

Case Report

Chlamydia trachomatis peritonitis and pelvic inflammatory disease: Menstrual cup use as a precipitating event

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Abstract

Pelvic inflammatory disease is a common sequel to sexually transmitted infection. The diagnosis is suspected in sexually active females presenting with lower abdominal pain. We report a case in a female using a menstrual cup with low risk factors and atypical presentation of peritonitis. A computer tomography abdominal scan identified dilated large bowel loops and free fluid in the abdomen. A diagnostic laparoscopy revealed hyperaemic uterus and ovaries and turbid fluid in all four quadrants of the abdomen. Culture of the fluid was positive for chlamydia trachomatis. This is an unusual presentation of peritonitis in a patient, using a menstrual cup, with a latent sexually transmitted infection. Although uncommon, the use of a menstrual cup is a potential source of bacterial growth requiring a thorough gynaecological history in young female patients presenting with atypical abdominal pain.

Key Words:

Menstrual cup, pelvic inflammatory disease, peritonitis

Introduction

Pelvic inflammatory disease (PID) is an ascending infection from the cervix and vagina to the uterus, fallopian tubes and adjacent pelvic organs [1]. It is common in young females of reproductive age and is polymicrobial in many cases [2]. Two important sexually transmitted microorganisms *Neisseria gonorrhoea* and *chlamydia trachomatis* are thought to be involved in a significant number of cases. Majority of the patients are asymptomatic with *chlamydia trachomatis* infections. An increased risk of PID is known to occur in women with intra-uterine devices (IUD) [3]. However no clinical correlation with the use of menstrual cups has been reported in literature. We report a case of a female

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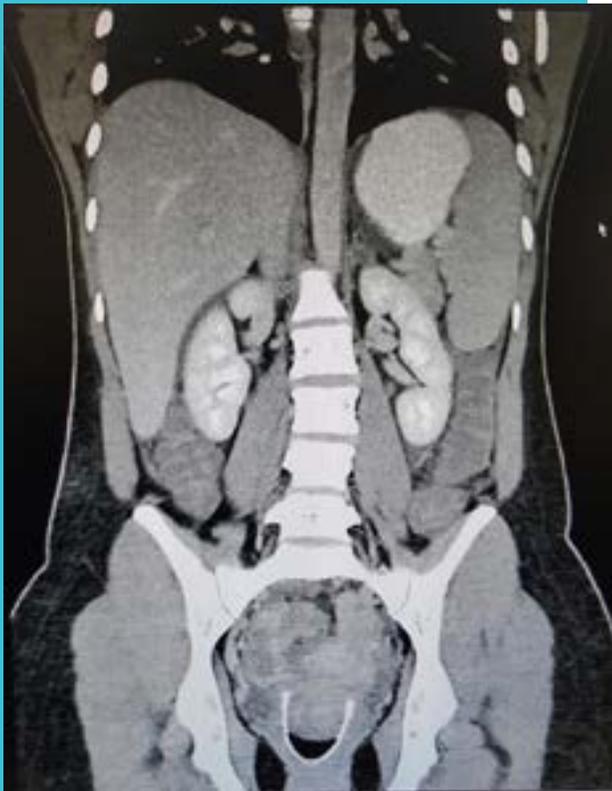
who presented with abdominal pain with a delayed diagnosis of PID and subsequently found to be using a menstrual cup.

Case Presentation

A 31-year-old female presented to our Emergency Department with 3 days of progressively worsening left iliac fossa pain. She described a preceding history of 3 weeks of migratory abdominal pain that culminated in presentation to the Emergency Department. Her pain was severe, stabbing and radiating across the abdomen with minimal relief from simple analgesia. This was associated with a reduced appetite, loose stools and pain on defecation. Her gynaecological history revealed a regular menstrual cycle with the onset of menstruation on the day of presentation. She denied any vaginal discharge or urinary symptoms. She intimated a recent separation from her husband, who was her only sexual partner. She was not on any regular medications and there was nothing else of clinical significance in her medical history.

On examination, a temperature of 37.4°C along with a normocardic and normotensive profile was noted. Her abdominal examination revealed a distended abdomen with generalised abdominal tenderness and involuntary guarding. Her biochemical profile reflected a leucocytosis at $15.8 \times 10^9/L$ (normal $8-11 \times 10^9/L$) with a neutrophilic predominance at $13.35 \times 10^9/L$ (normal $1.5 - 7.5 \times 10^9/L$).

