Case Report

Cardiac Tamponade as an Initial Manifestation of Cervical Cancer

Yuridia Evangelina Rodríguez-Rosales, Carlos Eduardo Salazar-Mejía, Blanca Angélica Soto-Martínez, David Hernández-Barajas, Oscar Vidal-Gutiérrez, and Gabriela Sofia Gómez-Macías

1Universidad Autónoma de Nuevo Leon, Facultad de Medicina y Hospital Universitario "Dr. José Eleuterio González", Department of Internal Medicine, Av. Madero y Gonzalitos s/n, Colonia Mitras Centro, Monterrey, Nuevo Leon, C.P. 64460, Mexico
2Universidad Autónoma de Nuevo Leon, Facultad de Medicina y Hospital Universitario "Dr. José Eleuterio González", Centro Universitario Contra el Cáncer, Av. Madero y Gonzalitos s/n, Colonia Mitras Centro, Monterrey, Nuevo Leon, C.P. 64460, Mexico
3Universidad Autónoma de Nuevo Leon, Facultad de Medicina y Hospital Universitario "Dr. José Eleuterio González", Department of Pathology, Av. Madero y Gonzalitos s/n, Colonia Mitras Centro, Monterrey, Nuevo Leon, C.P. 64460, Mexico

Correspondence should be addressed to Carlos Eduardo Salazar-Mejía; drsalazarmejia@gmail.com

Received 9 October 2018; Accepted 5 December 2018; Published 9 January 2019

Academic Editor: Raffaele Palmirotta

Copyright © 2019 Yuridia Evangelina Rodriguez-Rosales et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Cervical cancer is the second most common malignancy worldwide in women and the third most common cause of cancer death in developing countries. This type of cancer spreads mainly to the lung, the bone, and the brain; however, the pericardium is an unusual site of invasion, which is associated with a poor prognosis. We present a case of a 35-year-old woman with six months of leg edema and abnormal uterine bleeding. During the initial evaluation, cardiac tamponade and a bilateral pleural effusion were found. A left supraclavicular lymphadenopathy was identified on physical examination, while gynecological examination and MRI were irrelevant. Initial cytology of the pericardial fluid showed a poorly differentiated carcinoma, and a cervical biopsy revealed a squamous cell invasive carcinoma. Chemotherapy was started with carboplatin and paclitaxel, but no clinical improvement was noted and the patient died 46 days after arrival. Cardiac tamponade in a young female patient is a harbinger to widen the differential diagnosis to include not only infectious, cardiac, or metabolic etiology but also oncological causes since this will allow appropriate treatment.

1. Introduction

Pericardial metastasis is an unusual manifestation of cervical cancer, generally identified at autopsy [1]. Symptomatic pericardial effusion and cardiac tamponade are usually described in the scenario of recurrent disease after previous treatment with chemotherapy and/or radiotherapy, with very few cases reporting these entities as an initial presentation of cervical cancer [2]. Herein, we present a case of cardiac tamponade as an initial manifestation of a squamous cell carcinoma of the cervix.

2. Case Report

A 35-year-old woman arrived at the emergency department because of rest dyspnea and a 6-month history of lower extremity edema. She had a 3-month history of intermittent abnormal vaginal bleeding. On initial evaluation, the patient was hypoxemic with an oxygen saturation of 80% with room air. Relevant clinical signs were tachycardia and hypotension, decreased heart sounds, and a left supraclavicular lymphadenopathy. A chest X-ray showed a widening of the cardiac silhouette with a bilateral pleural effusion (Figure 1).
Pericardiocentesis was performed and a total of 500 mL of bloody secretion was drained with symptomatic improvement. Pleural fluid was obtained by thoracocentesis, and cytology was positive for a poorly differentiated carcinoma (Figure 2).

An excisional biopsy of the left supraclavicular lymphadenopathy was positive for metastatic squamous cell carcinoma. The cervical biopsy reported a squamous cell carcinoma associated with an intraepithelial high-grade lesion (Figures 3 and 4). CA-125 was 335.5 IU/mL and a simple and contrasted pelvic MRI demonstrated a uterine and cervical absence of tumoral mass; however, peritoneal carcinomatosis was present.

