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Case Report

Cancer cervix (adenocarcinoma) with cardiac metastasis: a rare case report and review of literature

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ABSTRACT

Carcinoma of the cervix is one of the leading malignancies in females worldwide, more prominent in developing countries. Squamous cell carcinoma is the most common histology with around 70% cases and Adenocarcinoma follows with 10-30%. Cardiac metastasis is very rare and difficult to diagnose with a reported incidence of 0.3% to 1.23% and is generally based on autopsy findings, only few cases of antemortem diagnosis of malignant pericardial effusion secondary to cervical carcinoma have been reported so far. The prognosis is poor and the longest reported survival so far is of 13 months. We hereby present a rare case report of adenocarcinoma of the cervix metastasizing to the heart and presenting with malignant pericardial effusion. The patient succumbed within one month of diagnosis.

Keywords: Cancer Cervix, Adenocarcinoma, HPV infection, Cardiac metastasis, Malignant pericardial effusion

INTRODUCTION

Carcinoma of the cervix is the 3rd most common malignancy in Indian females and the 4th most common carcinoma in females globally.[1] Squamous cell carcinoma is the most common histology comprising around 70-75% cases; second most common is Adenocarcinoma which makes up the remaining 10-30%, its incidence rising over the last few years in developed countries.[2]

Variants include minimal-deviation adenocarcinoma (adenoma-malignum), extremely well differentiated adenocarcinoma seen in Peutz-Jagar syndrome (PJS), glassy cell carcinoma- variant of poorly differentiated adenosquamous carcinoma and rarely endometroid, serous, clear cell or neuroendocrine carcinoma (NEC) variants are seen.[3] Almost 100% cases are HPV related and HPV subtypes 16/18 are involved in up to 94% of SCC and adenocarcinoma of the cervix being the most common and important causative organism.[4]

In India about 60% patients present in advanced stage due the social stigma associated, and metastatic disease has a very poor 5-year survival rate of less than 10%.[5] Cardiac metastasis is extremely uncommon and difficult to diagnose with a reported incidence of 0.3% to 1.23% and is generally based on autopsy findings, only few cases of antemortem diagnosis of malignant pericardial effusion secondary to cervical carcinoma have been reported so far.[6] The prognostic outlook subsequent to cardiac metastasis is unfavourable, and the most extended reported survival period following diagnosis is 13 months.[7]

We hereby present a rare case report of adenocarcinoma of the cervix metastasizing to the pericardium and presenting with malignant pericardial effusion.

CASE REPORT

A 44-year-old housewife was diagnosed with adenocarcinoma of the cervix in February 2022. It was a localized and early-stage disease (stage IB1) hence she was treated with type C hysterectomy and post-operative radiotherapy (EBRT + brachytherapy) was offered in view of positive lymphovascular infiltration (LVSI).

She was then put on regular follow up, but she defaulted the same and never came for surveillance.

The gentlewoman presented to our emergency department in December 2024, after almost 2 years, with acute onset chest discomfort, heaviness and swelling over feet and face with dyspnoea grade 3, chest pain, extreme weakness and exhaustion.

On examination she was found to have facial puffiness, bipedal pitting oedema and a weak pulse. On suspicion of impending cardiac failure with weak alternating pulse and oedema, a 2D echocardiogram was ordered. It revealed large pericardial effusion and impending cardiac tamponade.

With due precautions and informed consent, pericardiocentesis was performed and 450 ml of haemorrhagic fluid was tapped that came out to be positive for malignant cells clinching the diagnosis of cardiac metastasis from cancer cervix (Figure 1).

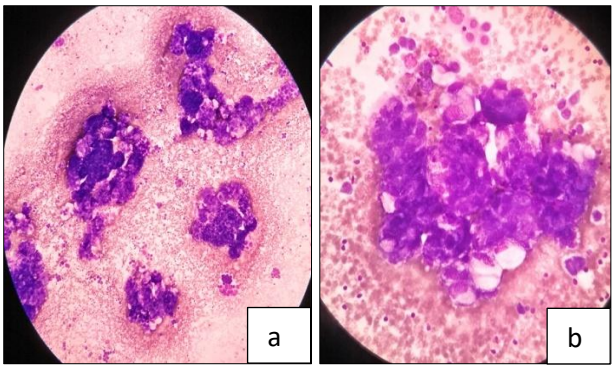

Figure 1 (a and b): Malignant adenocarcinoma cells in pericardial fluid cytology.

Realising the unusual course of events immunohistochemical (IHC) markers was ordered, which was suggestive of Adenocarcinoma thus confirming the diagnosis of cardiac metastasis from adenocarcinoma cervix (Figures 2a and b).

The patient refused salvage chemotherapy and opted for palliative care in view of financial difficulties. She deceased from high disease burden a few days later.

Positive for metastatic carcinoma suggestive of adenocarcinoma-pericardial fluid (Table 1).

Table 1: Relative risk of abnormal Doppler indices with adverse perinatal outcome.

IHC biomarker	Biomarker expression
PAN-CK	Diffuse strong positive
CK7	Diffuse strong positive
P16	Diffuse strong positive
P40	Negative
P63	Negative
ER, PR	Negative
VIMENTIN	Negative
CK20	Negative
CDX2	Negative
CD10	Negative
P53	Negative

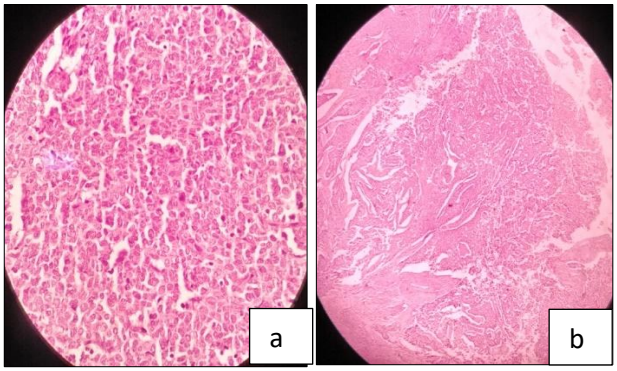

Figure 2 (a and b): Cross sectional images of the primary site, cervix adenocarcinoma.

