Metachronous adrenal metastasis from ovarian cancer – a case report and literature review

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Abstract
Hematogenous path remains an important pathway of spread for ovarian cancer; the most commonly reported sites of involvement are represented by liver and lungs. The aim of this paper is to report a rare situation in which adrenal metastasis from ovarian carcinoma was encountered.

Case report. The 55-year-old patient with previous history of surgically treated ovarian cancer was diagnosed at 18 months follow-up with an isolated lesion at the level of the right adrenal gland. After completing the biochemical analysis, in order to exclude an endocrine disorder, the final suspicion of diagnostic was of an adrenal metastasis and was submitted to adrenalectomy. The histopathological studies confirmed the presence of an adrenal metastasis of ovarian cancer.

Conclusions. Although rare situations, adrenal metastases from ovarian cancer can be encountered and might be successfully treated by surgery with curative intent.

Keywords: adrenal metastases, metachronous, ovarian cancer
INTRODUCTION

Ovarian cancer is still considered as a veritable silent killer due to the fact that most patients remain asymptomatic for a long period of time; meanwhile malignant cells present an increased capacity of spread via peritoneal, hematogenous and lymphatic pathways leading to the development of distant metastases (1-3). In such cases surgery remains the option of choice only if radical procedures to no visible residual disease is feasible. Unfortunately this desiderate is rather difficult to be achieved especially in cases in which hematogenous spread is present, in such patients the only rationale therapeutic strategy consisting of systemic palliative treatment. However, in certain cases, isolated metastases are encountered, and the patients might become candidates for surgery with curative intent (3). In such cases significant benefit of survival is to be expected. The aim of the current paper is to report the case of a 55-year-old patient who was diagnosed with an isolated right adrenal metastasis from ovarian cancer, which was successfully submitted to radical surgery.

CASE PRESENTATION

The 55-year-old female had been previously investigated for diffuse abdominal pain and weight loss and was diagnosed with stage IIIC ovarian cancer two years ago; at the time of diagnostic the presence of distant hematogenous metastases was excluded by the imagistic studies while the paraclinical tests revealed a significant increase of the cancer antigen CA125 levels (at 3,120 U/ml).

At that time total hysterectomy en bloc with bilateral adnexectomy, pelvic and para-aortic lymph node dissection, omentectomy, pelvic and parietal peritonectomy were performed. The histopathological studies confirmed the presence of an well differentiated serous ovarian adenocarcinoma with two positive pelvic lymph nodes at the level of the left obturatory fossa and one at the level of the right external iliac artery group (out of the 21 retrieved nodes) and no positive para-aortic lymph node. However, at that moment, venous thrombus at the level of the right ovarian veins was encountered. At four weeks follow-up, the serum levels of CA125 decreased at 23 U/ml, and the patient was submitted to adjuvant chemotherapy consisting of six cycles of taxanes and platinum based chemotherapy. However, 18 months after ending the adjuvant chemotherapy, the patient was diagnosed at computed tomography with a suspect lesion at the level of the right adrenal gland measuring 4.5 X 4 X 5 cm in association with a slight increase of the serum CA125 (at 145 U/ml). The initial suspicion was the one of an isolated metastasis from ovarian cancer; however, due to the rarity of this scenario, the patient was further submitted to a positron emission tomography and to endocrine studies. The imagistic studies excluded the presence of any other active sites and confirmed the presence of a metabolic active lesion at the level of the right adrenal gland while the paraclinical endocrine tests excluded a primary adrenal tumor. The patient was further submitted to surgery, right adrenalectomy being performed (Figures 1, 2). The histopathological studies confirmed the presence of an adrenal metastasis from ovarian cancer. The patient was discharged in the fourth postoperative day; meanwhile, at one month follow-up, the serum levels of CA125 decreased at 19 U/ml, therefore demonstrating the completeness of cytoreduction.

DISCUSSION

Adrenal metastases are rarely encountered, the most commonly primaries which lead to the appari-
tion of secondary tumors at this level being represent-
ed by lung and kidney (4). In a study conducted by Cas-
tillo et al. on 32 patients submitted to adrenalectomy
for metastatic disease, the most commonly encoun-
tered primaries were represented by lung carcinoma
(in 13 cases), renal cell carcinoma (in 9 cases), colorec-
tal and bladder carcinoma (each in two cases) and
ovarian, breast, gastric cancer and melanoma (each in
one case). However, autopsy studies came to demon-
strate that up to 15% of ovarian cancer patients will
develop adrenal metastases; these findings were re-
vealed at necropsy and were explained by the hemato-
genous and lymphatic spread of the malignant cells
(5). Interestingly, certain authors came to demonstrate
that in cases presenting lymph node metastases on a
certain side, adrenal gland metastases usually develop
in the contralateral adrenal gland side (1,6,7); howev-
er, this mechanism of spread is not fully understood so
far (1). When it comes to the case we reported, the
mechanism of development of an adrenal metastasis
might be a complex one, both hematogenous and lym-
phatic being incriminated. Therefore, the patient asso-
ciated both hematogenous spread at the level of the
ovarian veins and lymphatic spread – at the level of
three retrieved pelvic lymph nodes.