Chemotherapy was begun with carboplatin and paclitaxel. Despite the treatment received during her hospitalization, she again presented a pericardial and pleural effusion with subsequent hemodynamic instability and respiratory failure. Due to the fact that in our center there is no experience in applying intrapericardial sclerotherapy, it was offered to repeat pericardiocentesis; however, this intervention was refused. The patient died 46 days after the initial presentation.

3. Discussion

Cervical cancer is the second most common cancer diagnosed in women worldwide and the third cause of cancer death in developing countries [1, 3, 4]. The main sites for metastasis are the lung, the bone, and the brain [2]. Metastasis to the pericardial sac is an unusual manifestation. It has a reported incidence of 1.2-7% [2, 5, 6], conferring a poor prognosis with an overall survival of 2 to 5 months from diagnosis [2], with the majority of cases discovered at autopsy [7–10]. To our knowledge, this is the first case of cardiac tamponade as the initial presentation of a squamous cell carcinoma of the cervix.

The most common causes of pericardial effusion with or without tamponade are infections (Coxsackievirus, VEB, CMV, and M. tuberculosis); autoimmune diseases; cancer from lymphatic or hematogenous dissemination (metastasis: melanoma (50%), lung (30%), breast (12%), and lymphoma (12%)) [5, 9, 11, 12]; cardiac diseases (Dressler syndrome, myocarditis, and aortic dissection aneurysm); trauma; metabolic diseases (hypothyroidism, uremia, and ovary hyperstimulation); or drugs (cyclophosphamide, doxorubicin, gemcitabine, cytarabine, fludarabine, docetaxel, isoniazid, hydralazine, and phenytoin) [1, 13].

Maisch et al. analyzed 357 pericardial effusion samples from 1988 to 2008 and identified 68 patients with cancer-associated pericardial effusion. In 42 patients, a malignant pericardial effusion was noted; in 15 patients, it was induced by radiation; in 11, by viral disease; and in 6, with an autoimmune process. From the cancer-associated pericardial effusion, it was found that 52.4% was from lung cancer, 19% breast cancer, 4.8% Hodgkin’s lymphoma, 4.8% colon cancer, 2.4% mesothelioma and esophageal cancer, and 14.2% was of unknown origin undifferentiated cancer [14].

Pericardial effusion as a clinical presentation can be acute (trauma, aortic rupture, and iatrogenic), subacute (uremia or idiopathic), or chronic (constrictive or adhesive). The clinical features are dyspnea, pleuritic pain, cough, fatigue, and syncope. Cardiac tamponade causes hypotension, tachycardia, and decreased heart sounds (Beck triad). The paradoxical pulse is reported as the most sensitive sign (82%) to diagnose cardiac tamponade, followed by tachycardia and elevated jugular venous pressure with a sensitivity of 77% and 76%, respectively [1, 5, 13]. From the initial evaluation, the widening of the cardiac silhouette can be associated with the “water bottle sign” and the concomitant bilateral pleural effusion.
The EKG demonstrates low-voltage QRS and nonspecific T wave and ST segment changes. A transthoracic echocardiogram helps assess size, location, and hemodynamic physiology [1].

Pericardiocentesis is a diagnostic and therapeutic procedure. The drainage of the pericardial fluid is assessed daily. The inserted catheter is removed when drainage is less than 30 mL/day. Such a procedure has a greater risk of major complication (1.2%) such as ventricle laceration, pneumothorax, ventricular tachycardia, and bacteremia. In patients with cancer, the risk of recurrence is about 90% [1, 13]. There are many treatment options for pericardial effusion recurrence such as the use of an indwelling catheter with an efficacy of 70-90%, a pericardial window with drainage to the pleural or peritoneal cavity (recurrence of 5-15%), or pericardial sclerosis with chemotherapeutic agents such as cisplatin, bleomycin, or tetracycline [12].

