

Ruptured ectopic pregnancy mimicking acute pancreatitis

Pęknięcie ciąży ektopowej imitujące ostre zapalenie trzustki

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Abstract

Introduction: Ectopic pregnancy may lead to massive haemorrhage, infertility or death. Prompt diagnosis and treatment are crucial to save patients who would otherwise die. Serum amylase and lipase measurements are known biochemical markers of pancreatic inflammation and a recognized finding that may help diagnose acute pancreatitis. To the best of our knowledge (Medline, Pubmed, Cochrane Library have been researched) the following study presents the first case of ruptured ectopic pregnancy accompanied by markedly elevated amylase and lipase levels mimicking acute pancreatitis ever reported.

Case Report: A previously healthy, nulliparous 35-year-old woman was admitted to hospital with a 2-day history of abdominal pain and vomiting. Her last menstrual period was 7 weeks before presentation. At the admission, the patient was hemodynamically stable. The abdomen was soft with tenderness in its mesogastric area. Blood tests revealed markedly elevated activities of the pancreatic enzymes. Acute pancreatitis was the early clinical diagnosis and subsequent therapy was initiated. After 12 hours the condition of the patient suddenly worsened. She was clinically shocked with pallor, hypotension and tachycardia. Laboratory tests revealed anaemia and increased activities of pancreatic enzymes. An ultrasound examination demonstrated an accumulation of intraperitoneal fluid in the pelvis. Subsequently, the patient was subjected to immediate laparotomy. The peritoneal cavity contained large amount of blood. A cystic mass was found and extracted from the ruptured and bleeding right fallopian tube. Histological examination confirmed a rupture of an ectopic pregnancy of a 6-week-old foetus with an intact gestational sac. The patient made an uneventful recovery and was discharged from hospital after 8 days.

Conclusions: Our case proves that a misdiagnosed ruptured ectopic pregnancy in the event of elevated activities of pancreatic enzymes may lead to delayed diagnosis of haemorrhage to peritoneum, resulting in hemodynamic instability.

Key words: **ectopic pregnanc / hemoperitoneum / amylase / lipase / pancreatitis /**

Streszczenie

Wstęp: Cięża ektopowa może prowadzić do masywnego krwotoku, niepłodności lub zgonu. Niezwłoczne rozpoznanie i zastosowanie leczenia są kluczowe dla uratowania pacjentek zagrożonych śmiertelnymi powikłaniami. Amylaza i lipaza znajdujące się w osoczu są markerami biochemicznymi procesu zapalnego trzustki i ich oznaczenie stanowi podstawę diagnostyki ostrego zapalenia trzustki. W poniższej pracy przedstawiamy pierwszy opis przypadku pęknięcia ciąży pozamacicznej z towarzyszącym znacznym wzrostem poziomu amylazy i lipazy imitującym ostre zapalenie trzustki.

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Opis przypadku: Dotychczas zdrowa, 35-letnia kobieta została przyjęta do szpitala z powodu utrzymujących się od 2 dni wymiotów i bólu brzucha. Ostatnia miesiączka wystąpiła 7 tygodni przed zgłoszeniem się do szpitala. W badaniu wstępnym pacjentka była wydolna hemodynamicznie. Stwierdzono miękki brzuch z bolesnością okolicy śródbrzusza. W badaniach laboratoryjnych krwi ujawniono znacznie podwyższoną aktywność enzymów trzustkowych. Rozpoznanie wstępne ukierunkowano na ostre zapalenie trzustki i wdrożone zostało odpowiednie leczenie. Po 12 godzinach stan chorej uległ nagłemu pogorszeniu. Rozwinęły się objawy wstrząsu z towarzyszącym zblednięciem skóry, spadkiem wartości ciśnienia tętniczego, częstoskurczem serca. Ponowne badania laboratoryjne ujawniły niedokrwistość, dalszy wzrost aktywności enzymów trzustkowych. W kolejnym badaniu sonograficznym uwidoczniło się w jamie otrzewnej obecność wolnego płynu. Chora została zakwalifikowana do pilnej laparotomii. W jamie otrzewnej stwierdzono znaczną ilość krwi. Uwidoczniło się, a następnie usunięto torbielowatą zmianę w obrębie pękniętego i krwawiącego prawego jajowodu. Badanie histopatologiczne usuniętej zmiany potwierdziło pękniętą ciążę ektopową zawierającą jajo płodowe z 6-tygodniowym zarodkiem. Okres pooperacyjny przebiegł bez powikłań, chorą wypisano ze szpitala w 8. dobie hospitalizacji.

