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Acute Appendicitis in Pregnant Patient; A Case Report

Siti Rahmah Hashim Isa Merican[1], Andee Dzulkarnaen Zakaria[1], Amer Hayat Khan[2,*], Syed Azhar Syed Sulaiman[2], Nurul Hidayah Shariff[2]

[1]Department of Surgery, School of Medical Sciences, Universiti Sains Malaysia, Health Campus, 16150 Kelantan, Malaysia
[2]Department of Clinical Pharmacy, School of Pharmaceutical Sciences Universiti Sains Malaysia, 11800 Penang, Malaysia

Abstract Acute appendicitis is an inflammation of the inner lining of the vermiform appendix that spreads to its other parts. Acute appendicitis is a common diagnosis for localized abdominal pain in pregnancy with presence of significant but challengeable clinical manifestation and laboratory findings. Current report describes the case of an 18 year-old G^1P^0 Malay lady, at 16 weeks Period of Amenorrhea (POA) who was hospitalized with complaint of sudden onset of localized, non radiating pain at the suprapubic and right iliac fossa regions together with vomiting and worsening anorexia. Patient was suspected to have acute appendicitis based on pain location (periumbilical abdominal pain) and confirmed by radiological diagnosis. Laparoscopic procedure was adopted. Acute appendicitis in pregnancy requires an attentive assessment of clinical manifestation and laboratory findings including radiological diagnosis. Early action is a better option to control negative maternal and fetal outcomes. Laparoscopic procedure was adopted for current patient in 1st trimester pregnancy with general anesthesia and patient restored her health with normal fetus.

Keywords Acute Appendicitis, Laparoscopic Procedure, Outcomes, Pregnancy

1. Introduction

The worldwide incidence of acute appendicitis in pregnancy is 1 out of 1500 pregnancies and the incidence by trimester is 32% in first trimester and followed by 42% and 26% in second and third trimesters respectively[1].

Due to the challanging preoperative clinical evaluation; the pathologic diagnosis of appendicitis is confirmed in only 30- 50% of cases[2, 3]. The first trimester gives a better accuracy, but more than 40% of patients in the second and third trimester will have a normal appendix[5]. The risk of delay in diagnosis is associated with a greater risk of complications such as perforation, infection, preterm labor, and risks of fetal or maternal loss[3, 6]. Maternal mortality has been reported from none to 2%[2-4]. An unruptured appendix carries a fetal loss of 1.5 - 9%, while this rate increases up to 36% with perforation[2, 3].

During pregnancy the acute appendicitis is the major cause of abdominal pain[1]. Inflammation of the inner lining of the vermiform appendix that spreads to its other parts is always used to define appendicitis. The etiology of appendicitis is obstruction of the appendiceal lumen due to lymphoid hyperplasia. Once the diagnosis has been confirmed, appendectomy is the standard treatment for appendicitis[7]. Radiological diagnosis is needed to confirm the appendicitis and appendectomy may be preceded once the diagnosis has been confirmed[8]. Delay in conforming diagnosis may contribute to high perforation rate. Delaying surgery may increase the mortality rate to 4% while fetal death occurs in almost 43% of perforated appendicitis [1].

By comparing the risk and benefit of radiology diagnosis to the pregnant patient and her fetus, computed tomography (CT) scan can be used in the second or third trimester, whereas ultrasound and (MRI) can be used throughout pregnancy [9].

2. Case Presentation

A 19 year old, Malay woman with Gravida 1 Parity 0 (G^1P^0), at 16 weeks Period of Amenorrhea (POA) who presented at Accident and Emergency Department (A&E) was admitted to surgical ward complaining of sudden onset of localized, non radiating pain at suprapubic and right iliac fossa regions together with vomiting and worsening anorexia. Patient denied any fever and vaginal bleeding except minimal yellowish discharge with 2 days history. She also complained of increased frequency of urination however, there were no symptoms of urinary tract infection (UTI). Vaginal speculum examination done at A&E confirmed presene of whitish discharge without fouls- smelling, healthy cervix and closed opening (OS). Transabdominal Scan (TAS) was done showing singleton, positive fetal heart (FH), low lying placenta without retroplacenta clots, free fluid in pouch of Douglas (POD) and adnexal mass. Urine Full Examination Microscopy Exam (UFEME) revealed negative result except 3+ leukocytes. Vital signs were stable upon