Table 1 summarizes the reported literature regarding cervical cancer associated with pericardial effusion and cardiac tamponade. The mean age for diagnosis was 52 years. Cardiac tamponade was reported with pericardial effusion 6.2 months after the initial diagnosis and mostly in patients with previous treatment. Pericardial tamponade was detected in one patient 5 days after cervical cancer diagnosis with an overall survival of 4 months after pericardiocentesis [9]. Also, Azria et al., in 2011, published a similar case of a 54-year-old woman who initially presented cardiac tamponade, which was posteriorly associated with metastatic cervical adenocarcinoma and who died 33 days after its diagnosis [20].

The EKG demonstrates low-voltage QRS and nonspecific T wave and ST segment changes. A transthoracic echocardiogram helps assess size, location, and hemodynamic physiology [1].

Pericardiocentesis is a diagnostic and therapeutic procedure. The drainage of the pericardial fluid is assessed daily. The inserted catheter is removed when drainage is less than 30 mL/day. Such a procedure has a greater risk of major complication (1.2%) such as ventricle laceration, pneumothorax, ventricular tachycardia, and bacteremia. In patients with cancer, the risk of recurrence is about 90% [1, 13]. There are many treatment options for pericardial effusion recurrence such as the use of an indwelling catheter with an efficacy of 70-90%, a pericardial window with drainage to the pleural or peritoneal cavity (recurrence of 5-15%), or pericardial sclerosis with chemotherapeutic agents such as cisplatin, bleomycin, or tetracycline [12].

Table 1 summarizes the reported literature regarding cervical cancer associated with pericardial effusion and cardiac tamponade. The mean age for diagnosis was 52 years. Cardiac tamponade was reported with pericardial effusion 6.2 months after the initial diagnosis and mostly in patients with previous treatment. Pericardial tamponade was detected in one patient 5 days after cervical cancer diagnosis with an overall survival of 4 months after pericardiocentesis [9]. Also, Azria et al., in 2011, published a similar case of a 54-year-old woman who initially presented cardiac tamponade, which was posteriorly associated with metastatic cervical adenocarcinoma and who died 33 days after its diagnosis [20].
| Author (year)         | Age at initial presentation (years) | Time from diagnosis to pericardial effusion | FIGO clinical stage (initial) | Previous treatment | Presence of cardiac tamponade | Treatment after diagnosis of pericardial effusion | Overall survival |
|----------------------|------------------------------------|--------------------------------------------|-------------------------------|--------------------|-----------------------------|-----------------------------------------------|-----------------|
| Charles et al. (1997) [15] | 46                                | 24 months                                 | IIIB                          | RT, hysterectomy+BSO | Yes                         | Pericardial window, CT, doxorubicin           | 8 months        |
| Rieke and Kapp (1988) [5]   | 49                                | 23 months                                 | IIA                           | Hysterectomy+BSO, RT  | No                          | Pericardiocentesis, RT                        | 9 months        |
| Rudoff et al. (1989) [16]  | 27                                | 21 months                                 | IIIB                          | RT                 | Yes                         | Pericardiocentesis, anterior pericardiectomy, cisplatinum | Not reported   |
| Nelson and Rose (1993) [9] | 51                                | 5 days                                    | IV                            | None               | Yes                         | Pericardiocentesis/CT cisplatin+RT            | 4 months        |
|                       | 61                                | 3 months                                  | IIIB                          | RT                 | Yes                         | Pericardiocentesis, instillation of tetracycline, CT cisplatin, bleomycin, methotrexate alternating with cisplatin and 5FU | 12 months       |
| Rudo et al.             | 27                                | 21 months                                 | IIIB                          | RT                 | Yes                         | Pericardiocentesis/CT cisplatin+RT            | 4 months        |
|                       | 51                                | 5 days                                    | IV                            | None               | Yes                         | Pericardiocentesis, instillation of tetracycline, CT cisplatin, bleomycin, methotrexate alternating with cisplatin and 5FU | 12 months       |
| Kountz et al. (1993) [17] | 28                                | 10 months                                 | IIB                           | RT/CT              | No/mass in right ventricle  | Not specified                                | 3 months        |
| Jamshed et al. (1996) [6] | 57                                | 32 months                                 | IB                            | Hysterectomy, RT   | Yes                         | Pericardiocentesis, pericardial window, RT   | 5 months        |
| Lemus et al. (1998) [10]  | 53                                | 24 months                                 | IB                            | RT, hysterectomy+BSO+superior vaginectomy | No/interventricular septum mass | CT 5FU+cisplatin                              | 7 months        |
| Senzaki et al. (1999) [18]| 28                                | 16 months                                 | IB                            | RT                 | No/mass in right ventricle  | Pericardiocentesis+intrapericardial cisplatinum | 1 month         |
| Kim et al. (2008) [19]    | 64                                | 6 months                                  | IB                            | CT carboplatin+paclitaxel+concurrent RT pre- and posthysterectomy | No/right atrium mass | 5-fluorouracil+cisplatin+RT                   | 12 months       |
| Kim et al. (2011) [1]     | 52                                | 6 months                                  | IVB                           | 3 cycles of 5FU, cisplatin+concurrent RT | Yes                  | Pericardiocentesis                           | 1 month         |
| Azria et al. (2011) [20]  | 54                                | Initial presentation (cervical adenocarcinoma) | IVB                           | None               | Yes                         | Pericardiocentesis, pericardial window, carboplatin+paclitaxel | 33 days         |
| Ore et al. (2013) [21]    | 5th decade                       | 9 months                                  | IVB                           | RT, CT topotecan+cisplatin | Yes                  | Pericardiocentesis, pericardial window        | 26 days         |
| Kalra et al. (2014) [2]   | 56                                | 6 months                                  | IIIB                          | Carboplatin+paclitaxel+RT | Yes                  | CT not specified+RT                           | Not reported    |
| Ramegowda et al. (2015) [11]| 50                               | 23 months                                 | IIIB                          | RT, brachytherapy    | Yes                         | No treatment                                 | 4 months        |
| Tsuchida et al. (2016) [22]| 78                               | 15 months                                 | IIIB                          | RT                 | No/mass in right ventricle  | No treatment                                 | 1 month         |

