# Malignant mixed müllerian tumor of the fallopian tube coincident with a primary serous carcinoma of the ovary. Case report

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**Summary**

Malignant mixed müllerian tumors are very rare neoplasms of the fallopian tube, and treatment is not well defined. A case of malignant mixed müllerian tumor of the tube concomitant with a primary serous carcinoma of the ovary is reported. It was unclear if there were two distinct neoplasms in the same patient, or if it was a single tumor with a sarcomatous fallopian conversion of the serous component, as described for some recurrent ovarian carcinomas. Chemotherapy for ovarian carcinoma with intraperitoneal metastasis was performed, with about a three-year interval-free period of disease, as could be expected for ovarian carcinomas at the same stage. Such coexistence of these two tumors does not afford adequate staging of the malignancy. Therapy for the very rare cases similar to the one reported here needs to be improved.

*Key words:* Malignant mixed müllerian tumor; Serous ovarian cancer; Therapy.

## Introduction

Neoplastic pathology of the fallopian tube is a rare condition representing a small percentage (0.3%) of all gynecological tumors. Fallopian tube malignancies are by far more frequent than benign lesions. Usually, fallopian tube malignancies are the propagation of primary tumors of the ovary, endometrium and extragenital cancers (stomach, intestine, pancreas) [1-3].

Malignant mixed müllerian tumor is a rare sarcomatous neoplasia representing less than 1% of all genital sarcomas [4-6]. It has been found in the fallopian tube and rarely, in the corpus uteri, cervix, vagina, ovary, and bladder [7].

There are two histologic forms of this tumor: the "homologous variant" (carcinosarcoma), in which the tumor reproduces various components of the müllerian tract such as fibrous connective tissue stroma, glands and smooth muscle, and the "heterologous variant" (mesodermal mixed tumor), in which elements extrinsic to the müllerian tract, such as rhabdomyoblasts or cartilage and bones are found [7]. Radiotherapy after surgery is considered the best treatment [8].

The following case report is presented and discussed according to a recent theory about the pathogenesis of müllerian tumors [9, 10].

## Case report

A 66-year-old woman, gravida 3, para 3, 21 years beyond menopause, underwent X-ray (spinal column) and nuclear magnetic resonance (NMR) imaging (lumbosacral area) because of a six-month history of lumbosciatic pain. These examinations revealed the presence of a pelvic mass and the patient was referred to our gynecologic institute for further investigations. Her past medical history was unremarkable. Pelvic examination revealed a large mass including the uterus; the cervix was clear and no bleeding was present. Pelvic sonography demonstrated a bilobed hyperechogenic image 22 x 16 cm in diameter but it was not possible to distinguish the uterine outline. No sign of malignancy was found after Pap smear and colposcopic evaluation. Intravenous pyelogram showed extrinsic compression by tumor on the left ureter with distension of the upper urinary tract. Considering the clinical symptoms and results of the diagnostic examinations, surgical intervention was indicated. Exploratory laparotomy revealed an abdominopelvic mass made up of left and right ovarian cysts and a solid left fallopian tube tumor. Total abdominal hysterectomy with bilateral salpingo-oophorectomy and omentectomy were performed. The omentum was adherent to the anterior abdominal wall. Exploration of the upper abdomen and paraaortic and pelvic lymph nodes was negative.

Two weeks after surgery routine cardiac, hepatic and renal functions were thoroughly evaluated and results were within normal range. Then, a regime of combination chemotherapy consisting of six cycles of IV carboplatin plus paclitaxel was started three weeks after surgery. At six and 12 months postoperatively, computed tomography showed no evidence of new pelvic or peritoneal implants, and the patient appeared in good condition. However, two years later a new laparotomy procedure showed colorectal metastasis of serous carcinoma. A left hemicolectomy with colostomy was performed, and additionally a new cycle of palliative chemotherapy with radiation therapy was planned. The patient died the following year due to end stage renal failure in a cachectic state.

### *Gross pathology*

The left tube ampulla showed a 5 cm in diameter tumor which had a varying aspect with solid and cystic areas. White greasy nodes were disseminated in the neoplastic tissue. The left ovary, measuring 8 x 6 x 6 cm, showed a cavity (2 cm in diameter) with fine and regular walls and a homogeneous white

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nodule which measured 4 cm. The right ovary was transformed into an 8 cm in diameter multiloculated cyst; the interior surface was irregular because of the presence of many proliferative vegetations. The uterus was regular, measuring 6.5 cm (longitudinal) x 4 cm (trasversal) x 3.5 cm (anteroposterior). The omentum had several hard tumor nodes.

*Microscopic pathology*

Histologically, both the ovaries showed neoplastic epithelial proliferation with a solid and papillary pattern, with the classic aspect of a G2 ovarian serous carcinoma. The neoplastic capsule was largely involved and the omentum was also involved by serous carcinomatous cells. The left salpinx showed an ectatic lumen completely filled by neoplastic proliferation with poorly differentiated cells. Such cells in some areas lined tubular or glandular structures with serous fluid and in other areas they were oriented in a fibrosarcomatous or myxoid pattern. Foci of immature cartilage were very rare. Areas of coagulative necrosis delimited by nuclei in a palisade disposition were observed. The mitotic index was very high (more than 20/10 HPF). The residual tubal epithelium covered some neoplastic proliferations. The right salpinx was normal. At immunohistochemistry keratins were expressed only by the epithelial component in the salpingeal tumor and the neoplastic cells of the ovaries. The positivity for keratin 7 was focal, while keratin 20 was not expressed. A focal but strong expression of desmin and smooth muscle actin was observed in the mesenchymal component. Both the epithelial and spindle cells of the salpingeal tumor expressed prominent nuclear positivity for p53, which was present only in the carcinomatous cells of the ovaries. Peritoneal cytology revealed serous neoplastic cells.

