



Choriocarcinoma with Uterine Rupture in a Patient with Confirmed COVID-19 Infection: A Rare Case Report

Sedigheh Ghasemian Dizaj Mehr ^{1,*}, Hale Ayatollahi ², Afshin Mohammadi ³, Naser Gharebaghi ⁴, Farzaneh Rashidi Fakari ⁵, Shila Mohammadi Payandeh ¹ and Leila Nazari ¹

¹Department of Obstetrics and Gynecology, School of Medicine, Urmia University of Medical Sciences, Urmia, Iran

²Solid tumor Research Center, School of Medicine, Urmia University of Medical Sciences, Urmia, Iran

³Department of Radiology, School of Medicine, Urmia University of Medical Sciences, Urmia, Iran

⁴Department of Infectious Disease, School of Medicine, Urmia University of Medical Sciences, Urmia, Iran

⁵Student Research Committee, Department of Midwifery and Reproductive Health, School of Nursing and Midwifery, Shahid Beheshti University of Medical Sciences, Tehran, Iran

*Corresponding author: Department of Obstetrics and Gynecology, School of Medicine, Urmia University of Medical Sciences, Urmia, Iran. Email: dr.ghassemian@yahoo.com

Received 2020 April 25; Revised 2020 August 08; Accepted 2020 August 09.

Abstract

Introduction: Choriocarcinoma is a rare neoplasm, which is commonly treated with chemotherapy. However, in some cases, it is managed by surgical intervention to save the patient's life. Here, we present a rare case of uterine rupture associated with choriocarcinoma in a patient with COVID-19 infection.

Case Presentation: We present the case of a 34-year-old woman with choriocarcinoma, complicated by uterine rupture after the first course of chemotherapy, and concurrent COVID-19 infection. The patient underwent an emergency hysterectomy and survived after transferring to an isolated intensive care unit room.

Conclusions: During the COVID-19 pandemic, it is suggested to perform optimal surgery in the emergency setting to prevent further complications.

Keywords: Uterine Rupture, Coronavirus Infections, Choriocarcinoma

1. Introduction

Choriocarcinoma (CC) is the most aggressive type of gestational trophoblastic disease. Histologically, it is composed of mononuclear cytotrophoblasts, extravillous trophoblasts, and syncytiotrophoblasts. Hemorrhage and necrosis may be predominant in CC. Due to extensive bleeding, extensive tissue sampling is required to demonstrate the biphasic histological characteristics of these neoplasms (1). Approximately one-half of CC cases are reported following a hydatidiform mole, while the other half is reported after non-molar pregnancies (2, 3).

CC often presents with abnormal uterine bleeding and can have a variety of symptoms, depending on the site of metastasis. However, uterine rupture, which presents as acute hemoperitoneum, is rarely documented. Currently, we are in an ongoing global pandemic of COVID-19 infection, which has caused many challenges for patients with cancer in terms of the required equipment, facilities, and treatment. Here, we present a rare case of CC, complicated by uterine rupture, and concurrent COVID-19 infection.

2. Case Presentation

The patient was a 34-year-old woman with a history of irregular menstrual cycle and consumption of oral contraceptives and Accutane tablets without a history of pregnancy. After heavy vaginal bleeding with positive human chorionic gonadotropin (hCG) and retained products of conception on sonography, the patient had undergone emergency curettage in another country in December 2019. We did not have access to pathology tests. However, after 2 months, she underwent a second curettage in Iran in February 2020 because of vaginal rebleeding and retained products of conception on sonography, and the pathology report confirmed CC.

Within 2 months, due to the persistence of bleeding and new sonographic report of myoma, she was administered gonadotropin-releasing hormone agonists (Decapeptyl) regardless of pathology tests. Finally, the patient was referred to our hospital in Iran on April 3, 2020, for further management of CC. On admission, she showed non-productive cough without fever, intermittent lower abdominal pain, and irregular vaginal bleeding. Also, the

bimanual examination revealed a uterus as large as 16 weeks of gestation.

The hCG level was 1,975,255 mIU/mL, and pelvic and abdominal ultrasounds revealed a mixed hypervascular mass in the uterine fundus, measuring $10 \times 5 \times 5$ cm. Chest radiography showed more than 9 - 10 bilateral pulmonary nodules without evidence of brain metastasis in magnetic resonance imaging. Based on the mentioned findings, the patient was diagnosed with metastatic CC stage III, according to the International Federation of Gynecology and Obstetrics staging system and as a high-risk patient, according to the World Health Organization scoring system. Consequently, multi-agent chemotherapy with etoposide, methotrexate, and actinomycin (EMA) was initiated.