Wnioski: W opisanym przypadku zwracamy uwagę na fakt, że nierozpoznanie pękniętej ciąży ektopowej przy obecności podwyższonej aktywności enzymów trzustkowych może prowadzić do opóźnienia rozpoznania krwawienia do jamy otrzewnej, w wyniku czego może rozwinąć się niewydolność hemodynamiczna.

Słowa kluczowe: **ciąża ektopowa / krwiak otrzewnej / amylaza / lipaza /
zapalenie trzustki /**

Background

Ectopic pregnancy results from embryo implantation outside the endometrial cavity. It may lead to massive haemorrhage, infertility or death [1, 2]. Prompt diagnosis and treatment are crucial to save patients who would otherwise die [3, 4]. Serum amylase and lipase measurements are known biochemical markers of pancreatic inflammation and a recognized finding that may help diagnose acute pancreatitis [5, 6]. Confirmation of acute pancreatitis usually requires introduction of conservative supportive treatment [7, 8]. To the best of our knowledge (Medline, Pubmed, Cochrane Library have been researched) the following study presents the first case of ruptured ectopic pregnancy accompanied by markedly elevated amylase and lipase levels mimicking acute pancreatitis ever reported.

Case description

A previously healthy, nulliparous 35-year-old woman was admitted to the surgery department of our hospital with a 2-day history of persistent abdominal pain accompanied by nausea and vomiting. Her last menstrual period was 7 weeks before presentation. At the admission, the patient was hemodynamically stable and afebrile. The abdomen was soft with tenderness in its mesogastric area. Routine laboratory tests showed haemoglobin level 11.2 gm/dL, white blood cell count – 9.8 x10³/mcL, platelet count 213 x10³/mcL, lipase 2205 IU/L [reference range 13-60 IU/L], amylase 2113 IU/L [reference range 28-100 IU/L] and total bilirubin 1.07 mg/dL [reference range <1.0 mg/dL]. A chest radiograph demonstrated no significant abnormalities. Ultrasound examination of the abdomen revealed small amount of intraperitoneal fluid in Morison's pouch.

Acute pancreatitis was the early clinical diagnosis and subsequent therapy was introduced. Supportive treatment included prohibition of oral intake, followed by aggressive fluid resuscitation with intravenous crystalloid solutions. Analgesics (acetaminophen) were administered for pain relief.

In addition, the patient received intravenous proton pump inhibitor (esomeprazole) and antibiotics (cefotaxim and metronidazole). Monitoring of hemodynamic and volume statuses was initiated.

After 12 hours the condition of the patient suddenly worsened. She was clinically shocked with pallor, hypotension and tachycardia. Laboratory data revealed anaemia (haemoglobin level 8.7 gm/dL, white blood cell count – 11.4 x10³/mcL, platelet count – 193 x10³/mcL), increased activities of pancreatic enzymes (lipase 3184 IU/L, amylase 1916 IU/L) and slightly elevated bilirubin and aminotransferases (total bilirubin 1.71 mg/dL, aspartate aminotransferase 184 IU/L [reference range 0-37 IU/L], alanine aminotransferase 384 IU/L [reference range 5-49 IU/L]). Another ultrasound examination showed large amount of free pelvic fluid and transvaginal sonography was recommended. Subsequent examination revealed hyperechogenic endometrium (20 mm) and an accumulation of intraperitoneal fluid in the pelvis. Additionally, a cystic mass with an irregular outline (measuring 29 mm in diameter) arising from the right adnexa was found.

