



Case report

Tubal abortion masquerading as an acute appendicitis with a negative urine pregnancy test: A case report

Shiva Aryal^a, Bibek Man Shrestha^{a,*}, Sunita Lamsal^b, Milan Regmi^a, Anurag Karki^a, Neeta Katuwal^b^a Maharajgunj Medical Campus, Institute of Medicine, Kathmandu, Nepal^b Department of Obstetrics and Gynecology, Tribhuvan University Teaching Hospital, Institute of Medicine, Kathmandu, Nepal

ARTICLE INFO

Keywords:

Acute appendicitis
Ectopic pregnancy
Tubal abortion

ABSTRACT

Introduction and importance: Spontaneous expulsion of product of conception through the fimbrial end to the peritoneal cavity is a rare mode of progression of tubal pregnancy. Thus, ectopic pregnancy can present with right-sided iliac fossa pain which can be preoperatively misdiagnosed as acute appendicitis.

Case history: A 30-year regularly menstruating woman presented with right iliac fossa pain which was diagnosed as acute appendicitis preoperatively with an ultrasound. However, intraoperatively, a product of conception-like material measuring 3 * 3 cm was seen hanging from the right fimbrial end of the fallopian tube with a normal appendix. With an intraoperative diagnosis of spontaneous tubal abortion, histopathology of the resected mass showed chorionic villi lined by trophoblastic cells along with decidualized tissue, fibrinoid material, and blood clot.

Discussion: Ectopic pregnancy presenting as a right iliac fossa pain can mimic acute appendicitis. An abnormal β -hCG pattern/level which doesn't correspond to the gestational age suggests the likely diagnosis of ectopic gestation. Transvaginal ultrasound is the preferred imaging modality for the evaluation of patients with suspected ectopic gestation. A urine pregnancy kit cannot always exclude an underlying ectopic pregnancy because of the associated false-negative results.

Conclusion: Urgent laparotomy to prevent detrimental complications associated with ectopic gestation should be done. Surgeons should be aware of this suspicion as a false negative UPT can happen and misguide clinicians about the possible occurrence of ectopic pregnancy.

1. Introduction

Ectopic pregnancy is any pregnancy that occurs outside the uterine cavity, the most common site being the fallopian tube [1]. Tubal abortion, the spontaneous expulsion of the products of conception through the fimbriae into the peritoneal cavity is one of the rare modes of progression of tubal pregnancy [2]. Right-sided tubal abortion is difficult to distinguish from acute appendicitis because of almost similar presentation [3]. Urinary pregnancy tests using test kits sensing hCG would be one of the most valuable tools to segregate the two quickly in the Emergency Department (ED), but the kits seem to have a questionable accuracy of detection, contrary to what they claim [3,4]. Here, we report a case of a female who was diagnosed to have acute appendicitis in the ED, with a negative urine pregnancy test, taken for the emergency appendectomy to the Operation Theater only to find she had a right-sided

tubal abortion. To our surprise, the urinary pregnancy test repeated post-operatively was positive though. We report this case under the SCARE checklist [5].

2. Case presentation

A 30-year-old nulliparous female with no history of any comorbidities and past surgery presented to the Emergency Department with the complaint of pain abdomen over the right iliac fossa of one-day duration which was acute in onset, dull aching type, non-radiating, non-migratory, and not associated with fever, anorexia, nausea or vomiting. The patient didn't have vaginal bleeding during the presentation but had a history of per vaginal spotting 7 days before the ED visit which lasted for 3 days. She had a regular 28 ± 5 days cycle with the blood flow for 4–5 days. Her last menstrual period was 44 days before the day of

* Corresponding author at: Maharajgunj Medical Campus, Institute of Medicine, P.O. Box: 1524, Kathmandu, Nepal.

E-mail address: bibekmantha7@gmail.com (B.M. Shrestha).<https://doi.org/10.1016/j.ijscr.2021.106438>

Received 8 July 2021; Received in revised form 19 September 2021; Accepted 19 September 2021

Available online 21 September 2021

2210-2612/© 2021 The Authors. Published by Elsevier Ltd on behalf of IJS Publishing Group Ltd. This is an open access article under the CC BY-NC-ND license

<http://creativecommons.org/licenses/by-nc-nd/4.0/>.

presentation. She had been married for 2 years and was not using any contraceptives. Past history was significant for mild COVID-19, 16 days back from which she had recovered fully. She gave a vague history of lower abdominal pain and foul-smelling per-vaginal discharge a year back which subsided by medications, suggesting a probable diagnosis of pelvic inflammatory disease in the past.

