Case Report
Central Eur J Paed 2023;2(2):92-96
DOI: 10.5457/p2005-114.342

# Imaging of Perisplenitis as an Unusual Presentation of the Fitz-hugh-curtis Syndrome

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**Received:** August 18 2023; **Accepted:** September 7 2023

**Abstract**

**Objective –** We present the imaging characteristics of an unusual case of Fitz-Hugh-Curtis syndrome (FHCS), a late complication of pelvic inflammatory disease in an adolescent girl with left upper abdominal pain due to perisplenitis seen on contrast-enhanced ultrasound and magnetic resonance imaging. **Case Report –** A 16-year-old girl presented with acute abdominal pain in the left upper quadrant, vomiting, diarrhoea, and vaginal odour with yellow discharge. She was recently diagnosed with infectious mononucleosis. Abdominal ultrasound showed perisplenic fluid collection that did not enhance post-contrast application, but it did show a mild enhancement of perisplenic tissue. MRI findings indicated perisplenitis. The results of the positive vaginal swab for *Chlamydia trachomatis* and *Ureaplasma parvum* and the imaging findings favoured a final diagnosis of FHCS with perisplenitis. **Conclusion –** Imaging findings, and clinical and laboratory data, including positive vaginal swabs, are crucial to confirm the unusual presentation of FHCS in an adolescent with left upper abdominal pain.

**Key Words:** Perisplenitis ▪ Fitz-Hugh-Curtis Syndrome ▪ Adolescent ▪ Contrast-Enhanced Ultrasound ▪ Magnetic Resonance.

## Introduction

Abdominal pain in adolescents is among the most common causes of doctor visits. The differential diagnosis for abdominal pain is extensive, but it can be narrowed down based on its location in the abdomen and pain characteristics. It is important for clinicians never to assume the adolescent is not sexually active, as assumptions can prolong the time to diagnosis.

One of the differential diagnoses of abdominal pain in women of childbearing age, including adolescent patients, must be pelvic inflammatory disease (PID) and its possible complications, such as Fitz-Hugh-Curtis syndrome (FHCS). PID is most commonly associated with sexually transmitted infections (1). The most common type of FHCS is perihepatitis, which usually manifests as right upper quadrant pain with false positive Murphy's sign, fever, and leukocytosis, which can mimic acute cholecystitis or choledocholithiasis (2, 3).

This article aims to present a less common presentation of FHCS with atypical pain in the left upper quadrant of the abdomen.

## Case Report

A 16-year-old female patient presented with severe abdominal pain, vomiting, diarrhoea, and vaginal odour with yellow discharge. The pain was diffuse with punctum maximum in the left upper quadrant. Laboratory findings showed elevated C-reactive protein (max 135mg/l) and sedimentation rate (60 mm/h) without leukocytosis. Other laboratory values were within the normal range. Haemocultures and urine cultures were negative. Vaginal and cervical swabs were positive for

*Chlamydia trachomatis* and *Ureaplasma parvum.* One month before the onset of symptoms, she had infectious mononucleosis, and serology came back positive for Epstein-Barr virus-specific antibodies; IgM and IgG antiVCA positive, IgG antiEA positive, IgG antiEBNA negative.

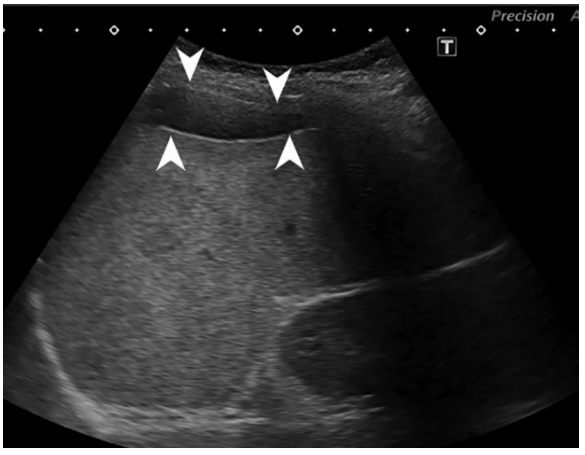


**Fig. 1.** *Ultrasound showed an enlarged spleen—concave indentation on the spleen contour caused by relatively well-limited perisplenic fluid (arrowheads).*

