitated us to isolate him into a private room. After confirming the negative antigen test result, we performed emergent surgery under spinal anesthesia in a special operating room dedicated to COVID-19 patients. It eventually took 7.5 h from symptom onset to enter the operating room because it was previously occupied. Surgical findings showed that the left testis was slightly pale and it spontaneously detorsed during anesthesia (Fig. 3). Orchidopexy was performed after confirming the improvement in blood flow to the testes by CDU. The patient was isolated in the private room until a negative PCR result. The pneumonia was diagnosed as community-acquired pneumoniae and treated with intravenous ceftriaxone 2 g and oral azithromycin 500 mg daily. One month after surgery, bilateral testicular blood flow was maintained, and there was no testicular atrophy.

Discussion

This report presents an extremely rare case of TT complicated by acute pneumonia during the COVID-19 pandemic. Fever is relatively rare in TT[2] and is a sign of acute epididymitis or orchitis in patients with acute scrotum.[6] There have been no reports of TT with acute pneumonia to date, as far as we know; probably because it had not been considered an important synchronous occurrence in the pre-COVID-19 era. However, in the COVID-19 pandemic, this co-occurrence has become problematic. Although the patient's lung CT image was not typical for COVID-19,[7] the patient needed special care for transfer and treatment, and a longer time was required before the patient could undergo surgery despite the threat of testicular loss.

It is generally known that 4–8 h after onset is the so-called "golden-time" during which testicular function is properly maintained.[1] To preserve testicular function, we have to minimize the time between onset of torsion and surgery. The time is further divided into two stages: (i) from onset to arrival at the hospital and (ii) from arrival to the start of surgery. The COVID-19 pandemic has affected both stages and may increase delays. In the current case, there was an initial delay in finding a hospital where the patient could be treated and a second delay in waiting for a special operating room.

There have been several reports of actual delays from onset to arrival among patients with TT. A North American multicenter analysis[3] and another Croatian single-center study[4] revealed a delay in time from onset to hospital arrival and increased the rate of orchiectomy. It has also been reported that the hospitals providing emergency care restricted accepting emergency patients[8] with non-COVID-19-related problems and patients themselves refrained from visiting a doctor due to a fear of being infected with SARS-CoV-2 from other patients.[9] According to the COVID-19 guideline by the European Association of Urology, emergent surgery in cases of organ-threatening or life-threatening diseases, including TT, cannot be postponed for more than 24 h, even in the COVID-19 era.[10] To facilitate shortening the time from the onset to arrival at the hospital, it might be necessary to perform numerous social awareness activities to spread the message that "TT requires urgent surgery to prevent testicular loss."[11]

Reducing the time from arrival to surgery may be an effective alternative. It is necessary to disseminate knowledge regarding the importance of urgent surgery, even during the COVID-19 pandemic, among the hospital staff, including anesthesiologists, emergency staff, and operation room staff.[11] It is also important to conduct simulation drills to develop an optimal response for a TT patient with COVID-19, including preparation of a special operating room and securing quick patient transport.[12]

As of September 2021, Japan is experiencing the largest wave of COVID-19, and the rapid increase in infection among young people has become a significant problem. Furthermore, it is still unclear when the COVID-19 pandemic

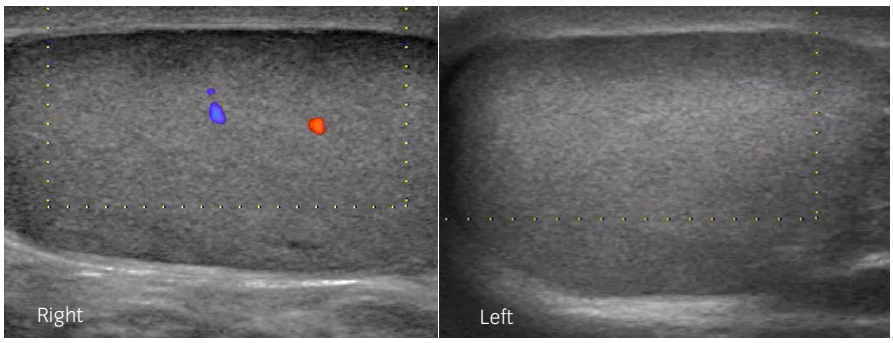

Fig. 1 CDU showed the presence of blood flow in the right testis, and the loss of blood flow in the left testis.