On examination, she was ill-looking with a BP of 110/60 mm Hg, pulse rate of 92 bpm, respiratory rate of 20 breaths/min, SpO₂ of 94% in the room air, and temperature – 98 °F. On per abdomen examination, the abdomen was mildly distended with tenderness over the Mc Burney's point and rebound tenderness was also present. Her bowel sounds were normal. Per vaginal examination and other systemic examinations were unremarkable.

She was anemic (hemoglobin-10 g/dl, PCV-29 g %) with total leucocyte count (TLC) 10,300/mm³ (66% neutrophils) and other blood parameters within normal limit. The urine pregnancy test was negative. All of these clinical and laboratory markers yielded an Alvarado score of 5/10. Ultrasound of the abdomen revealed a 13.3 mm diameter tubular, non-compressible, non-peristaltic structure in the right iliac fossa with a minimal amount of surrounding fluid and edematous omentum. With the provisional diagnosis of acute appendicitis, the patient was shifted to the operating room without any delay. Per operatively approximately 50 ml of hemoperitoneum was present. The appendix was, to our surprise, normal looking. Intraoperatively gynecologic consultation was done after a product of conception. The uterus was bulky and bilateral ovaries and left fallopian tube were normal. Intraoperative diagnosis of right tubal abortion was made for which right salpingectomy was performed and peritoneal washing was done by the experienced team of gynecologists of Tribhuvan University Teaching Hospital and was well tolerable by the patient. After securing hemostasis abdomen was closed in layers. On the cut section, the swelling revealed the product of conception-like material (Fig. 1).

The postoperative period was uneventful and she was managed with



Fig. 1. Showing an enlargement of the fallopian tube with a product of conception.

broad-spectrum antibiotics and analgesics. The urine pregnancy test was repeated on the second postoperative day and the test was positive. The patient recovered well after the operation and was discharged on the third postoperative day. The diagnosis that the patient had right total pregnancy was confirmed by histopathological examination (Fig. 2), which showed the presence of a few degenerative chorionic villi and some trophoblastic cells mixed with blood and fibrin. At one month's follow-up, she was healthy and doing well with no complaints.

3. Discussion

Acute abdominal pain is one of the most common chief complaints of patients visiting the ED accounting for 8% of all emergency visits in the United States [6]. In women of childbearing age, proper diagnosis can be difficult, as ovulation, menstrual symptoms, acute appendicitis, ectopic pregnancy, pelvic infection, all present similarly to some extent [6,7]. Acute appendicitis is one of the most causes and indications for emergency abdominal surgery worldwide with more than 40,000 hospital admissions in England every year, and ectopic pregnancy is a leading cause of maternal mortality, accounting for 4-10% of all pregnancy-related deaths [8,9].

Previous tubal pregnancy and factors resulting in disruption of normal tubal anatomies like tubal surgery, congenital anomalies, tumors, and infection are major predisposing factors to an ectopic pregnancy [10]. The risk factors of acute appendicitis, however, are not as pronounced as that of an extra-uterine pregnancy, but low dietary fiber and increased consumption of refined carbohydrates have been pointed at [11,3]. Our patient gave us a vague history of having had lower abdominal pain and foul-smelling per-vaginal discharge a year back which subsided by medications, suggesting a probable diagnosis of pelvic inflammatory disease in the past. She didn't have any other history coinciding with the aforementioned risk factors, however.

The presenting complaints of both acute appendicitis and ectopic pregnancy can overlap especially in the case of right-sided ectopic pregnancy [3]. Acute appendicitis presents classically with poorly localized periumbilical pain that migrates to the right lower quadrant. Nausea and vomiting may be associated especially after the onset of pain and can be mistaken for that of an early pregnancy than that due to acute appendicitis or vice versa. Rigidity in RLQ, tenderness, and rebound pain make appendicitis more likely [12]. Right-sided ectopic pregnancy presents almost similar except that the pain begins on the right side and doesn't migrate, unlike classic appendicitis [3]. Our patient presented with static, non-radiating, and non-migratory pain in the right lower quadrant. The most important differentiator of an ectopic pregnancy could have been a history of amenorrhea followed by first-trimester vaginal bleeding although no bleeding pattern is specific for ectopic pregnancy, except that in our case, the patient didn't have vaginal