Abdominal ultrasound (US) showed an enlarged spleen with concave indentation of perisplenic fluid collection (45x10 mm) (Fig. 1) on the spleen contour, traces of small pleural effusion on the left side, free fluid in the pouch of Douglas, and a simple cyst in the left ovary. Other intraperitoneal and retroperitoneal structures were normal. Spleen contrast-enhanced US (CEUS) was performed immediately as a part of the US examination to rule out possible spontaneous splenic rupture associated with infectious mononucleosis. There were no signs of splenic rupture, and the fluid collection did not enhance with contrast. A discrete enhancement of perisplenic soft tissue could be seen, indicating the possibility of perisplenitis (Fig. 2). A chest x-ray showed a small pleural effusion on the left side without other pathological changes.

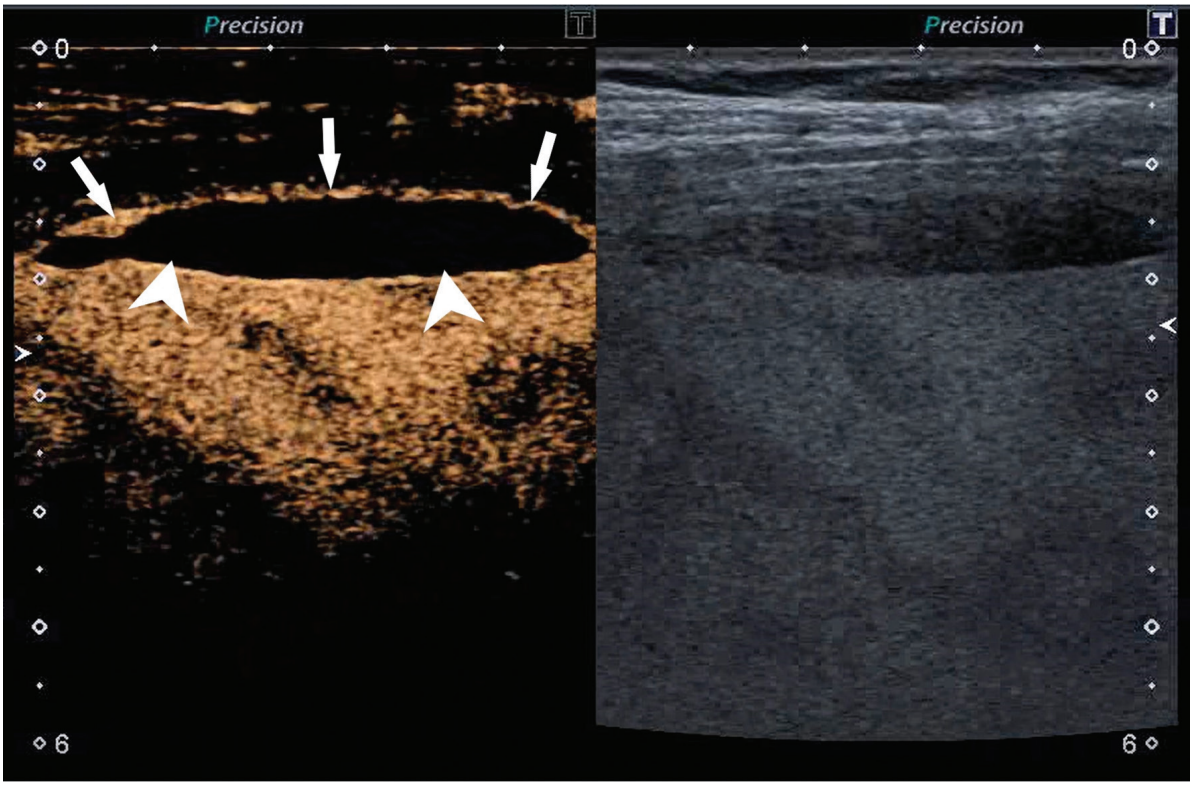


**Fig. 2.** *Contrast-enhanced ultrasound of the spleen on dual-screen mode with simultaneous display of grey-scale image (right) and contrast-only image (left) showed non-enhanced perisplenic fluid (arrowheads) with clear contrast enhancement of perisplenic tissue (arrows). There are no signs of spleen trauma.*