After the first day of administering EMA, the patient presented with increasing abdominal pain, associated with diarrhea, fatigue, dyspnea, and persistent coughs, without fever or chill. The vital signs included the pulse rate of 104 bpm, respiratory rate of 24 bpm, blood pressure of 100/70 mmHg, the body temperature of 37°C , and oxygen saturation of 96% (4 L of nasal oxygen). Her abdomen was distended with generalized tenderness to palpation without vaginal bleeding. The results of laboratory tests, including complete blood count, were as follow: hemoglobin level of 8 g/dL, leukocyte count of 16 900, 90% neutrophils and 10% lymphocytes, lactate dehydrogenase of 1085, creatinine of 0.8 mg/dL, and C-reactive protein of 3+.

Considering the ongoing global pandemic of COVID-19 and the patient's symptoms, to protect our team against COVID-19 and manage this emergency condition in the operating room, we resuscitated the patient with 2 L of IV normal saline and 2 units of packed red cells. A throat swab test for COVID-19 was also performed. Moreover, computed tomography (CT) scans of the chest, abdomen, and pelvis with double contrast were acquired by a radiologist. The results showed multiple well-defined hypodense pulmonary nodules due to metastasis, ground-glass opacity at the apical segment of the right lower lobe in favor of COVID-19-related pneumonia, a large hypodense, heterogeneously ring-enhancing, expansile mass, distending the endometrial cavity; and necrosis with uterine rupture and free fluid (Figures 1 and 2).

Despite the patient's instability and chest CT evidence of COVID-19 infection, she was transferred directly to the operating room for emergency laparotomy, using the personal protective equipment for COVID-19. The abdomen was opened and a hemoperitoneum volume of 2300 mL was evacuated. The uterus was enlarged to an 18 weeks' gestational size and there was a ruptured area with tumor tissue on the uterine fundus; there was no evidence of liver or other visceral metastases. A total abdominal hysterectomy



Figure 1. The axial CT scan shows multiple rounds to oval, well-defined, hypodense pulmonary nodules in the left lung due to metastasis, as well as ground-glass opacity in the apical segment of the right lower lobe (arrow), suggesting COVID-19 pneumonia.



Figure 2. The axial contrast-enhanced CT scan shows a large, hypodense, heterogeneously ring-enhancing, expansile mass, distending the endometrial cavity, as well as necrosis with uterine rupture (arrow).

was carried out under emergency conditions as a lifesaving procedure.

The isolated intensive care unit room was booked for the patient's recovery, and conservative treatment of COVID-19 included oxygen therapy, hydroxychloroquine, azithromycin, and Kaletra (200 mg of lopinavir co-formulated with 50 mg of ritonavir). The patient was discharged from the hospital after 8 days without respiratory complications due to COVID-19; quarantine and self-

isolation were advised for the patient. After 2 to 3 weeks of recovery, based on the suggestion of the infectious diseases specialists, chemotherapy was initiated. She has received 1 course of chemotherapy after surgery without any complications, which will continue for 3 consecutive courses until hCG reaches the normal range.

Written informed consent was obtained from the patient.

3. Discussion

CC should be suspected when there is persistent uterine bleeding following pregnancy. It is a rare neoplasm characterized by rapid growth, invasion into the myometrium, and distant metastasis (4, 5). A theory of intratumoral bleeding suggests the invasion of trophoblastic cells into vessels leading to thrombosis, infarction, and formation of vascular aneurysms (5, 6). Another possible etiology is a myometrial invasion and rapid necrosis of tumor cells due to chemotherapy leading to uterine perforation (7). Even after successful chemotherapy and a negative hCG titer, if the necrotic area and healing defect are significant, they may cause a spontaneous uterine rupture in the future (7). Nonetheless, hemoperitoneum secondary to CC is rare (8).

Emergency cases of active intraabdominal bleeding usually require hysterectomy as a lifesaving procedure (7-9). Fertility-sparing uterine lesion resection and uterine reconstruction for young women, who desire pregnancy, are preferred when the lesion is confined to the uterus without metastasis (4, 7, 10, 11). In hemodynamically stable patients, selective embolization of the main pelvic blood supply to the tumor can be performed by interventional radiology. Successful pregnancy after conservative surgery has also been reported (4, 12, 13).

