

# Pediatric Fitz-Hugh-Curtis Syndrome Diagnosed by Magnetic Resonance Imaging

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## Abstract

A 17-year-old girl, who had a sexual intercourse history, presented with fever and right upper quadrant pain. On physical examination, tenderness and percussion tender were identified at that quadrant point, but cervical motion tenderness was not identified. Plane X-ray, abdominal ultrasonography, and nonenhanced abdominal computed tomography, because of contrast agent allergy, showed no specific findings. Nonenhanced magnetic resonance imaging (MRI) demonstrated the high-intensity area in the surface and subcapsule of the liver. From vaginal discharge, polymerase chain reaction for *Chlamydia trachomatis* was positive. Considered physical and MRI findings, Fitz-Hugh-Curtis syndrome was diagnosed. After Azithromycin administering (1000 mg/day), she got better and discharged.

**Keywords:** Fitz-Hugh-Curtis syndrome, magnetic resonance imaging, right upper abdominal pain

## INTRODUCTION

Pediatric Fitz-Hugh-Curtis syndrome (FHCS), one of the sexually transmitted infections, is increasing recently;<sup>[1]</sup> however, the diagnosis of FHCS is difficult and often delayed.<sup>[2]</sup> When we make a differential diagnosis of acute abdominal pain, imaging inspection is useful, but we should consider several problems when we order.

Especially for adolescent, radiation exposure should be avoided as much as possible. Ultrasonography may be the first examination because of safety and utility but sometimes reveals no specific sign. In such a case, we would often tend to take a computed tomography (CT) for the next examination.

This is the case of pediatric FHCS which we can diagnose using nonenhanced magnetic resonance imaging (MRI).

## CASE REPORT

A 17-year-old girl, who had a sexual intercourse history, presented with fever and right upper quadrant pain. On physical examination, tenderness and percussion tender were identified at that quadrant point. Laboratory examinations revealed inflammatory reactions (white blood cells 13,300/ $\mu$ l and

C-reactive protein 0.70 mg/dl) and the hepatobiliary enzyme was within the normal range. Plane X-ray, abdominal ultrasonography, and nonenhanced abdominal CT, because of contrast agent allergy, showed no specific findings. Nonenhanced MRI demonstrated the high-intensity area in the surface and subcapsule of the liver [Figure 1]. From vaginal discharge, polymerase chain reaction for *Chlamydia trachomatis* was positive. Considered physical and MRI findings, FHCS was diagnosed. After Azithromycin administering (1000 mg/day), she got better and discharged on the 10<sup>th</sup> hospitalization. After 3 years of follow-up, there have been no signs of recurrence.

## DISCUSSION

When we order image inspections to make a differential diagnosis of acute abdominal pain among many diseases, there are some of the points to consider, the radiation exposure, the necessary of contrast agents, the cost, the diagnostic accuracy and the degree of emergency.

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**Figure 1:** T2-weighted magnetic resonance imaging: The high intensity of the surface and subcapsule of the liver was revealed (a: Axial, b: Coronal)

If the patient was adolescent and had the allergy of the contrast agent like this case, ultrasonography may be the first choice but could reveal no specific sign in this case.

Which examination we should choose either CT or MRI after ultrasonography revealed no specific sign? Enhanced CT is useful also for the diagnosis of FHCS;<sup>[1]</sup> however, it has the problem of the radiologic exposure. Especially for children and adolescent, radiological risk should be avoided. Furthermore, if the patient has an allergy of the contrast agent like the present case, enhanced CT with another contrast agent or MRI can be considered as a more detailed examination, but MRI should be chosen to avoid the anaphylactic complications.

MRI is optimally suited for the evaluation of intraperitoneal inflammatory disease due to its high soft-tissue contrast and high sensitivity to detect even subtle acute inflammation.<sup>[2]</sup> T2-weighted (T2W) imaging, which is the most useful for the evaluation of acute pelvic pain, provides fluid sensitive images where free fluid or tissue edema results in elevated signal intensity.<sup>[2]</sup> In the present case, T2W imaging revealed the high-intensity region in the surface and subcapsule of the

liver which may be ascites, edema, and adhesions which were reflected by FHCS inflammation.

Retrospectively considered we could not use enhanced CT and we had to find a detail intraperitoneal changes which ultrasonography could not detect, the second choice of examination of this case might have been to be MRI, of which the diagnostic capability is higher than a plane CT, and the radiation exposure of CT could have been avoided. As a result, MRI can reveal the changes around the liver, and we can diagnose FHCS. If we could not make a differential diagnosis in the image inspection, we might have to perform the exploratory laparotomy by laparoscopy for the diagnosis and its therapy.<sup>[3]</sup>

## CONCLUSION

We could diagnose FHCS using nonenhanced MRI, which is radiological safely and unnecessary for the contrast agent.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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## Conflicts of interest

There are no conflicts of interest.

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