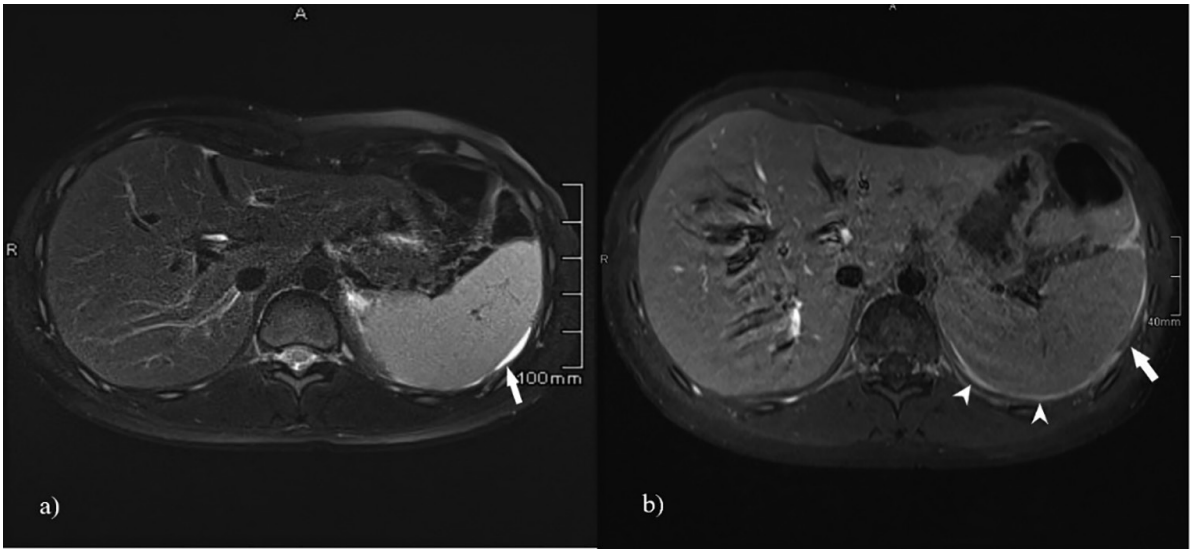


**Fig. 3.** *Abdominal MRI: a) T2-weighted fat sat sequence shows fluid collection at the posterior border of the spleen (arrows). b) T1-weighted fat sat sequence post-contrast application shows splenic capsule enhancement (arrowheads).*

An abdominal magnetic resonance imaging (MRI) was performed to exclude other possible pathology. The fluid collection at the posterior border of the spleen had a hyperintense signal in T2-weighted sequences. After applying a paramagnetic contrast agent, the splenic capsule was enhanced (Fig. 3). An additional finding was some free fluid in the abdomen and a corpus luteum cyst in the left ovary.

US-guided needle aspiration of fluid collection revealed a pale-yellow serous fluid that was negative for aerobic and anaerobic cultures, with some leucocytes found during microscopy. The fluid was recognised to be peritoneal. Initially, infected subcapsular spleen haematoma was suspected as a complication caused by infectious mononucleosis; therefore, she was initially treated with cefotaxime and flucloxacillin intravenously. After getting the positive vaginal swab for *Chlamydia trachomatis* in combination with imaging findings and aspiration of the fluid, a diagnosis of perisplenitis as a complication of PID was made, and antibiotic treatment was gradually switched to monotherapy with oral doxycycline for 14 days. Because our patient kept experiencing persistent pelvic and abdominal pain even after antibiotic treatment, a laparoscopy was performed, which showed no abnormalities. During the hospitalisation, the pain receded, and she was discharged home. A few months later, a new episode of left upper quadrant abdominal pain occurred together with a headache, but the pain was of lower grade (5/10) and intermittent. The US showed only the perisplenic fluid of the same size and location as before. After analgesic treatment, the pain receded, and hospitalisation was not required.

