Introduction

All tumours spreading beyond minor circulation may produce adrenal haematogenous metastasis. The presence of metastasis in the adrenal glands represents the second most frequent cause of "adrenal incidentaloma", following cortical-adrenal adenomas. The most common primary tumors responsible for adrenal metastasis are carcinomas of the lung, breast and kidney. In this cases adrenal metastases are rarely bilateral.

Adrenal metastases from colorectal cancer are not rare findings in autopic reports. Generally adrenal metastases are considered to depend by haematogenous spread of the primary carcinoma and to be unsuitable for surgical resection. In fact, at autopsy the majority of patients with colon cancer adrenal metastases have several other metastases.

The presence of lonely adrenal metastasis from colon or rectal carcinoma is very rare. The Authors report an unusual case of right adrenal metastasis occurred four years after right hemicolectomy for adenocarcinoma of the ascending colon.
Case report

A 74-year-old man underwent radical resection of a primary colon cancer in May 2002. It was an adenocarcinoma of the ascending colon infiltrating the muscular wall and stretching into the subserosa. There was no evidence of metastasis in regional lymph nodes or other more distant areas (T3 N0 M0, Stage II A). The post-operative course was uneventful and the patient was introduced in a follow-up program, including yearly total-body CT scan and abdominal ultrasonography every six months. The patient was treated with chemotherapy based on 5-fluorouracil and mitomycin-C.

In January 2006, the abdomen CT showed the presence of a 4x5 cm solid expanding lesion on the right adrenal side, absent in the CT scan one year before. The patient was completely asymptomatic. The physical examination was normal, as well as the laboratory tests, including CEA. There was a slight increase of hepatic transaminases (GOT-AST 54 U/L; GPT-ALT 76 U/L). The presence of expanding lesion was confirmed by MRI examination.

Therefore a right adrenalectomy was performed. The exploration of the abdomen revealed the absence of any adenomegalies or other metastatic lesions. At histology the right adrenal gland was nearly completely occupied by a yellowish neoplastic-like tissue, necrotic and soft, which the definitive histology classified as adrenal metastasis from intestinal adenocarcinoma (Figs. 1 and 2).

Patient’s post-operative course was uneventful. The patient was discharged 4 days after operation. A new cycle of chemotherapy with 5-fluorouracil and mitomycin-C was administrated. Ten months after second surgery, the patient is in good general conditions, with no clinical or radiological evidence of disease relapse.

Discussion

The most common primary tumors responsible for adrenal metastasis are carcinomas of the lung, breast and kidney. Adrenal metastases from colo-rectal carcinomas are less frequent (Table 1). In literature the global incidence of adrenal metastasis ranges between 8.6% and 27%, while the incidence of adrenal metastasis from colorectal cancer ranges from 1.9% to 17.4% (1,2). Adrenal metastases are found more frequently in males, with an average age over 58 (range 42-77).

Pre-operative diagnosis is very hard, because adrenal metastases are generally asymptomatic (3/3% of cases), and they are prevalently revealed by autopsy (3). The rate of detection of clinically silent adrenal masses has increased due to the widespread use of abdominal imaging including ultrasonography, CT, and MRL. Generally clinical suspicions, as in our case, are raised by instrumental examinations, such as CT scans performed during post-operative follow-up.

The most frequent symptom is the pain, observed around 25% of patients, as reported by Lo et al. (13 out of 52 patients) and by Kim et al. (9 out of 37 patients) (3,4). In case of bilateral metastases, there may be a picture of adrenal insufficiency (5). The incidence of bilateral adrenal metastasis is rare. Two cases are described by Kim (one from colon adenocarcinoma, one from kidney carcinoma), two cases are described by Lo and one by Moreno (3-5).

<table>
<thead>
<tr>
<th>Author</th>
<th>Total metastasis (n)</th>
<th>Metastasis from colo-rectal cancer (n)</th>
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<tbody>
<tr>
<td>Moreno</td>
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<td>Wade</td>
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The values of tumoral markers, CEA in particular, may be high but not rarely CEA dosage remains within the normal range. CT scans allow diagnosis of the adrenal masses with fair accuracy, also in subcentimetric le-
sions. However, they do not provide any distinction between primitive lesions, incidentalomas and secondary lesions. Percutaneous fine needle-biopsy was therefore proposed in order to provide a complete diagnosis, excluding false positives and attaining histological confirmation. This procedure does not always identify primitive lesions, but it can allow to distinguish between incidentalomas and metastasis.

In many cases, adrenal metastases are associated to lung metastasis. This does not exclude the surgical treatment of both lesions. Generally adrenal metastases from colo-rectal cancer is considered to result from haematogenous spread of the primary carcinoma. Katayama et al. suggested that there is a route of haematogenous metastasis from the primary lesion via the lung to the adrenal glands (6). Other authors believe that these secondary lesions, especially for the right adrenal gland, may derive from hematogenically neoplastic dissemination as well as from the vascular modifications correlated to right hemicolectomy with lymphadenectomy (7). The presence of alone adrenal metastasis from colon or rectal carcinoma as described in our case is very rare (8).

The involvement of the adrenal glands by secondary lesions may be associated with lung metastases and neoplastic infiltration of other organs without negatively affecting the prognosis (5). Indeed, Kim describes cases where the patient underwent both hepatic resection and adrenalectomy, for the presence of hepatic and adrenal secondary lesions from right colon cancer with survival until to 21 months (3). Though the studies in Literature does not prove that surgery can modify the natural course of the disease, it does remain the therapy of choice (9). Surgical procedure includes adrenalectomy, removing the gland without damaging the capsule to avoid neoplastic dissemination, and resection of the infiltrated tissue or other affected organs. In case of alone adrenal metastasis, limited within the capsule, a laparoscopic approach is a reliable option (1). Minimvasive treatment is indicated when the preoperative instrumental show no tumoral infiltration of the surrounding organs, no lymphadenopathies and no extra-adrenal metastasis (Table 2).

In the majority of cases, with at 18 months median follow-up (range 1-18 months) average post-operative survival is about 21 months, with a 5-year survival rate of 24%. The average rate of disease free survival is 11%, with a 5-year rate of 21% (3).

**Conclusion**

Due to the relative rarity of adrenal metastasis from colo-rectal cancer, there are not randomised studies supporting the effectiveness of surgical treatment (10). Nevertheless, on the basis of our experience and international Literature, we believe that adrenalectomy in patients with alone lesions represents at present the “gold-standard” therapeutic approach.

### References