**Name of Journal:** *World Journal of Clinical Cases*

**Manuscript NO:** 55388

**Manuscript Type:** CASE REPORT

***Campylobacter jejuni* enterocolitis presenting with testicular pain: A case report**

Sanagawa M *et al*. Enterocolitis with testicular pain

Masahiro Sanagawa, Tsuneaki Kenzaka, Sayaka Kato,Ichiko Yamaoka, Shouichi Fujimoto

**Masahiro Sanagawa, Sayaka Kato,** Department of Internal Medicine, Miyazaki Seikyo Hospital, Miyazaki 880-0824, Japan

**Tsuneaki Kenzaka,**Department of Internal Medicine, Hyogo Prefectural Tamba Medical Center, Hyogo 652-0032, Japan

**Tsuneaki Kenzaka,**Division of Community Medicine and Career Development, Kobe University Graduate School of Medicine, Hyogo 652-0032, Japan

**Ichiko Yamaoka,**Department of General Surgery, Miyazaki Seikyo Hospital, Miyazaki 880-0824, Japan

**Shouichi Fujimoto,** Department of Hemovascular Medicine and Artificial Organs, Faculty of Medicine, University of Miyazaki, Miyazaki 889-1692, Japan

**Author contributions:** Sanagawa M managed the case and edited the manuscript. Kenzaka T assisted with the editing and correcting of the manuscript; Sanagawa M, Kenzaka T, Kato S, Yamaoka I, and Fujimoto S read and approved the final manuscript.

**Corresponding author: Masahiro Sanagawa, MD, Doctor,** Department of Internal Medicine, Miyazaki Seikyo Hospital, 1171 Tenjinmae, Oshima-cho, Miyazaki 880-0824, Japan. msa440u@yahoo.co.jp

**Received:** March 15, 2020

**Revised:** April 23, 2020

**Accepted:** July 14, 2020

**Published online:**

**Abstract**

BACKGROUND

Common symptoms of *Campylobacter* colitis include abdominal pain, vomiting, diarrhea, and fever, among others. However, *Campylobacter* colitis also has a high incidence of extraintestinal symptoms.

CASE SUMMARY

We report the case of a 51-year-old man who presented with bilateral testicular pain. A scrotal examination failed to reveal any physical findings, but the patient exhibited mild tenderness in the right lower abdomen. Computed tomography revealed ileocecal wall thickening. Post-admission, the patient developed diarrhea, and a stool culture was submitted; *Campylobacter* *jejuni* infection was confirmed. Testicular pain is known to be caused by appendicitis. Consequently, we suggest that *Campylobacter* colitis, which causes ileocecal inflammation, caused the testicular pain in this case.

CONCLUSION

In patients with testicular pain and no other objective findings, diseases such as *Campylobacter* colitis should be considered.

**Key words**: *Campylobacter*; Colitis; Testicular pain; Ileocecal inflammation; Related pain; Case report

Sanagawa M, Kenzaka T, Kato S,Yamaoka I, Fujimoto S. *Campylobacter jejuni* enterocolitis presenting with testicular pain: A case report. *World J Clin Cases* 2020; In press

**Core tip**: In cases of testicular pain without other objective findings, ileocecal inflammation-causing diseases, such as *Campylobacter* colitis, should be considered in the differential diagnosis.

**INTRODUCTION**

*Campylobacter jejuni* is the most common bacterial enteropathogen, and infections with this organism are typically accompanied by abdominal pain, vomiting, diarrhea, and fever. In contrast, *Campylobacter* colitis has been reported to cause various extraintestinal symptoms[1]. Approximately 40% of patients with *Campylobacter* colitis present with musculoskeletal symptoms, 15% present with ocular symptoms, and 17% present with urinary tract symptoms. Urinary tract symptoms can include urethral inflammation, which may cause frequent urination and pain during urination[1]. In this report, we document a case where *Campylobacter* colitis was accompanied by testicular pain.

**CASE PRESENTATION**

***Chief complaint***

A 51-year-old man presented to our hospital with bilateral testicular pain.

***History of present illness***

He had eaten raw chicken (*sashimi*, in Japanese) a few days before the onset of his symptoms. The testicular pain onset was gradual, beginning in the morning prior to his visiting the hospital. Throughout the day, his testicular pain had spread to his entire back and abdomen and had increased in intensity, leading him to visit our hospital that evening. He also experienced fever, headache, and general joint pain, but no nausea or diarrhea.

***History of past illness***

The patient did not have a history of significant past illnesses.

***Physical examination***

Physical examination revealed a body temperature of 38.1 °C, a heart rate of 109 beats/min, a blood pressure of 138/76 mmHg, and a respiratory rate of 20 breaths/min. He exhibited mild tenderness over a wide area, which centered in his right lower abdomen. However, his scrotum did not exhibit any abnormal findings, such as redness, swelling, warmth, or tenderness.

***Laboratory examinations***

Blood tests showed slight increases in his white blood cell count [12360 cells/µL, (neutrophils: 81.9%)] and C-reactive protein level (1.26 mg/L); no abnormalities were detected in the patient’s urinalysis.

***Imaging examinations***

Abdominal computed tomography imaging revealed thickening of the ileocecal walls (Figure 1), but his scrotal area appeared normal (Figure 2).

**FINAL DIAGNOSIS**

*Campylobacter* colitis.

**TREATMENT**

The patient was hospitalized and treated with fasting, fluid replacement, and 1 g of ceftriaxone, administered intravenously every 24 h. On the night of his admission, he developed watery diarrhea; a stool sample was submitted for culturing.