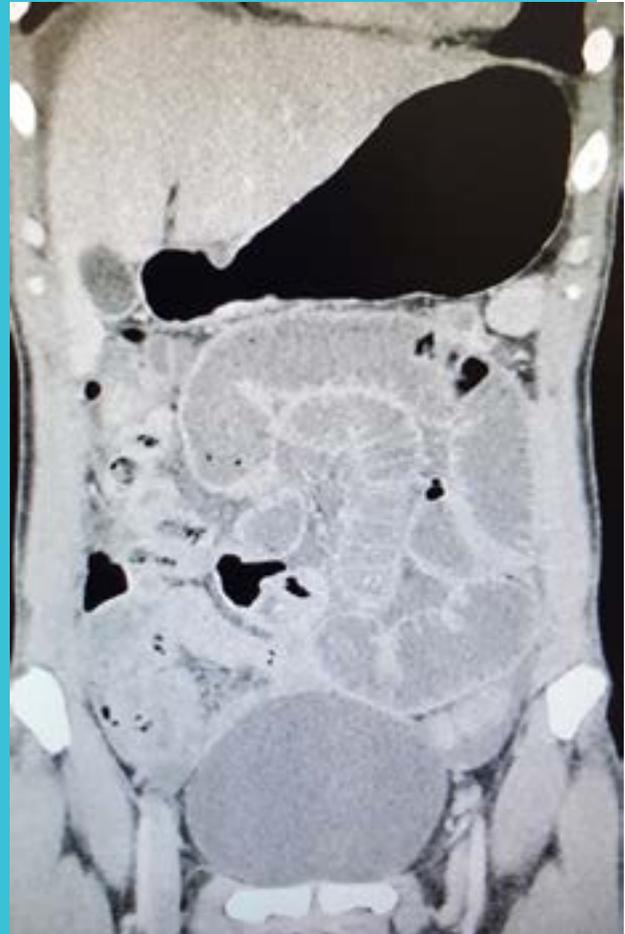
Figure 1.



Menstrual cup in vagina

A C-reactive protein (CRP) titre was recorded at 190 mg/L (normal <6 mg/L). A quantitative Human Chorionic Gonadotrophin (beta-HCG) blood test was negative. A computerised tomography of the abdomen and pelvis was requested which highlighted dilated small bowel loops with free fluid in the paracolic gutters, pelvis, perihepatic and perisplenic recesses (Figure 1). There was also noted to be a tubular structure in her vagina, which the patient revealed was a menstrual cup, which she had just started using (Figure 2). An initial differential diagnosis of small bowel ob-

Figure 2.



Dilated small bowel loops with surrounding free fluid

struction or an ileus was made and the patient was treated conservatively with a view to a diagnostic laparoscopy the following morning to ascertain the precipitating cause. On laparoscopy she was found to have turbid free fluid in all 4 quadrants with scattered fibrin. The small bowel and pelvic viscera were hyperaemic with hyperaemia of the uterus, fallopian tubes and ovaries (Figure 3). Her appendix was non-inflamed. Peritoneal fluid was sent off for culture, the abdomen was washed out with normal saline and a drain was placed in the pelvis. Post-operatively, she was reviewed by the gynaecologist who felt pelvic inflammatory disease was unlikely given her sexual history and lack of gynaecological symptoms.

However an endocervical swab was taken. The endocervical swab as well as the peritoneal fluid was positive for chlamydia trachomatis on real time polymerase chain reaction (PCR) testing. On further questioning the patient mentioned she had only recently started using a menstrual cup during her last menstrual period, just prior to the onset of her abdominal pain. In total she had used it only for one month over two menstrual cycles. The patient remained in hospital where she was treated with intravenous antibiotics and discharged home after five days on a course of oral antibiotics.

Figure 3.



Laparoscopic view of the hyperaemic fallopian tube and ovary

Discussion

A menstrual cup is a feminine hygiene product that was patented in the 1930s but is not commonly used compared to tampons and pads [4]. It is inserted into the vagina to collect menstrual flow but does not absorb fluid. It is easily removed with the contents disposed, re-sterilized with boiling water and reinserted. It is reusable over multiple menstrual cycles. Its use is of special interest in the developing and low-income groups as an alternatively less expensive hygiene product. There are no reports of an increased risk of PID with the use of menstrual cups in literature contrary to documented cases of increased risk with the use of intra-uterine devices (IUD). There is one case report of toxic shock syndrome secondary to

local trauma and infection from the use of a menstrual cup [5]. What makes this case so unusual is its initial unclear diagnosis and uncommon presentation in someone with a low risk of sexually transmissible infections presenting with acute PID. It is presumed that she had an asymptomatic chlamydia infection, which was untreated. We propose that the use of a menstrual cup, in which menstrual fluid accumulates, acted as a growth medium for chlamydia trachomatis resulting in acute PID and peritonitis. The recent use of the menstrual cup coincided with her sudden onset of lower abdominal symptoms. It is also possible that the frequent insertion, removal and re-insertion of the menstrual cup could lead to unrecognized local trauma precipitating the acute clinical presentation as seen in the case report of toxic shock syndrome. This is a rare presentation of chlamydia infection but needs to be kept in mind in high-risk women considering using menstrual cups as its use may convert patients with asymptomatic infection to an overt infection.

Conclusion

This is the first reported case of acute PID and chlamydia peritonitis in a patient using a menstrual cup. Acute abdominal pain remains a clinical and radiological dilemma. Many patients with an initial diagnosis of acute appendicitis and rarely bowel obstruction are subsequently deemed to have PID. The diagnosis of PID remains difficult and a good sexual history and clinical examination with radiological and biochemical investigations remain the mainstay of subsequent diagnosis. Whilst not common, menstrual cups should be considered to be a potential precipitant for bacterial growth and subsequent clinical infection in patients with asymptomatic sexually transmitted infections.

Acknowledgement

None

Declaration of Interest

None

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