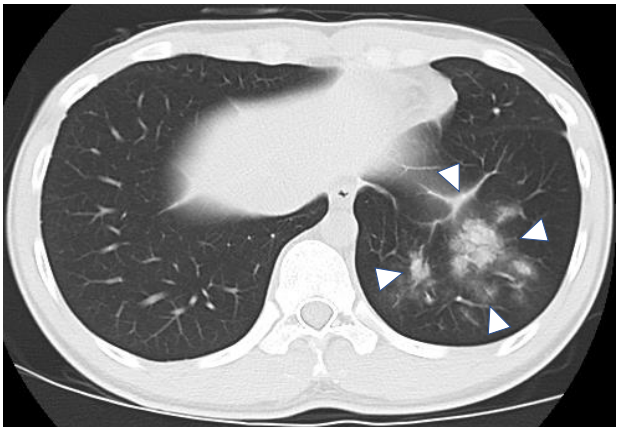

Fig. 2 CT showed left acute pneumonia on the dorsal side of the left lung. The arrow heads indicated the lesion of infiltrative shadow.

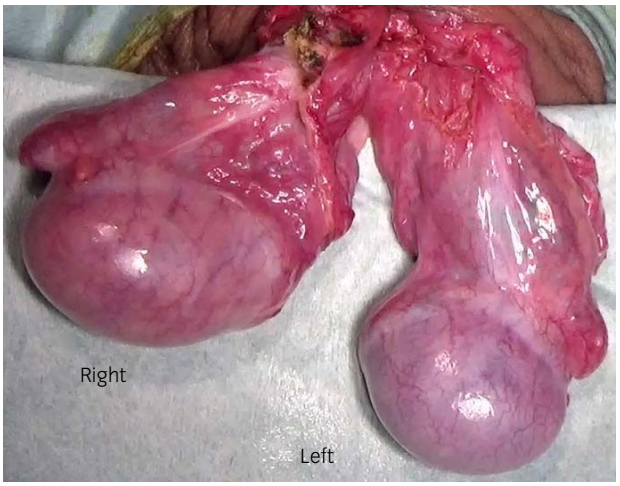

Fig. 3 The testes on both sides were exposed. The left testis was slightly pale and blood flow was confirmed using color Doppler ultrasound.

will end. Thus, it is necessary to learn how to deal with TT in the COVID-19 era for testicular preservation.

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Author contribution

Masahiro Arai: Conceptualization; Data curation; Resources; Visualization; Writing – original draft. **Yohei Okada:** Conceptualization; Data curation; Formal analysis; Project administration; Resources; Supervision; Validation; Visualization; Writing – original draft; Writing – review & editing. **Hideki Takeshita:** Conceptualization; Funding acquisition; Project administration; Resources; Supervision; Visualization; Writing – original draft; Writing – review & editing. **Kojiro Tachibana:** Data curation. **Makoto Kagawa:** Writing – review & editing. **Takayuki Nakayama:** Writing – review & editing. **Akihiro Yano:** Writing – review & editing. **Makoto Morozumi:** Writing – review & editing. **Satoru Kawakami:** Supervision; Writing – review & editing.

Conflict of interest

The authors declare no conflict of interest.

Approval of the research protocol by an Institutional Reviewer Board

The protocol for this research project has been approved by a suitably constituted Ethics Committee of the institution, and it conforms to the provisions of the Declaration of Helsinki. Ethical Committee of Saitama Medical Center, Approval No. 2010, SOU2021-052.

Informed consent

All human subjects provided written informed consent with guarantees of confidentiality.

Registry and the Registration No. of the study/trial

N/A.

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