

## Primary Clear Cell Adenocarcinoma of the Uterine Cervix in a 13-Year-Old Virgin Girl: Case Report and Literature Review

H. Loukili<sup>1\*</sup>, M. El Hassnaoui<sup>1</sup>, C. Ahmanna<sup>1</sup>, B. Zouita<sup>1</sup>, D. Basraoui<sup>1</sup>, H. Jalal<sup>1</sup><sup>1</sup>Radiology Department, Mother and Child Hospital Mohammed VI University Hospital, FMPM, Cadi Ayyad University, Marrakech, MoroccoDOI: [10.36347/sjmcr.2024.v12i05.018](https://doi.org/10.36347/sjmcr.2024.v12i05.018)

| Received: 30.03.2024 | Accepted: 07.05.2024 | Published: 11.05.2024

\*Corresponding author: H. Loukili

Radiology Department, Mother and Child Hospital Mohammed VI University Hospital, FMPM, Cadi Ayyad University, Marrakech, Morocco

## Abstract

## Case Report

Cervical cancer is rare in the pediatric population. In cases of cervical cancer, adeno-carcinoma is predominantly reported. Clear cell adenocarcinoma (CCAC) of the uterine cervix is a very rare tumor and accounts for only 4% of all adenocarcinomas of the uterine cervix. Risk factors and pathogenesis of this disease are not exactly revealed. The intra uterine exposure to diethylstilbestrol (DES) and associated non-steroidal estrogen during pregnancy before 18 weeks is the only known risk factor. This study reports the imaging finding of primary uterine cervical tumor in a 15-year-old girl, who was finally diagnosed with CCAC, with no maternal history of DES exposure in utero.

**Keywords:** Clear Cell Adenocarcinoma, Uterine Cervix, Girl.

Copyright © 2024 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

### INTRODUCTION

Cervical cancer is rare in the pediatric population. In cases of cervical cancer, adenocarcinoma is predominantly reported. Clear cell adenocarcinoma (CCAC) of the uterine cervix is very rare tumor, and accounts for only 4% of all adenocarcinomas of the uterine cervix. Furthermore, its radiological features have not been well described [1]. In this case report, we describe the imaging finding of CCAC of the uterine cervix in a 13-year-old girl with no history of intra uterine diethylstilbestrol (DES) exposure [6].

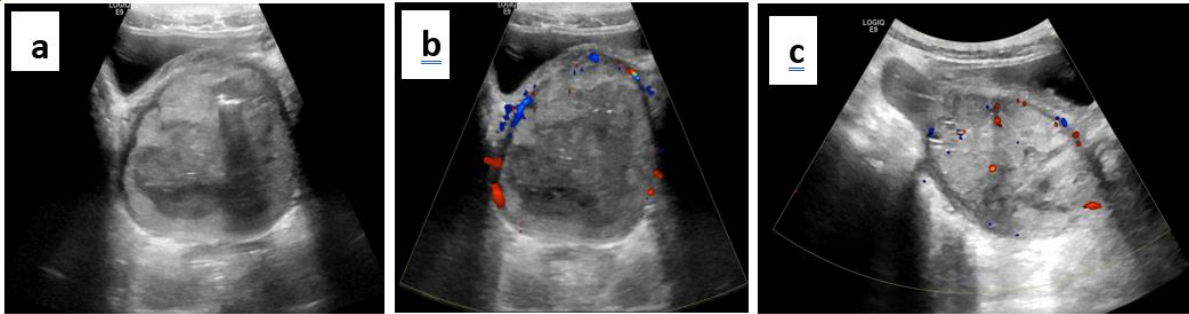
### CAS REPORT

A 13-year-old adolescent girl who, since the age of 10, has presented with a symptomatology consisting of fetid leucorrhea with repeated episodes of urinary tract infections complicated by continuous vaginal bleeding over a duration of ten months. Her menarche occurred at 11 years of age. Although the presenting physician prescribed estrogen, it was ineffective in controlling the bleeding. A vaginal examination revealed an irregular mass arising from the vagina. Transrectal pelvic ultrasonography indicated a Centro-pelvic inter vesico utero-rectal mass, with well-defined contours, hypochoic, heterogeneous, with peripheral vascularization on color Doppler, measuring