As for the symptomatology associated by the pres-
ence of adrenal metastases, most patients will remain
asymptomatic for a long period of time; meanwhile
these patients might become symptomatic in rare sit-
uations, especially if bilateral involvement is encoun-
tered. An interesting such case was reported by the
study group conducted by Gokosmanoglu et al. in
2016 (8); the authors presented the case of a 60-year-
old female who was diagnosed with a suspect pelvic
mass in association with bilateral adrenal tumors
which were initially considered as non-functional ad-
renal tumors. The patient was submitted to surgery for
the gynecological disorder which proved to be an un-
differentiated ovarian carcinoma with lymph node
metastases; postoperatively the patient developed
phenomena of adrenal insufficiency while the adrenal
masses proved to be adrenal metastases from ovarian
cancer. However, the fulminant development of post-
operative adrenal insufficiency was explained by the
authors to be caused by the association of postopera-
tive stress in association with tumor growth produced
by the immune suppression caused by surgery itself
(8).

Most often the presence of adrenal metastases is
the sign of systemic neoplastic impregnation and is
associated with other disseminated metastases (2,3,9-
11); in such cases the patient becomes the candidate
for systemic, palliative oncological treatment; howev-
er, in rare cases isolated lesions are encountered
(12,13). When it comes to the most appropriate thera-
peutic option in such cases, it seems that surgery re-
 mains the option of choice especially in cases with uni-
lateral adrenal metastases; in such cases unilateral
adrenalectomy provides a radical procedure which in-
creases the chances of achieving a long term survival.
However, this approach should be avoided in cases
presenting bilateral lesions or a poor biological status
due to the increased risks of postoperative complica-
tions (1,14,15).

The first successful resection of an isolated me-
tachronous adrenal metastasis from ovarian cancer
was reported in 2002; at that moment Einat et al. pre-
 sented the case of a patient who was diagnosed with a
solitary adrenal metastasis from ovarian cancer 11
months after completing the adjuvant chemotherapy
and who was successfully submitted to laparoscopic
adrenalectomy; similarly to our case, the serum levels
of CA125 reported a significant decrease (from 365 U/
ml to 35 U/ml) therefore demonstrating the complete-
ness of cytoreduction (12).

As for the prognostic factors after adrenalectomy
for metastatic disease, one of the largest studies con-
ducted on this issue which was published in 2010 by
Muth et al. came to demonstrate that patients submit-
ted to surgery with curative intent in the absence of
other previous surgery for metastatic disease as well
as those presenting colorectal or renal cell carcinoma
primaries seemed to have a significantly improved
long term survival. Interestingly, no correlation could
be established between the size of metastases and
overall survival (16). In a more recent study conducted
by Tomasini et al. the authors underlined the fact that
the origin of the primary tumor does not significantly
influence the long term outcomes after adrenalecto-
my for metastatic disease and recommended perform-
ing the surgical procedure whenever oligometastatic
metachronous lesions are found. In Tomasini’s study
the authors included 40 cases with oligometastatic
disease, the overall survival being significantly im-
proved in cases presenting metachronous lesions
(10.8 months) when compared to synchronous lesions
(4.5 months, p = 0.008) (17).

CONCLUSIONS

Although rarely encountered, adrenal metastases
from ovarian cancer should be suspected in patients
with a previous history of this malignancy. Due to the
rarity of cases, in such patients the initial diagnostic
tests should be conducted in order to exclude a prima-
ry adrenal pathology; once the differential diagnostic
with all these pathologic entities is established, sur-
gery consisting of adrenalectomy should be performed
in order to remove the isolated metastasis developed
at this level and to achieve a radical surgical gesture.
Authors’ contributions
NB performed the surgical procedures; IB prepared the manuscript; CD, LI, DC, SD performed data analysis; OGB, AF, CB, MD, CS were part of the surgical team; DC advised about the oncological outcome; NB revised the final draft of the manuscript.

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