* Corresponding author:
amerhayat@ymail.com (Amer Hayat Khan)
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admission with blood pressure (BP) 103/64 mmHg, heart rate 84 beat per minute, temperature 37 °C and SPO_2 98 % on room air. Meanwhile her White Blood Cell (WBC) was 15.7 $x10^3/mm^3$, hemoglobin (Hb) was 10.1 g/dL, platelet count (Plt) was 364 $x10^3/mm^3$, Sodium (Na) was 136 mmol/L, Potassium (K) was 4.0 mmol/L, urea was 3.8 mmol/L and creatinine was 53 µmol/L. apparently the laboratory findings were within normal limit except for elevation of WBC count. Surgeon in charge suspected acute appendicitis. Ultrasound showed a normal appendix and intrauterine pregnancy at 16 weeks. She was admitted to the hospital for observation, where she developed worsening pain and low-grade fever. A laparoscopic appendectomy was performed under general anesthesia and patient was discharged with better health.

3. Discussion

Patient was presented with the most common symptoms of acute appendicitis which are localized abdominal pain at suprapubic and right iliac fossil areas, vomiting, anorexia, together with positive leukocytosis and elevated WBC without UTI symptoms[4]. Both obstetric and gynecologic conditions can lead to abdominal pain, with appendicitis resemblance[3, 6]. A systematic history and a watchful physical assessment should lead the clinician to formulate a differential diagnosis that is appropriate for the patient. One study demonstrated that appendicitis occurred in approximately half of their clinical symptoms are same like pregnancy, for example; ovarian cysts, mesenteric adenitis, fibromyoma uteri, varicose veins in the parametria, ileus, and salpingitis [2].

Accurately identifying acute appendicitis in pregnancy is a challenging phase for surgeons. Though, the diagnostic imaging techniques have shown promise in facilitating and supporting the diagnosis. Ultrasound has shown to be highly sensitive and specific although to a lesser degree after a gestational age of 35 weeks due to technical difficulties, and this procedure should be considered first line diagnostic method in suspected acute appendicitis[10]. Although considerations regarding operator technique, large body habits and possible obscuring bowel and gas may not allow for a conclusive preoperative diagnosis[11].

Laboratory assessment may not be helpful, like leukocytosis in pregnancy can be high (16000 cells/ml) along with bandemia which is not a clear indicator for appendicitis. Furthermore, during labor, leukocytes value may rise to 30,000 cells/mL, and not all pregnant patients with appendicitis have leukocytosis.[12] It is not a reliable marker, as up to 33% of cases may have a leukocyte count greater than 15,000/mm[6].

Early surgical intervention (within 24 hours), has shown to give imperative outcomes and reduce the maternal and fetal morbidity and mortality. Surgical delays have been associated with appendiceal perforation and significant fetal loss and cases of maternal mortality[6]. Various tocolytic agents are used prophylactically for uterine irritability; however their efficacy has not been established[2, 3].

Fetal health complicates the management of the gravida patient with acute abdominal pain. When appendicitis is suspected, timely obstetric as well as general surgical consult is essential. Laparoscopic surgery in the pregnant patient has not been generally accepted in the 2nd and or 3rd trimester due to the apprehension regarding fetal wastage, the effects of carbon dioxide on the developing fetus and the long-term effects of this exposure[13].

Improved laparoscopic technique has shown some advantages over open laparotomy, like decreased postoperative pain, reduced hospital, and wound morbidity [14]. Postoperatively, early mobilization is advantageous for prevention of thromboembolism as occurrence rates of deep vein thrombosis are higher in pregnancy. Early mobilization also reduces the occurrence of incision scars, hernias, and decreases fetal depression secondary to pain and narcotic use[15].

Usage of antibiotic either pre or post surgical phase may expose the developing fetus to potentially teratogenic substances[5]. Pregnancy related pharmacodynamic changes result in reduced maternal plasma levels of antibiotics[16]. Second generation cephalosporins are used for prophylactic purpose in majority of cases. Furthermore, ampicillin or cephalosporins are used in combination with metronidazole in cases with perforated or gangrenous appendix[3].

4. Conclusions

The most important cause of high mortality and morbidity rate in acute appendicitis during pregnancy is the inability to assess patients' clinical symptoms, laboratory findings and confirm the diagnosis as early as possible through radiological diagnosis and inability to conduct adequate treatment to patients. Laparoscopic procedure was adopted for current patient with general anesthesia and patient restored her health with normal fetus.

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