## Discussion

Fitz-Hugh-Curtis syndrome (FHCS) is a chronic complication of PID that usually manifests as inflammation of the liver capsule and peritoneum, with the formation of adhesions and no involvement of the liver parenchyma (1). Transmission is believed to be through peritoneal dissemination; however, FHCS has also been reported in men, indicating possible lymphatic or blood-borne transmission (1, 2, 4). The most common causes are gonococcal and chlamydial infections, but cases of tuberculous peritonitis have also been reported (5). We found only one case in the literature that reported perisplenitis in connection with FHCS (2). Perisplenitis has also been connected to heart failure, sepsis, ascites, autoimmune diseases (e.g.,

rheumatoid arthritis), sickle cell anaemia, and malignancies, primarily published as case reports.

The gold standard for diagnosing FHCS is laparoscopy (1, 2). However, most cases can be diagnosed with careful history taking and clinical, microbiological, and imaging findings (6). Our patient had an infection caused by *Chlamydia trachomatis* and *Ureaplasma parvum,* confirmed with a vaginal swab. The gynaecologist found no evidence of pelvic inflammation or adhesions during the diagnostic laparoscopy performed at the end of doxycycline treatment. Due to perisplenitis being an infrequent manifestation, imaging was paramount in our case. When choosing an imaging modality, contrast-enhanced CT is usually a go-to in the literature (1,7). It shows liver capsular enhancement in the arterial phase (8), with possible ascites, mesenteric lymphadenopathy, fat stranding and pelvic abscess or inflammation as adjunct findings (9). A thickened hepatic capsule with free fluid in the abdomen can also be seen with the US (10).

Our patient was a young female; therefore, the initial evaluation was done with the US, followed by intravenous CEUS to evaluate spleen and perisplenic changes. CEUS ruled out the initial differential diagnosis of spontaneous spleen rupture as a rare complication of infectious mononucleosis previously diagnosed in the patient (11). To the best of our knowledge, this is the first published case of perisplenitis describing the suspected enhancement of the perisplenic tissue seen on CEUS. When infection with *Chlamydia trachomatis* was confirmed, an MRI was performed, which confirmed findings indicating perisplenitis. Similar MRI findings in perihepatic FHCS were reported in other cases (12, 13). In addition, US-guided needle aspiration was performed to exclude an infectious cause of perisplenic collection. It showed that the collection was peritoneal fluid caught between the adhesions and the spleen. Perisplenitis was most probably caused by Chlamydia infection.

Established treatments for FHCS are antibiotics. Current guidelines for treating *Chlamydia trachomatis* induced FHCS recommend doxycycline for 14 days (3, 14). In cases where the pain persists even after antibiotic treatment, laparoscopy can be performed to remove the adhesions (1).

## Conclusion

PID and its complications, such as FHCS, should be a differential diagnosis in adolescent girls with abdominal pain. Contrast-enhanced MRI is the method of choice to confirm or rule out perisplenitis. However, we showed that spleen CEUS is a fast and valuable method to rule out splenic trauma and suspect perisplenitis with the additional enhancement of perisplenic tissue. Contrast-enhanced CT should be avoided in paediatrics due to the high radiation burden.

**Authors Contributions:** Acquisition, analysis and interpretation of data: TPS, MJ, MG and DK Drafting the article: MŠ and DK; Revising it critically for important intellectual content: MŠ, TPS, MG, MJ and DK; The approved final version of the manuscript: MŠ, TPS, MG, MJ and DK.

**Conflict of Interest:** The authors declare that they have no conflict of interest.

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