The clinical diagnosis of intraperitoneal haemorrhage implied urgent surgical intervention. Subsequently, the patient was subjected to immediate laparotomy by Pfannenstiel incision. The peritoneal cavity contained large amount (3 L) of clotted and fluid blood. A cystic mass measuring 25 mm was found and extracted from the ruptured and bleeding right fallopian tube. Partial salpingectomy was performed. The histological examination confirmed ruptured ectopic pregnancy of a 6-week foetus with an intact gestational sac. Simultaneously, the patient received 2 units of packed red blood cells. Another 3 units were transfused immediately after the surgery, together with 4 units of fresh frozen plasma. After the laparotomy the patient was transferred to intensive care unit and remained there for two more days. On the second post-operative day biochemical analysis of the blood samples revealed no abnormalities. The patient made an uneventful recovery and was discharged from hospital after 8 days.

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Discussion

A variety of organs and secretions contain amylase activity, including pancreas, salivary glands, fallopian tubes and ovarian cyst fluids, testes, thyroid, tonsils, breast milk, sweat, tears, and some malignant neoplasms [9]. The pancreas and salivary glands contain amylase concentrations several orders of magnitude greater than other organs. Thus, serum amylase is increased in at least 75% of pancreatitis cases [5, 10]. The major limitation of using serum amylase measurement as the only factor in diagnosing pancreatitis is lack of specificity because numerous clinical situations may result in elevated amylase. Hyperamylasemia has been reported to occur in mumps, parotitis, perforated peptic ulcer, perforated appendicitis, intestinal obstruction, mesenteric infarction, pulmonary embolism, pneumonia, myocardial infarction, lung cancer, breast cancer, lymphoma and several tubo-ovarian disorders [5, 11-13].

In terms of diagnostic accuracy, lipase has been proven to be superior to amylase in acute pancreatitis [6, 10]. However, lipase is also not specific to the pancreas, having been isolated in the tongue, esophagus, stomach, duodenum, small bowel, liver, lung, and adipose tissue [5, 14]. Consequently, hyperlipasemia has been reported to appear in the event of cholecystitis, esophagitis, peptic ulcer disease, enteritis, peritonitis and bowel obstruction and infarction [5, 10, 14].

So far we have found only one published report of hyperlipasemia occurring with tubo-ovarian disorders. Sinha et al presented a case of lipase activity elevation secondary to ruptured ovarian cyst [15].

For the reasons discussed above, lipase and amylase should not be considered separately in the diagnostic process of abdominal disorders, especially concerning pancreatitis. According to Mofidi, elevated activity of both enzymes in combination with clinical features (abdominal pain) should result in the diagnosis of acute pancreatitis [7]. In the reported case, the patient's presentation fulfilled all the obligatory criteria listed above, allowing for the diagnosis of acute pancreatitis. The initial bleeding from the ruptured ectopic pregnancy, which had probably occurred prior to hospital admission, triggered the development of peritonitis. Hyperamylasemia and hyperlipasemia might develop from ongoing peritonitis [15]. According to Saruc et al, hemolysis of extravasated blood might have been the reason of the elevated pancreatic enzymes activity [16]. Simultaneously, the intensifying haemorrhage from the ruptured ectopic pregnancy in following hours after admittance led to hypovolemic shock.

Currently ectopic pregnancy remains the leading cause of pregnancy-related deaths during the first trimester, accounting for 9% of all cases [1, 17]. The classic triad of ectopic pregnancy is pain, amenorrhea, and vaginal bleeding, but only 50% of patients present typically [18]. In the reported case the patient denied having experienced vaginal bleeding and other symptoms typical of an early pregnancy, among them breast fullness, fatigue, heavy cramping, shoulder pain and recent dyspareunia. The absence of these symptoms has taken the attention of the surgeon away from the diagnosis of early pregnancy despite the reported delay of menstrual period. Thus, no urine pregnancy test or beta-hCG test was performed at that point, leading to the delay of the correct diagnosis.

Most ectopic pregnancies are located in the fallopian tube, especially in the ampulla portion of the tube, where over 80% of the cases are located [18]. The abnormally implanted gestation grows and draws its blood supply from the site of abnormal implantation. As the gestation enlarges, the probability of organ rupture increases as only the uterine cavity is designed to expand and accommodate foetal development. Thus, ectopic pregnancy may lead to massive haemorrhage and result in infertility or death [3]. In the presented case, the patient developed symptoms of hypovolemic shock, which made us revise the original diagnosis of acute pancreatitis. Loss of haemoglobin in the subsequent blood tests and sonographic manifestation of free pelvic fluid led us to the diagnosis of hemoperitoneum. Therefore, hemodynamic instability and demonstration of intraperitoneal fluid accumulation required laparotomy to be performed.