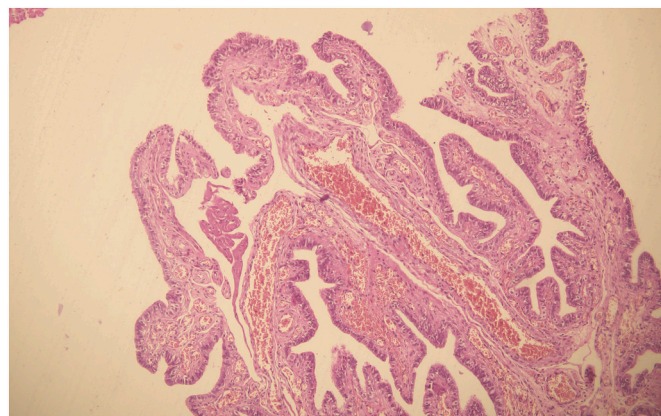


Fig. 2. Showing degenerative chorionic villi and some trophoblastic cells mixed with blood and fibrin.

bleeding during the presentation with per vaginal spotting 7 days before ED visit was present, which lasted for 3 days [13].

There is no specific pattern of abdominal pain in ectopic pregnancy, but certain features like involuntary guarding and peritoneal signs indicate intraperitoneal blood collection. Cervical motion tenderness is present frequently and a palpable adnexal mass is also very likely [13]. But, in our case, none of them were present.

However, in an ectopic pregnancy, measuring serum human chorionic gonadotropin (β -hCG) plays a decent role. In a normal intrauterine pregnancy, β -hCG doubles every 1.5 days in the first 5 weeks, and after 7 weeks, doubles every 3.5 days. 70% of extrauterine pregnancies deviate from this pattern. An abnormal β -hCG pattern/level which doesn't correspond to the gestational age is indicative of ectopic gestation [13]. Computed tomography is the imaging modality of choice for the diagnosis of acute appendicitis, but ultrasonography seems to be the most commonly done imaging during management [14,15]. A greater than 6 mm diameter of the appendix is found to be highly sensitive and specific for diagnosing acute appendicitis [16]. In contrast to normal intrauterine pregnancy where serum β -hCG levels of 1500 mIU/mL, which reached at 10-14 days post-conception correspond to an intrauterine chorionic sac on the transvaginal scan (TVS), the absence of the same despite β -hCG of 1500 mIU/mL is an indirect proof for ectopic pregnancy. Color Doppler and power Doppler can also aid in detecting an extrauterine pregnancy, as color-coded flow signals of ectopic pregnancy differ substantially from ovarian tissue and corpus luteum. TVS and serial quantitative β -hCG serum levels are the standards for diagnosing ectopic pregnancy [13]. In our center, however, because the appendiceal lumen of the patient was found to be 13.3 mm wide on trans-abdominal ultrasonography, and serial quantitative serum β -hCG and TVS are unfortunately not routinely done in patients presenting to the ED, a negative urine pregnancy test was "sufficient" to take the patient for an emergency appendectomy. Our patient had a leukocyte count of 10,100/mm³ with 66% neutrophils, tenderness and rebound tenderness were both present in the RIF region, equating to an Alvarado score of 5/10 [17].

β -hCG levels below 5000 mIU/mL, with no cardiac activity in the embryo, can qualify for medical management of ectopic pregnancy with methotrexate [18]. These approaches are just for the hemodynamically stable patient. As serum Bhcg facility was not available at the particular time and USG finding was not suggestive of ectopic, our patient was given the Lanz incision in the operating room for an appendectomy only to inform the Gynecology team intra-operatively for having found productis of conception-like material, hanging from the fallopian tube. Tubal preservation was not done and right salpingectomy was done although the tube was not ruptured because of, a) active oozing from fimbrial end with hemoperitoneum, b) involvement of long ampullary segment, c) risk of repeat ectopic implantation in damaged tube, d) difficult followup in developing countries like Nepal. Laparoscopic method for the same is regarded more benefitting than open surgery [18,19].

4. Conclusion

Ectopic pregnancy can mimic acute appendicitis which can have a grave prognosis if there is a delay in diagnosis and management. Hence a high clinical suspicion in rural areas with limited diagnostic tools can aid in early diagnosis in young females with acute abdomen even if the pregnancy test is negative.

Consent for publication

Written informed consent was obtained from the patients' father for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Provenance and peer review

Not commissioned, externally peer-reviewed.

Ethical approval

Not required.

Funding

None.

Guarantor

Shiva Aryal.

Research registration number

Not applicable.

CRediT authorship contribution statement

Neeta Katuwal (NK), Sunita Lamsal (SL) and Shiva Aryal (SA) = Study concept, Data collection, and surgical therapy for the patient. SA and Bibek Man Shrestha (BMS) = Writing- original draft preparation
BMS, Milan Regmi (MR) and Anurag Karki (AK) = Editing and writing
NK = senior author and manuscript reviewer.

All the authors read and approved the final manuscript.