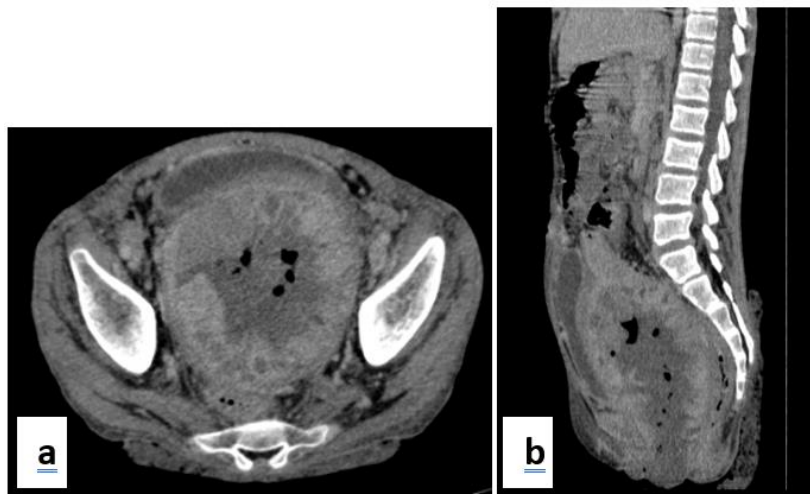
approximately 10x5 cm associated at multiple oval hypochoic adenopathies are associated in the right iliac fossa, the largest measuring 18x 8 mm. (Fig. 1). Post-contrast computed tomography indicated a Centro-pelvic, cervico-vaginal, heterogeneous mass with a central liquid zone, with irregular walls containing vegetations and air bubbles, iso-dense with spontaneous contrast, heterogeneously enhancing after injection of PDC, measuring 9.4 x 8.6 x 15.4cm. The mass abutted the bladder anteriorly and the rectum posteriorly (Fig. 2). Multiple enlarged lymph nodes were noted in the rectal and sigmoid chain chain. Magnetic resonance imaging (MRI) indicated a large pelvic lesion mass, roughly oval in shape, well-defined, with irregular contours and areas of central necrosis, with the tissue portion in T1 hypo signal and T2 hyper signal and diffusion, heterogeneously enhanced after gadolinium injection, measuring 116x78x63 mm. No para-metrial extension was evident and the interfaces between the mass, bladder and rectum were sharply delineated without tumor invasion (Fig. 3). Multiple enlarged lymph nodes are also detected in bilateral iliac and hypogastric chain.

The tumor was histological confirmed as CCAC and was originated from the cervix.

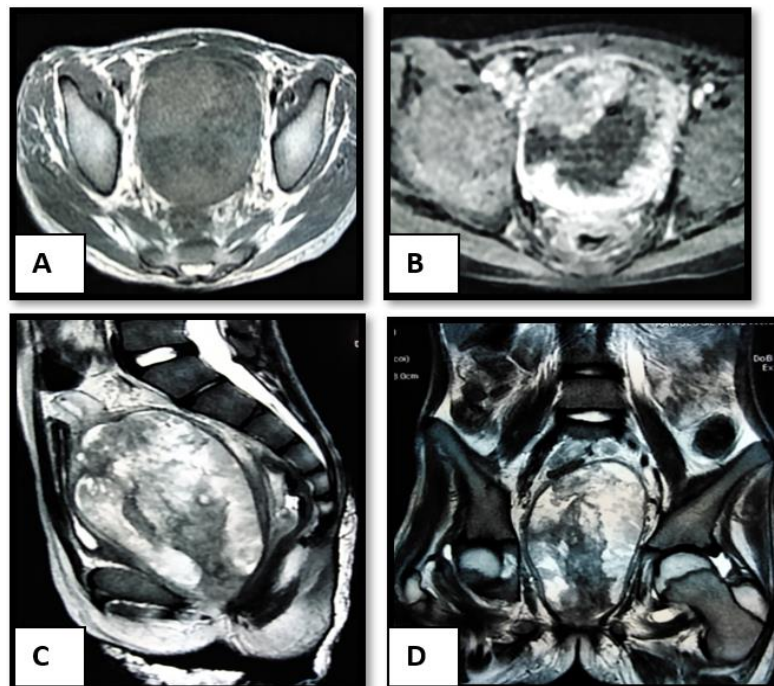
The patient was put on chemotherapy but unfortunately the patient died 3 months after diagnosis.



