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ENDGAMES

CASE REVIEW

A teenage girl with lower abdominal pain

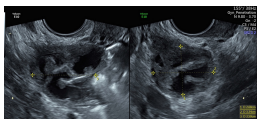
Chiara Zanchi *paediatrician*[1], Giorgio Cozzi *paediatrician*[1], Caterina Businelli *gynaecologist*[2], Egidio Barbi *paediatrician1* [3]

[1]Emergency Department, Institute for Maternal and Child Health, IRCCS Burlo Garofolo, Trieste, Italy; [2]Department of Obstetrics and Gynecology, Institute for Maternal and Child Health, IRCCS Burlo Garofolo, Trieste, Italy; [3]University of Trieste, Trieste, Italy

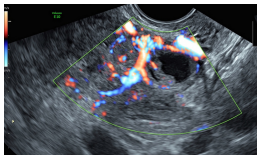
A 14 year old girl arrived with her mother at the emergency department complaining of a 6 day history of lower abdominal pain, associated with dysuria and mild fever. She reported no other symptoms. On examination, the girl was tender across the lower abdomen, particularly in the right lower quadrant, where mild guarding and rebound tenderness were present. She was given intravenous paracetamol.

During a brief private talk, she said she was sexually active with her boyfriend and was not using any form of contraception. Laboratory tests showed increased white blood count (13.6×10^9/L, neutrophils 8.7×10^9/L), C reactive protein of 5.4 mg/dL, and erythrocyte sedimentation rate of 47 mm/h. Beta-human chorionic gonadotropin levels were negative. Urine analysis showed mild leucocyturia.

An abdominal ultrasound showed normal appendix and ovaries, with a small amount of free pelvic fluid. Gynaecological physical examination showed cervical and uterine motion tenderness and vaginal discharge. A transvaginal ultrasound with colour Doppler analysis showed thickened, fluid filled fallopian tubes with hypervascularity ().



Ultrasound image shows tubes with thick walls and intraluminal fluid



Colour Doppler shows increased vascularity of the tube

Questions

1. What is the most likely diagnosis?
2. How should this patient be managed?
3. What specific issues relate to managing this condition in adolescence?

Answers

1.

What is the most likely diagnosis?

Short answer

A clinical presumptive diagnosis of pelvic inflammatory disease was made according to the diagnostic criteria stated by the 2015 Centers for Disease Control and Prevention guidelines for pelvic inflammatory disease.[1-5]

Discussion

Pelvic inflammatory disease should be suspected in any sexually active adolescent girl presenting with a persistent lower abdominal pain or pelvic discomfort. The condition is characterised by inflammation of the endometrium, fallopian tubes, ovaries, and pelvic peritoneum. It is caused by pathogens ascending the female genitourinary tract.[1-4]

Sexually transmitted infections such as *Neisseria gonorrhoeae* and *Chlamydia trachomatis* are often the cause of pelvic inflammatory disease, although vaginal flora can also play an important role.[1 2] The absence of documented sexually transmitted infection does not exclude the disease.

In Europe, the estimated pooled average prevalence of chlamydia infection in sexually active women between 18 and 26 is 3.6%, with an estimated risk of pelvic inflammatory disease in untreated asymptomatic women of 9% at 12 months.[6 7]

Women who start to have vaginal intercourse before the age of 15 and who have a high number of sexual partners are at greater

Correspondence to G Cozzi giorgiocozzi@gmail.com

risk of pelvic inflammatory disease.[1 8] Adolescents have immature cervixes, which appear to be more susceptible to sexually transmitted infections.[2]

They are also more likely to display risky behaviour, such as having multiple sexual partners and having sexual intercourse without using condoms.[2-10] However, any sexually active woman should be considered at risk of pelvic inflammatory disease.[2 8]

Pelvic inflammatory disease can be difficult to diagnose because of the various signs and symptoms[1-5] that can mimic other clinical conditions, such as acute appendicitis, urinary tract infection, or ectopic pregnancy.[3 8] Pelvic inflammatory disease can be clinically silent (subclinical pelvic inflammatory disease) or when acute (less than 30 days) symptoms can vary from mild, vague pelvic discomfort, to a severe abdominal pain secondary to a tubo-ovarian abscess.[3 11]