Declaration of competing interest

None.

Acknowledgment

None.

References

- [1] K.T. Barnhart, Ectopic pregnancy, *N. Engl. J. Med.* 361 (4) (2009) 379–387, <https://doi.org/10.1056/nejmcp0810384>.
- [2] B. Chirculescu, R. Chirculescu, M. Ionescu, G. Peltecu, A. Panaitescu, Complete tubal abortion: a rare form of ectopic pregnancy, *Chirurgia* 112 (1) (2017) 68, <https://doi.org/10.21614/chirurgia.112.1.68>.
- [3] N. Williams, P. Ronan O'Connell, *Bailey & Love's Short Practice of Surgery* 26E, CRC Press, 2013.
- [4] C. Gnoth, S. Johnson, Strips of hope: accuracy of home pregnancy tests and new developments, *Geburtshilfe Frauenheilkd.* 74 (7) (2014) 661–669.
- [5] R.A. Agha, T. Franchi, C. Sohrabi, et al., The SCARE 2020 guideline: updating consensus Surgical CAse REport (SCARE) guidelines, *Int. J. Surg.* 84 (2020) 226–230, <https://doi.org/10.1016/j.ijsu.2020.10.034>.
- [6] R. Niska, F. Bhuiya, J. Xu, National Hospital Ambulatory Medical Care Survey: 2007 Emergency Department Summary. *PsycEXTRA Dataset*, 2010, <https://doi.org/10.1037/e587172010-001>.
- [7] H.G. Gaitán, L. Reveiz, C. Farquhar, V.M. Elias, Laparoscopy for the management of acute lower abdominal pain in women of childbearing age, *Cochrane Database Syst. Rev.* (2014), <https://doi.org/10.1002/14651858.cd007683.pub3>.
- [8] D.J. Humes, J. Simpson, Acute appendicitis, *BMJ* 333 (7567) (2006) 530–534, <https://doi.org/10.1136/bmj.38940.664363.ae>.
- [9] A.A. Creanga, C.K. Shapiro-Mendoza, C.L. Bish, S. Zane, C.J. Berg, W.M. Callaghan, Trends in ectopic pregnancy mortality in the United States: 1980–2007, *Obstet. Gynecol.* 117 (4) (2011) 837–843.
- [10] J. Bouyer, Risk factors for ectopic pregnancy: a comprehensive analysis based on a large case-control, population-based study in France, *Am. J. Epidemiol.* 157 (3) (2003) 185–194, <https://doi.org/10.1093/aje/kwf190>.
- [11] A.J. Larner, The aetiology of appendicitis, *Br. J. Hosp. Med.* 39 (6) (1988) 540–542.
- [12] J.M. Wagner, Does this patient have appendicitis? *JAMA* 276 (19) (1996) 1589, <https://doi.org/10.1001/jama.1996.03540190061030>.

- [13] I. Alkatout, U. Honemeyer, A. Strauss, et al., Clinical diagnosis and treatment of ectopic pregnancy, *Obstet Gynecol Surv.* 68 (8) (2013) 571–581.
- [14] M. Sartelli, G.L. Baiocchi, S. Di Saverio, et al., Prospective Observational Study on acute Appendicitis Worldwide (POSAW), *World J. Emerg. Surg.* 13 (2018) 19.
- [15] D.D. Hershko, G. Sroka, H. Bahouth, E. Ghersin, A. Mahajna, M.M. Krausz, The role of selective computed tomography in the diagnosis and management of suspected acute appendicitis, *Am. Surg.* 68 (11) (2002) 1003–1007.
- [16] N. Kessler, C. Cyteval, B. Gallix, et al., Appendicitis: evaluation of sensitivity, specificity, and predictive values of US, Doppler US, and laboratory findings, *Radiology* 230 (2) (2004) 472–478.
- [17] A. Alvarado, A practical score for the early diagnosis of acute appendicitis, *Ann. Emerg. Med.* 15 (5) (1986) 557–564, [https://doi.org/10.1016/s0196-0644\(86\)80993-3](https://doi.org/10.1016/s0196-0644(86)80993-3).
- [18] P. Capmas, J. Bouyer, H. Fernandez, Treatment of ectopic pregnancies in 2014: new answers to some old questions, *Fertil. Steril.* 101 (3) (2014) 615–620.
- [19] P.J. Hajenius, B.W.J. Mol, P.M.M. Bossuyt, W.M. Ankum, F. Van der Veen, Interventions for tubal ectopic pregnancy, *Cochrane Database Syst. Rev.* (2000), <https://doi.org/10.1002/14651858.cd000324>.