FIGO: International Federation of Gynecology and Obstetrics; CT: chemotherapy; RT: radiotherapy; BSO: bilateral salpingo-oophorectomy; SFU: 5-fluorouracil.
Within the initial approach of a young woman presenting with cardiac tamponade, an etiology must be identified and cancer should be considered as a possible cause. A correct workup is required to achieve a timely diagnosis, in order to grant the patient the best possible outcome.

**Conflicts of Interest**

The authors declare that there is no conflict of interest regarding the publication of this paper.

**References**

[1] M. H. Kim, T. H. Lee, C. J. Lee, H. Y. Kim, W. G. Kim, and S. H. Kim, “Malignant pericardial effusion in carcinoma of the uterine cervix,” *Korean Journal of Obstetrics & Gynecology*, vol. 54, no. 4, pp. 214–217, 2011.

[2] R. Kalra, R. Pawar, A. Chandna, and R. Panwar, “Metastatic pericardial effusion secondary to squamous cell carcinoma of uterine cervix: a rare case report,” *International Journal of Healthcare and Biomedical Research*, vol. 2, no. 4, pp. 80–82, 2014.

[3] C. Marth, F. Landoni, S. Mahner et al., “Cervical cancer: ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up,” *Annals of Oncology*, vol. 28, Supplement 4, pp. iv72–iv83, 2017.

[4] P. Petignat and M. Roy, “Diagnosis and management of cervical cancer,” *BMJ*, vol. 335, no. 7623, pp. 765–768, 2007.

[5] J. W. Rieke and D. S. Kapp, “Successful management of malignant pericardial effusion in metastatic squamous cell carcinoma of the uterine cervix,” *Gynecologic Oncology*, vol. 31, no. 2, pp. 338–351, 1988.

[6] A. Jamshed, Y. Khafaga, G. el-Husseiny, A. J. Gray, and M. Manji, “Pericardial metastasis in carcinoma of the uterine cervix,” *Gynecologic Oncology*, vol. 61, no. 3, pp. 451–453, 1996.