**Fig. 1:** US of abdominal-pelvic with axial (a, b) and sagittal sections revealed a Centro-pelvic inter vesico utero-rectal mass, with well-defined contours, hypochoic, heterogeneous, with central and peripheral vascularization on color Doppler. cervix



**Fig. 2:** Contrast-enhanced axial (a) and sagittal (b) CT image shows cervico-vaginal, heterogeneous mass with a central liquid zone, with irregular walls containing vegetations and air bubbles and abutted the bladder anteriorly and the rectum posteriorly



**Fig. 3:** MRI of Axial T1 weighted images (A) and T1 with contrast (B), T2-weighted images in sagittal (C) and coronal (D) show a homogeneous lobulated hyper intense mass in the upper vagina and cervix. No parametrial extension is evident, and the interfaces between the mass, bladder and rectum are sharply delineated with no evidence of tumor invasion showing a homogeneous, well-enhanced mass

## DISCUSSION

CCAC is a rare tumor of the cervix, and its etiology and pathogenesis are unclear. However, many reports have associated this cancer subtype with prior intra uterine exposure to DES, a synthetic non steroidal estrogen hormone and teratogen with the ability to cross the placenta [6].

During the 1970s and 1980s, the incidence of CCAC markedly increased, as DES was used therapeutically in early pregnancy in the belief that it would decrease complications, such as toxemia of pregnancy and bleeding, and help to reduce premature births and neonatal deaths. When the link between DES exposure and vaginal and cervical adenocarcinoma was first reported. The risk of CCAC development is 1 in 1000 for DES-exposed women up to the age of 34. However, in 25% of CCAC cases, no history of maternal hormone exposure was found [6].

Most of these cancer types are of Müllerian origin, affecting any region of the vagina and uterine cervix, or both. The upper third of the anterior vaginal wall is a frequent location of these tumors because it is the site for the majority of vaginal adenosis lesions [9].

This disease has no specific clinical manifestations that delay correct diagnosis [9]. The most common symptom in pediatric patients at presentation is vaginal bleeding. CCAC is often misdiagnosed as precocious puberty or anovulatory bleeding in a child or young women with prolonged vaginal bleeding [6].

Routine vaginal cytology is often negative and the tumor is not palpated during rectal examination. Because young patients have a slightly higher incidence of advanced stage disease, early diagnosis of the cervical mass is important in pediatric patients. Accordingly, abnormal vaginal bleeding in girls should be promptly investigated through a pelvic examination and appropriate imaging [6].

Because prognosis, therapeutic management, and surgical planning in adenocarcinoma of the vagina and cervix are closely related to the primary tumour volume and extent, Diagnostic imaging plays an important role [4].

Although ultrasound, CT, and MR imaging all identified the primary tumour in this patient, tumour extent and involvement of adjacent structures was best delineated by MR imaging. By ultrasound and CT, the relationship of the mass to the cervix, parametrium and uterus was not clear. In addition, the mass was inseparable from the bladder and rectum so that tumour involvement of these structures was indeterminate [4].

By MR imaging, the mass was iso intense to surrounding tissues on T1-weighted images, such that this sequence did not contribute to defining tumour extent.

Tumour extent was confidently delineated on FSE T2- weighted images using fat suppression due to marked signal contrast between the hyper intense tumour and the very hypo intense adjacent structures. Our findings support previous reports which have shown MR imaging to be an accurate modality for assessing the extent of the tumour in the region of the vagina and uterus. Although MR imaging has previously been reported to clearly define the presence of cervical invasion by tumour.

Cross-sectional imaging can also show complications of the pelvic tumour such as ureteral obstruction and resultant hydronephrosis, determine anatomic relationships between the mass and normal structures such as the ureter, and show abnormal retroperitoneal lymphadenopathy. However, the absence of normal pelvic lymphadenopathy does not alleviate the need for staging retroperitoneal lymphadenectomy at the time of surgery [4].

The differential diagnosis of tumours with clear cell morphology includes mixed germ cell tumours (yolk sac tumour, choriocarcinoma and embryonal carcinoma), squamous cell carcinoma with clear cell change, mesonephric carcinoma and melanoma [5].