## Discussion

There has been a revaluation of the role of the epithelium in the genesis of the mesenchymal-like component of genital tumors. This hypothesis, called "conversion theory", is supported by the fact that there are some sarcomatoid recurrences of carcinomas and by some molecular biology and cytogenetics studies [9]. On the other hand, it has been proposed [10] that some ovarian serous tumors could be generated by the müllerian epithelium with greater frequency than what was believed before. From this view point, the neoplasm found in that patient could be considered as the following: 1) two independent tumors (serous bilateral carcinoma of the ovary and malignant mixed müllerian tumor of the tube), according to classic conviction; 2) an epithelial tumor of the ovary with tubal location and sarcomatous transformation, in accordance with the "conversion theory". If the latter "sarcomatous conversion" is accepted, it is of interest because it was found contemporaneously with the ovarian tumor and not in a recurrent neoplasm, and the transformation was broadly represented in the tubal location while it did not appear in the ovary. This has not been reported elsewhere.

If the ovarian and fallopian neoplasms are considered as the same tumor, the FIGO staging [8] results as a Stage IIIc G2 ovarian carcinoma, which should be treated with adjuvant chemotherapy. If instead two distinct neoplasms are occurring at the same time in the same patient (an ovarian bilateral serous carcinoma and a fallopian sarcomatous tumor), perhaps radiant therapy against the malignant mixed müllerian tumor is even suitable after surgical section [8, 11].

In the case reported, adjuvant chemotherapy with placitaxel and carboplatin was planned, getting about two-three years of interval-free disease, which would be about the same survival time expected for FIGO Stage IIIc ovarian carcinoma.

To our knowledge, cases of coexistent synchronous ovarian carcinoma and fallopian mixed müllerian tumor are not described in the litterature. Therefore, the case reported acquires interest both if it was the same neoplasia, or if there were two distinct neoplasms, because the laking of staging and therapy.

## References

[1] Gaducci A., Landoni F., Sartori E., Maggino T., Zola P., Gabriele A. *et al.*: "Analysis of treatment failures and survival of patients with fallopian tube carcinoma: a cooperation task force (CTF) study". *Gynecol. Oncol.,* 2001, *81,* 150.

[2] Obermair A., Taylor K.H., Janda M., Nicklin J.L., Crandon A.J., Perrin L.: "Primary fallopian tube carcinoma: the Queensland experience". *Int. J. Gynecol. Cancer,* 2001, *11,* 69.

[3] Butler D.F., Bolton M.E., Spanos W.J. Jr., Day T.G. Jr., Paris K.J., Jose B.O. *et al.*: "Retrospective analysis of patients with primary fallopian tube carcinoma treated at the University of Louisville". *J. Ky Med. Assoc.,* 1999, *97,* 154.

[4] Gagner J.P., Mittal K.: "Malignant mixed Mullerian tumor of the fimbriated end of the fallopian tube: origin as an intraepithelial carcinoma". *Gynecol. Oncol.,* 2005, *97,* 219.

[5] Ajithkumar T.V., Minimole A.L., John M.M., Ashokkumar O.S.: "Primary fallopian tube carcinoma". *Obstet. Gynecol. Surv.,* 2005, *60,* 247.

[6] Lim B.J., Kim J.W., Yang W.I., Cho N.H.: "Malignant mixed mullerian tumor of fallopian tube with multiple distinct heterologous components". *Int. J. Gynecol. Cancer,* 2004, *14,* 690.

[7] Piura B., Rabinovich A., Meirovitz M., Yanai-Inbar I.: "Müllerian adenosarcoma of the uterus: case report and review of literature". *Eur. J. Gynaecol. Oncol.*, 2000, *21,* 387.

[8] Benedet J.L., Bender H., Jones 3rd H., Ngan H.Y., Pecorelli S.: "FIGO staging classifications and clinical practice guidelines in the management of gynecologic cancers". FIGO Committee on Gynecologic Oncology. *Int. J. Gynaecol. Obstet.,* 2000, *70,* 209.

[9] Sreenan J.J., Hart W.R.: "Carcinosarcomas of the female genital tract. A pathologic study of 29 metastatic tumors: further evidence for the dominant role of the epithelial component and the conversion theory of histogenesis". *Am. J. Surg. Pathol.,* 1995, *19,* 666.

[10] Piek J.M., Kenemans P., Verheijen R.H.: "Intraperitoneal serous adenocarcinoma: a critical appraisal of three hypotheses on its cause". *Am. J. Obstet. Gynecol.,* 2004, *191,* 718.

[11] Callister M., Ramondetta L.M., Jhingran A., Bruke T.W., Eifel P.J.: "Malignant mixed Mullerian tumors of the uterus: analysis of patterns of failure, prognostic factors, and treatment outcome". *Int. J. Radiat. Oncol. Biol. Phys.,* 2004, *58,* 786.

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