[7] W. B. Lockwood and W. L. Broghamer, “The changing prevalence of secondary cardiac neoplasms as related to cancer therapy,” *Cancer*, vol. 45, no. 10, pp. 2659–2662, 1980.

[8] D. Dequanter, P. Lothaire, T. Berghmans, and J. P. Sculier, “Severe pericardial effusion in patients with concurrent malignancy: a retrospective analysis of prognostic factors influencing survival,” *Annals of Surgical Oncology*, vol. 15, no. 11, pp. 3268–3271, 2008.

[9] B. E. Nelson and P. G. Rose, “Malignant pericardial effusion from squamous cell cancer of the cervix,” *Journal of Surgical Oncology*, vol. 52, no. 3, pp. 203–206, 1993.

[10] J. F. Lemus, G. Abdulhay, C. Sobolewski, and V. R. Risch, “Cardiac metastasis from carcinoma of the cervix: report of two cases,” *Gynecologic Oncology*, vol. 69, no. 3, pp. 264–268, 1998.

[11] K. S. Ramegowda, N. Agrawal, P. Bhatt, and C. N. Manjunath, “Cardiac metastases from a gynecological malignancy presenting with tamponade: a rare and potentially life threatening medical emergency,” *Journal of Indian College of Cardiology*, vol. 5, no. 1, pp. 86–89, 2015.

[12] K. Reynen, U. Kockeritz, and R. H. Strasser, “Metastases to the heart,” *Annals of Oncology*, vol. 15, no. 3, pp. 375–381, 2004.

[13] M. Petrofsky, “Management of malignant pericardial effusion,” *Journal of the Advanced Practitioner in Oncology*, vol. 5, no. 4, pp. 281–289, 2014.

[14] B. Maisch, A. Ristic, and S. Pankuweit, “Evaluation and management of pericardial effusion in patients with neoplastic disease,” *Progress in Cardiovascular Diseases*, vol. 53, no. 2, pp. 157–163, 2010.

[15] E. H. Charles, J. Condori, and S. Sall, “Metastasis to the pericardium from squamous cell carcinoma of the cervix,” *American Journal of Obstetrics & Gynecology*, vol. 129, no. 3, pp. 349–351, 1977.

[16] J. Rudoff, R. Percy, G. Benrubri, and M. L. Ostrowski, “Recurrent squamous cell carcinoma of the cervix presenting as cardiac tamponade: case report and subject review,” *Gynecologic Oncology*, vol. 34, no. 2, pp. 226–231, 1989.

[17] D. S. Kountz, “Isolated cardiac metastasis from cervical carcinoma: presentation as acute anteroseptal myocardial infarction,” *Southern Medical Journal*, vol. 86, no. 2, pp. 228–230, 1993.

[18] H. Senzaki, Y. Uemura, D. Yamamoto et al., “Right intraventricular metastasis of squamous cell carcinoma of the uterine cervix: an autopsy case and literature review,” *Pathology International*, vol. 49, no. 5, pp. 447–452, 1999.

[19] H. S. Kim, N. H. Park, and S. B. Kang, “Rare metastases of recurrent cervical cancer to the pericardium and abdominal muscle,” *Archives of Gynecology and Obstetrics*, vol. 278, no. 5, pp. 479–482, 2008.

[20] E. Azria, M. Dufeu, P. Fernandez, F. Walker, and D. Luton, “Cervical adenocarcinoma presenting as a cardiac tamponade in a 57-year-old woman: a case report,” *Journal of Medical Case Reports*, vol. 5, no. 1, 2011.

[21] R. M. Ore, B. G. Reed, and C. A. Leath III, “Malignant pericardial effusion and pericardial tumor involvement secondary to cervical cancer,” *Military Medicine*, vol. 178, no. 1, pp. e130–e132, 2013.

[22] K. Tsuchida, T. Oike, T. Ohtsuka et al., “Solitary cardiac metastasis of uterine cervical cancer with antemortem diagnosis: a case report and literature review,” *Oncology Letters*, vol. 11, no. 5, pp. 3337–3341, 2016.