Treatment of CCAC is similar to cervical cancer. As mainly patients with CCAC of cervix are of the young age group, the mainstay of treatment is surgery. Ovaries are not removed in most cases. Local recurrence often occurs in first 3 years from initial diagnosis. Patients presenting with advanced stage are treated with chemo radiotherapy [6].

Prognosis of CCAC depends on the stage at presentation, size of tumour, nuclear atypia, growth pattern and mitotic activity. Large tumour size, high mitotic activity and nuclear atypia are associated with poor prognosis. A tubulocystic growth pattern has good prognosis as compared with solid or mixed growth patterns [6].

As for its the majority of reported cases illustrate the very poor prognosis of this pathology. In fact, the aggressive nature of the disease was noted in our observation, as our patient presented locoregional extension and lymph node metastases. This may be explained by the fact that in girls who often have no risk factors, the diagnosis of cervical cancer is not evoked [1]. As a result, the tumour is most often discovered at an advanced stage, when the possibilities of curative treatment are very limited [1].

## CONCLUSION

Although cervical cancer takes first place in terms of pathology in women, it is extremely rare in childhood and adolescence. Adenocarcinoma of the cervix and vagina is rare in pediatric populations. Due to the aggressive nature of the tumor and limitations of vaginal examination in children, diagnostic imaging modalities should be considered promptly for any child complaining of vaginal bleeding in order to avoid delayed diagnosis.

## REFERENCES

1. Yamoul, R., Attoulou, G., Achenani, M., Riani, A., El Otmani, A., Jalil, A., & Tijami, F. (2013). L'ADENOCARCINOME A CELLULES CLAIRES DU COL UTERIN CHEZ LA JEUNE FILLE. *Journal Marocain des Sciences Médicales*, 18(3).
2. Rehme, M. F. B., Ihlenfeld, M. F. K., & Chuery, A. C. S. (1998). Adenocarcinoma de Células Claras de Endocérvice em Menina de 7 anos. *Revista Brasileira de Ginecologia e Obstetrícia*, 20, 411-414.
3. AA, A. A., Lim, B. K., & Lim, Y. K. (2016). Clear cell adenocarcinoma of the cervix in a ten-year-old girl without prenatal diethylstilbestrol exposure. *Singapore medical journal*, 57(8), 470-470.
4. Donnelly, L. F., Gyls-Morin, V. M., Warner, B. W., & Hillard, P. J. A. (1998). Case report: clear cell adenocarcinoma of the vagina in a 5-year-old girl: imaging findings. *Clinical radiology*, 53(1), 69-72.
5. Arora, A., Rastogi, A., Neyaz, A., & Husain, N. (2017). Clear cell adenocarcinoma of cervix in 1-year-old girl without in utero exposure to diethylstilbestrol: an uncommon tumour at an uncommon age and site. *Case Reports*, 2017, bcr2016218730.
6. Choi, S. J., Kim, J. E., Kim, H. S., & Choi, H. Y. (2013). Clear cell adenocarcinoma of the uterine cervix in a 15-year-old girl: a case report. *Journal of the Korean Society of Radiology*, 69(4), 321-325.
7. Meltem, Baykara, M.D. (2014). Clear Cell Adenocarcinoma of the Uterine Cervix: A Case Report and Review of the Literature, *J Pediatr Hematol Oncol*, e131–e133.
8. Alipour, P., Arjmandi, K., & Hallaji, F. (2008). Vaginal clear cell adenocarcinoma with early pulmonary metastasis in a child. *Pediatric Hematology and Oncology*, 25(7), 679-684.
9. Bujor, I. E., Lozneau, L., Ursache, A., Cristofor, A., Scurtu, A. M., Plamadeala, P., ... & Matasariu, D. R. (2022). Primary Clear Cell Adenocarcinoma of the Uterine Cervix in a 14-Year-Old Virgin Girl: Case Report. *International Journal of Environmental Research and Public Health*, 19(24), 16652.
10. Su, Y., Zhang, C., Hou, W., Liou, Y., Chen, Y., Xie, Y., ... & Zhang, M. (2020). Fertility-preserving local excision under a hysteroscope with combined chemotherapy in a 6-year-old child with clear cell adenocarcinoma of the cervix: a case report and review of the literature. *Medicine*, 99(5), e18646.