Conclusions

Our case stresses the fact that a misdiagnosed ruptured ectopic pregnancy accompanied by elevated activities of pancreatic enzymes may lead to delayed diagnosis of haemorrhage to peritoneum, resulting in hemodynamic instability. Therefore, clinicians ought to realize that coincident hyperamylasemia and hyperlipasemia are not always necessarily pathognomic of acute pancreatitis.

Piśmiennictwo

- Mukul L, Teal S. Current management of ectopic pregnancy. *Obstet Gynecol Clin North Am.* 2007, 34, 403-419.
- Banaszek A, Ziolkowska K, Szymusik I, [et al]. Ectopic pregnancy – still a live clinical issue – a case report. *Ginekol Pol.* 2006, 77, 788-792.
- Hertzberg B, Kliever M, Paulson E. Ovarian cyst rupture causing hemoperitoneum: imaging features and the potential for misdiagnosis. *Abdom Imaging.* 1999, 24, 304-308.
- Brodowska A, Szydłowska I, Starczewski A, [et al]. Analysis of risk factors for ectopic pregnancy in own material in the years 1993-2002. *Pol Merkur Lekarski.* 2005, 18, 74-77.
- Pacheco R, Nishioka Sde A, de Oliveira L. Validity of serum amylase and lipase in the differential diagnosis between acute/acute chronic pancreatitis and other causes of acute abdominal pain. *Arq Gastroenterol.* 2003, 40, 233-238.
- Matull W, Pereira S, O'Donohue J. Biochemical markers of acute pancreatitis. *J Clin Pathol.* 2006, 59, 340-344.
- Mofidi R, Madhavan K, Garden O, [et al]. An audit of the management of patients with acute pancreatitis against national standards of practice. *Br J Surg.* 2007, 94, 844-848.
- Carroll J, Herrick B, Gipson T, [et al]. Acute pancreatitis: diagnosis, prognosis and treatment. *Am Fam Physician.* 2007, 75, 1513-1520.
- Pieper-Bigelow C, Strocchi A, Levitt M. Where does serum amylase come from and where does it go? *Gastroenterol Clin North Am.* 1990, 19, 793-810.
- Vissers R, Abu-Laban R, McHugh D. Amylase and lipase in the emergency department evaluation of acute pancreatitis. *J Emerg Med.* 1999, 17, 1027-1037.
- Christensen H, Larsen M, Schebye O. Serum amylase levels in gynecologic patients with acute abdominal pain. *Surg Gynecol Obstet.* 1992, 175, 355-356.
- Um J, Kim K, Kang M, [et al]. Macroamylasemia in a patient with acute appendicitis: a case report. *J Korean Med Sci.* 1999, 14, 679-681.
- Shapiro R, Dropkin R, Finkelstein J, [et al]. Ovarian carcinomatosis presenting with hyperamylasemia and plural effusion. *Am J Gastroenterol.* 1981, 76, 365-368.
- Serrano N. Increased lipase plasma levels in ICU patients: when are they critical? *Chest.* 2005, 127, 7-10.
- Sinha S, Khan H, Timms P, [et al]. Pancreatic-type hyperamylasemia and hyperlipasemia secondary to ruptured ovarian cyst: a case report and review of the literature. *J Emerg Med.* 2008 Nov 6. [Epub ahead of print] Available from: URL: <http://www.sciencedirect.com/science/journal/07364679>.
- Saruc M, Yuceyar H, Turkel N, [et al]. The role of heme in hemolysis-induced acute pancreatitis. *Med Sci Monit.* 2007, 13BR, 67-72.
- Jedrzycki P, Krawczyk J, Meissner W, [et al]. Heterotopic pregnancy successfully treated at laparoscopy (case report). *Ginekol Pol.* 2006, 77, 53-57.
- Andolsek K. Ectopic pregnancy: 'classic' vs common presentation. *J Fam Pract.* 1987, 24, 481-485.