DISCUSSION

Approximately 20% of cervical cancers are of adenocarcinoma lesions and are associated with human papillomavirus (HPV). Individuals harbouring co-infections with other sexually transmitted organisms face an elevated risk of developing invasive cervical carcinoma. This risk is further heightened by recurrent cervicitis, oral contraceptive usage, tobacco consumption, and a compromised immune system.[8] Pathologic diagnosis of invasive adenocarcinoma is based on the stromal invasion in the form marked glandular confluence with cribriform or microacinar architecture, irregular infiltrating glands with stromal desmoplasia, tumour cell clusters or individual tumor cells, and lymphovascular invasion. HPV associated adenocarcinomas may be the usual type with less than 50% of mucinous component or mucinous adenocarcinoma with more than 50% mucinous component. Immunohistochemistry plays a crucial role in confirming the adenocarcinoma of cervical origin and differentiating it from metastatic adenocarcinomas arising at other body sites which have similar morphologic features. Immunohistochemistry demonstrates strong diffuse positivity for p16 in HPV-associated cervical adenocarcinomas in more than 95% of cases. The other markers showing positivity include CK7 and CEA. The negativity for ER, PR and vimentin helps to differentiate it

from endometrial adenocarcinoma. The negativity for CK20 and CDX2 differentiates it from adenocarcinoma of colorectal origin. The staining for p63 and CD10 is typically negative in cervical adenocarcinomas. The p53 immunostaining shows normal wild type staining pattern differentiating it from adenocarcinoma of gastric origin which often shows abnormal staining pattern for p53. The CD 10 negativity differentiates it from rare mesonephric adenocarcinoma which shows positivity for CD10. Although screening for cervical carcinoma has greatly reduced morbidity and mortality, this carcinoma is known to metastasize or recur. The recurrence rate of cervical carcinoma in women with no lymph node involvement following surgical intervention or radiotherapy is 10% to 20%. Metastasis of cervical carcinoma can occur via the lymphatic route or the hematogenous route, with the hematogenous route occurring more commonly in advanced stages, through the paracervical veins and the venous plexuses. The sites that are most commonly affected by distant metastasis are the lungs, which comprise 21% of distant metastatic sites, the para-aortic nodes (11%), the abdominal cavity (8%) and finally the supraclavicular nodes, which make up 7% of distant metastasis.[9] Unusual sites of metastasis reported include the breast, skin, soft tissue, umbilicus, oral cavity and heart.[10] In most cases, metastases occurs within 2 years of diagnosis.[9] The median survival time for metastatic cervical carcinoma is approximately 8 to 13 months depending on site and disease burden.[11] Cardiac metastasis of cervical carcinoma is a very rare occurrence, with a reported incidence rate of approximately 1.23%. Due to the rarity of the condition, most cases are often discovered during autopsies. Very rarely, antemortem diagnosis of cardiac metastases is made. Prognosis is usually poor, with the longest reported survival being 13 months. The primary locus of metastasis to the heart from cervical carcinoma predominantly involves the pericardium, accounting for 64% of all cardiac metastases, followed by the myocardium and endocardium. Survival rates are consistently poor in patients with malignancy who present with a pericardial effusion.[12] Nguyen et al demonstrated that patients had a median survival of 2.6 months. Patients with lung cancer had a median survival of 2.1 months while those with other types of cancer of 4.7 months.[13] Our patient deceased within 10 days of diagnosis.

Patients typically present with symptoms of pleuritic pain, cough, dyspnoea, fatigue, and syncope. Diagnosis is confirmed by 2D-echocardiography and a cytological evaluation is needed to confirm the presence and subtype of malignant cells.[14] The differential diagnosis of cardiac metastases are thrombi, cardiac vegetations, and primary cardiac tumors, such as atrial myxoma, primary pericardial malignant mesothelioma.[15] Many times, it can be challenging to achieve a definitive diagnosis based solely on cyto-morphologic findings. In such context, application of IHC stains has demonstrated utility.

The cytological examination of pericardial fluid in our study revealed atypical cells arranged in clusters and scattered singly; large cells seen with hyperchromatic nuclei, prominent nucleoli and moderate eosinophilic cytoplasm; background mesothelial cells, lymphocytes and RBCs seen (Figures 1a and b).

This case highlights the extreme severity of pericardial effusion secondary to metastatic cervical adenocarcinoma as our patient expired from disease burden within ten days of diagnosis.

CONCLUSION

Cervical adenocarcinoma metastasizing to the pericardium is extremely rare. There are less than 100 cases described in the literature, with very poor prognosis and undefined clinical management and majority have been associated with cervical cancer squamous cell carcinoma, infrequently with adenocarcinoma. The treatment strategy of metastatic cervical carcinoma to the heart has not yet been standardized given the rarity of this situation. Many factors should be considered in order to make a decision on management in such complicated cases; options include chemotherapy and surgical resection with high risk of complications and poor tolerance. The overall prognosis is very poor, our patient opted for palliative care and succumbed to disease within a month of diagnosis, confirming the magnitude of aggressiveness of this presentation.

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