**OUTCOME AND FOLLOW-UP**

His fever and testicular pain resolved on post-admission day 3; he was discharged on day 6. After discharge, his stool culture results were reported and revealed the presence of *C. jejuni*, confirming the *Campylobacter* colitis diagnosis; his urine culture was negative for the presence of bacteria.

**DISCUSSION**

Here, we report, to the best of our knowledge, the first case of *Campylobacter* colitis accompanied by testicular pain. Clinicians should be particularly aware of the fact that *Campylobacter* colitis often presents with extraintestinal symptoms[1]. The more common symptoms of the disease include abdominal pain, vomiting, diarrhea, and fever. In addition, about 40% of patients present with musculoskeletal symptoms, which may include Reiter's syndrome-like arthritis[1]. Further, patients may manifest both eye and urinary tract symptoms[1]. The urinary tract symptoms, caused by urethral inflammation, include increased urinary frequency and dysuria[1]; however, previous reports have not suggested that this inflammation induces testicular pain.

The differential diagnosis for testicular pain includes testicular torsion, epididymitis/orchitis, testicular infarction, and scrotal edema[2]. In addition, a few reports have documented testicular pain associated with appendicitis[3-5], but none have reported testicular pain associated with ileocecal inflammation. The testicular pain associated with appendicitis is thought to be related to the tenth thoracic spinal nerve, which innervates both the appendix and the testes[6]. In the present patient, because ileocecal inflammation is a hallmark of *Campylobacter* colitis, the inflammation may have spread from the ileocecal region to the appendix.

Given the absence of physical findings, such as scrotal tenderness, and the normal urinalysis results, we surmise that the patient’s testicular pain was caused by inflammation of the appendix. This hypothesis is supported by the simultaneous resolution of the testicular pain and the resolution of his colitis symptoms, which included fever, abdominal pain, and diarrhea. The testicular pain appeared as an early symptom, before the onset of diarrhea. This is similar to the onset of appendicitis, which may include related (indirect) epigastric and/or testicular pain. *Campylobacter* colitis is often preceded by extraintestinal symptoms, such as fever and headache, and the onset of diarrhea is often delayed. The inflammation that is often present in the ileocecal area is presumed to cause the delayed onset of diarrhea[7]. In the present patient, the reported testicular symptoms were bilateral, but the location of the pain may have been unclear because it was related, rather than direct, pain.

**CONCLUSION**

This is the first report of testicular pain associated with *Campylobacter* colitis. Given that *Campylobacter* colitis causes ileocecal inflammation, our case suggests that ileocecal inflammation may indirectly cause testicular pain. Thus, ileocecal inflammation should be considered in the differential diagnosis of patients with testicular pain.

**REFERENCES**

1 **Schönberg-Norio D**, Mattila L, Lauhio A, Katila ML, Kaukoranta SS, Koskela M, Pajarre S, Uksila J, Eerola E, Sarna S, Rautelin H. Patient-reported complications associated with Campylobacter jejuni infection. *Epidemiol Infect* 2010; **138**: 1004-1011 [PMID: 19887016 DOI: 10.1017/S0950268809991099]

2 **Knight PJ**, Vassy LE. The diagnosis and treatment of the acute scrotum in children and adolescents. *Ann Surg* 1984; **200**: 664-673 [PMID: 6486916 DOI: 10.1097/00000658-198411000-00019]

3 **Wilkins SA Jr**, Holder LE, Raiker RV, Wilson TH Jr. Acute appendicitis presenting as acute left scrotal pain: diagnostic considerations. *Urology* 1985; **25**: 634-636 [PMID: 4012959 DOI: 10.1016/0090-4295(85)90300-0]

4 **Dienye PO**, Jebbin NJ. Acute appendicitis masquerading as acute scrotum: a case report. *Am J Mens Health* 2011; **5**: 524-527 [PMID: 21816859 DOI: 10.1177/1557988311415514]

5 **Najafizadeh-Sari S**, Mehdizadeh H, Bagheri-Baghdasht MS, Manoochehry S. Suppurative appendicitis presenting acute scrotal pain: a rare condition may confuse surgeons. *J Surg Case Rep* 2017; **2017**: rjx215 [PMID: 29423152 DOI: 10.1093/jscr/rjx215]

6 **Silen W**. Cope's early diagnosis of the acute abdomen. 22nd edition. Oxford: Oxford University Press, 2010: 75-76

7 **Bennett JE**, Dolin R, Blaser MJ. Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases. 9th edition. Philadelphia: Elsevier, 2019: 2654

**Footnotes**

**Informed consent statement:** Informed written consent was obtained from the patient for publication of this report.

**Conflict-of-interest statement:** The authors declare that they have no competing interests.

**CARE Checklist (2016) statement:** The authors have read the CARE Checklist (2016), and the manuscript was prepared and revised according to the CARE Checklist (2016).

**Open-Access:** This article is an open-access article that was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution NonCommercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: http://creativecommons.org/licenses/by-nc/4.0/

**Manuscript source:** Unsolicited manuscript

**Peer-review started:** March 15, 2020

**First decision:** April 7, 2020

**Article in press:**

**Specialty type:** Medicine, research and experimental

**Country/Territory of origin:** Japan

**Peer-review report’s scientific quality classification**

Grade A (Excellent): 0

Grade B (Very good): 0

Grade C (Good): C, C

Grade D (Fair): 0

Grade E (Poor): 0

**P-Reviewer:** Dai Y, Sitkin S **S-Editor:** Wang JL **L-Editor: E-Editor:**

**Figure Legends**



**Figure 1 Computed tomography scans of the abdomen.** Ileocecal wall thickening (circled) is evident in the horizontal and coronal views. A: Horizontal view; B: Coronal view.



**Figure 2 Computed tomography scans of the scrotum.** Abnormal findings are not apparent.