In this case report, the patient presented with CC in an emergency setting due to COVID-19 infection (positive RT-PCR and CT results). Although the majority of COVID-19 cases are mild (14), our patient was at high risk of infection because her immune system was compromised due to cancer and previous chemotherapy, and surgery could not be postponed. Overall, these patients are at high risk of complications associated with COVID-19; therefore, it was difficult to choose between conservative management and surgery. In this case report, the main causes of hysterectomy included the heavy burden of tumor in the ruptured area, metastatic disease, and unpredictable conditions due to COVID-19.

3.1. Conclusions

Since CC is a chemosensitive tumor, conservative surgery should be considered in the setting of low-risk tu-

mors. Due to the outbreak of the new coronavirus disease with serious impacts on the treatment of patients with cancer, it is suggested to perform optimal surgery in a high-risk emergency setting to prevent further complications, especially when hospital facilities are inadequate due to the COVID-19 pandemic.

Acknowledgments

The authors appreciate all the staff members of the obstetrics and gynecology department of Motahhari Hospital, Urmia, for their help and suggestions. This article was extracted from a research project approved by the Ethics Committee of the university receiving the code: IR. UMSU.REC.1399.055.

Footnotes

Authors' Contribution: All authors made a substantial contribution to writing of the paper draft and met the four criteria for authorship recommended by the International Committee of Medical Journal Editors.

Conflict of Interests: There is no conflict of interest.

Ethical Approval: This article was extracted from a research project approved by the Ethics Committee of the university receiving the code: IR. UMSU.REC.1399.055.

Funding/Support: None.

Informed Consent: Written informed consent was obtained from the patient.

References

1. Crum CP, Lee KR, Nucci MR, Granter SR, Howitt BE, Parast MM, et al. *Diagnostic Gynecologic and Obstetric Pathology E-Book*. Elsevier Health Sciences; 2017.
2. Berek JS, Hacker NF. *Berek and Hacker's gynecologic oncology*. Lippincott Williams & Wilkins; 2010.
3. Berek JS. *Berek & Novak's gynecology*. Lippincott Williams & Wilkins; 2019.
4. Gueye M, Gueye MDN, Thiam O, Toure Y, Cisse M, Wade M, et al. Choriocarcinoma with uterine rupture presenting as acute haemoperitoneum and shock. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*. 2017;**6**(3):1141-3.
5. Mangla M, Singla D, Kaur H, Sharma S. Unusual clinical presentations of choriocarcinoma: A systematic review of case reports. *Taiwanese Journal of Obstetrics and Gynecology*. 2017;**56**(1):1-8.
6. Bozacı EA, Taşkın S, Gürkan Ö, Atasoy Ç, Ersoy ZG, Erekuş S, et al. Intracavitary cardiac metastasis and pulmonary tumor emboli of choriocarcinoma: The first case diagnosed and treated without surgical intervention. *Gynecologic oncology*. 2005;**99**(3):753-6.
7. Xie C, Zheng L, Li Z, Zhao X. Spontaneous uterine perforation of choriocarcinoma with negative beta-human chorionic gonadotropin after chemotherapy. *Medical Principles and Practice*. 2011;**20**(6):570-3.
8. Liberis V, Bouchlariotou S, Ammari A, Psillaki A, Ntatidou M, Sivridis E, et al. Acute abdomen as initial presentation of gestational choriocarcinoma. *Archives of gynecology and obstetrics*. 2009;**280**(5):859-62.

9. Ma Y, Xiang Y, Wan XR, Chen Y, Feng FZ, Lei CZ, et al. The prognostic analysis of 123 postpartum choriocarcinoma cases. *International Journal of Gynecologic Cancer*. 2008;**18**(5):1097-101.
10. Lurain JR. High-risk metastatic gestational trophoblastic tumors. Current management. *The Journal of reproductive medicine*. 1994;**39**(3):217-22.
11. Lehman E, Gershenson DM, Burke TW, Levenback C, Silva EG, Morris M. Salvage surgery for chemorefractory gestational trophoblastic disease. *Journal of clinical oncology*. 1994;**12**(12):2737-42.
12. Behtash N, Ansari S, Sarvi F. Successful pregnancy after localized resection of perforated uterus in choriocarcinoma and a literature review. *International Journal of Gynecologic Cancer*. 2006;**16**(Suppl 1):445-8.
13. David-West G, Jeganathan S, Cohen N, Maddineni S, Friedman B, Cohen S. Conservative management of uterine rupture in gestational trophoblastic neoplasia. *Gynecologic Oncology Reports*. 2020;**32**.
14. Chen J, Qi T, Liu L, Ling Y, Qian Z, Li T, et al. Clinical progression of patients with COVID-19 in Shanghai, China. *Journal of Infection*. 2020.