2. How should this patient be managed?

Short answer

The patient should receive antibiotic treatment consisting of a single dose of intramuscular ceftriaxone plus oral doxycycline 100 mg and metronizadole 500 mg every 12 hours for 14 days.[3 5] She should be re-evaluated by a clinician within 72 hours to check her condition. A gynaecological follow-up should be planned for three months after treatment, including a retest for chlamydia. Appropriate counselling about safe sexual behaviours is crucial, and tests should be performed for HIV and syphilis.[3 5]

Discussion

Pelvic inflammatory disease has potentially serious sequelae for the reproductive organs, even in mild or asymptomatic cases, and can be difficult to diagnose. Patients suspected of having the condition should receive prompt empirical treatment while awaiting microbiological results.[9] Treatment includes broad spectrum parenteral, intramuscular, or oral antibiotics.[5 8]

The first line outpatient treatment recommended by the Centers for Disease Control and Prevention includes intramuscular ceftriaxone plus oral doxycycline 100 mg, with or without metronizadole 500 mg every 12 hours for 14 days. There is only a limited evidence for the use of metronidazole.[5]

Azithromycin has been shown to achieve greater patient compliance and fewer side effects than doxycycline.[12 13]

Hospitalisation is recommended for patients with a suspected surgical emergency, who have a tubo-ovarian abscess, are pregnant, have severe symptoms (eg, nausea, vomiting, and high fever), are unable to tolerate outpatient regimen, or who fail to respond to oral treatment.[3 8]

Male sexual partners from the last 60 days should be evaluated, tested, and, if necessary, treated for *Chlamydia trachomatis* and *Neisseria gonorrhoeae*.[7]

Patients should avoid sexual intercourse until completion of treatment, which includes total resolution of symptoms and treatment of the sexual partner.[9]

Retesting is important because 20%-30% of women treated for chlamydia shows a repeat positive test by 12 months, and a prospective study of young women screened every three months showed the point prevalence of the infection remained at around 10% throughout follow-up.[5 7]

Patients should be offered advice on maintaining healthy sexual behaviours such as having fewer partners and using condoms to reduce the risks of contracting sexually transmitted infections, pelvic inflammatory disease, and tubal infertility.[5]

3.

What specific issues relate to managing this condition in adolescence?

Short answer

Pelvic inflammatory disease is a serious reproductive health disorder with a high incidence among adolescent girls and young women.[1] Physicians should be able to recognise patients at risk of the condition and suggest appropriate management[1 2] to improve the health of the patient and her partners.

Discussion

Adolescent girls presenting with abdominal and genitourinary problems are most likely to visit a general practitioner or an emergency department doctor; therefore, physicians in these settings should consider pelvic inflammatory disease among the differential diagnoses when evaluating these patients.[5] Investigation should include an accurate history focusing on the risk factors for pelvic inflammatory disease[5 9]; this might require a brief private talk with the adolescent patient, without her parents, to investigate sexual behaviour.

Pelvic inflammatory disease can be poorly symptomatic, and even when patients are symptomatic, they might delay consulting a healthcare provider because of the subtle and non-specific symptoms. Inconsistent, inadequate, or non-existent care for pelvic inflammatory disease in adolescents owing to incomplete physician knowledge can contribute to a delay in diagnosis and treatment and, therefore, to long term sequelae, including scarring, infertility, and ectopic pregnancy.

According to a survey sent to members of the American Academy of Pediatrics, in the section of emergency medicine, overall knowledge of paediatricians on pelvic inflammatory disease was unsatisfactory. However, physicians provided with a one page summary of guidelines for managing the condition could adequately recognise symptoms and offer appropriate treatment.[5-10]

A diagnosis of pelvic inflammatory disease in adolescence offers the opportunity to explain and promote safe sexual behaviours to the patient and her sexual partner. The girl should be offered appropriate counselling to prevent future acquisition or transmission of sexually transmitted infections. The possibility of sexual abuse should also be considered.

Patient outcome

Vaginal swabs were taken to rule out bacterial vaginosis and *Trichomonas vaginalis*, and cervical swabs were collected for *Neisseria gonorrhoeae* and *Chlamydia trachomatis* nucleic acid amplification testing, which tested positive for *Chlamydia trachomatis*, confirming the clinical diagnosis.[1-5] The patient's symptoms resolved with the antibiotic treatment in one week. At the gynaecological follow-up, she was well and asymptomatic, her physical examination was unremarkable, and retesting for *Chlamydia trachomatis* was negative. Her boyfriend was tested for infection and they both attended counselling.

Competing interests: we have read and understood BMJ policy on declaration of interest and declare that we have no competing interests.

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Patient consent obtained.

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