Chromophobe Renal Cell Carcinoma and the Synchronous Presence of Primary Colon Malignancies. Is There a Relation?

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Abstract

While the presence of multiple primary malignancies in the same patient is a well described phenomenon, there is no clear association between various histological subtypes of renal cell carcinoma (RCC) and the synchronous presence of colon malignancies. We present the rare case of an 81-year-old female patient suffering from chromophobe renal cell carcinoma (chRCC) and an angiomyolipoma of her left kidney, synchronous with an adenocarcinoma of the caecum. While there is an established connection between RCC and colon cancer, a literature review is performed to specify this association in regard to chRCC and the synchronous presence of colon malignancies.

Introduction

Chromophobe renal cell carcinoma (chRCC) is a rare histological subtype of renal cell cancer (RCC), presenting in approximately 5% of cases. While a connection between RCC and secondary primary malignancies is well described, little data is recorded regarding the association of various histological subtypes of RCC and secondary primary carcinomas. Herein we present the rare case of a female patient suffering from adenocarcinoma of the cecum, a synchronous chromophobe RCC and an angiomyolipoma of her left kidney. We will also review the literature regarding any connection between chRCC and colon cancer.

Case presentation

The case pertains to an 81 year old female who presented in our department regarding loss of weight (>10 kg last month), along with general weakness for the past 2 months. Her medical history included hypertension and diabetes mellitus. Physical examination was unremarkable, with no abdominal findings and a negative digital rectal exam. Laboratory data revealed a hematocrit of 33% and hemoglobin of 9.4 g/dL. Biochemistry and urine results were within normal limits. She underwent a colonoscopy, which uncovered the presence of a multilobular mass of the cecum, causing partial stenosis of the bowel lumen. Pathology examination of the mass was significant for an adenocarcinoma of the caecum. Further thorax and abdominal CT scan showed a solid renal mass on her left kidney (Fig. 1). After written consent she was admitted for surgery.

Intraoperatively, patient was set in supine position and a supra-infraumbilical incision was performed. After manipulation of the descending colon, a radical left nephrectomy was executed, along with resection of the retroperitoneal lymph nodes. A right hemicolectomy was further performed, with the formation of an ilio-colon anastomosis.

Postoperatively, patient was taken to the ICU for surveillance. She returned to the ward on the 2nd postoperative day, while she resumed normal bowel activity on the 4th. She was discharged on the 7th day with no complications. At 3 month follow no symptoms were reported, while her hematocrit was found at 34.2%.

Pathology report of the excised specimen demonstrated a Fuhrman grade 2 chromophobe renal cell carcinoma (chRCC), measuring 3.5 cm in diameter. Immunohistochemical (IHC) report was positive for epithelial membrane antigen (EMA) and CD117 (c-kit), and negative for vimentin. Overexpression of cytokeratin 7 and CD107 was observed. Surgical margins were clear, with no invasion of Gerota’s fascia or renal vein. Another small mass 0.6 cm in diameter was detected as an incidental finding, during gross description of the kidney specimen, significant as an angiomyolipoma, with positive smooth muscle antibodies (SMA). The excised...
colon specimen demonstrated a primary Duke’s grade B (T3N0) adenocarcinoma of the sigmoid colon (Fig. 2).

**Discussion**

The synchronous presence of RCC and other malignancies is a well described phenomenon. In a retrospective analysis of 319 patients suffering from RCC, Sato et al\(^1\) reported that 19 (6%) people were having concurrent RCC and another primary malignancy, with 4 of those being colorectal cancer. In another report, Beisland et al\(^2\) reported the synchronous presence of 53 (0.37%) primary malignancies out of 1425 patients suffering from RCC. Again, only 4 of those cases were colon carcinoma. While these reports clearly identify a connection between RCC and colorectal cancer, they do not associate the synchronous presence of colon carcinoma with the subtypes of RCC. Lastly, Rabbani et al\(^3\) also tried to find a relation between RCC histological subtypes and secondary primary cancer, with his results demonstrating that out of 763 patients with RCC, 68 were chRCC, 209 had a secondary primary cancer, with 104 of these cases referring to synchronous malignancy. Again, no case of synchronous chRCC and primary malignancy of the colon were reported.

In a very large analysis involving 2722 patients, Thompson et al\(^4\) investigated the relation of RCC subtypes and the presence of other synchronous primary malignancies. In his study group, a total of 533 (19.5%) patients found to have a second primary malignancy regardless of RCC histological type. Of the 128 patients suffering from chRCC, 29 (22.7%) of them had a secondary primary cancer, with 7 (5.5%) of these cases referring to colon carcinomas. While the main conclusion of Thompson et al report

| Table 1 | Association of RCC, chRCC and secondary primary colon malignancy. |
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| Sato, et al\(^1\) | 319 | No data | 9 Patients (4 concurrent) | No data |
| Rabbani, et al\(^1\) | 753 | 68 (8.9%) | 23 Patients\(^a\) | No data |
| Beisland, et al\(^2\) | 1425 | No data | 25 Patients (4 concurrent) | No data |
| Thompson, et al\(^4\) | 2722 | 128 (4.7%) | 65\(^b\) | 7 Patients\(^a\) |
| Yu-Chun Li, et al\(^5\) | 228 | 15 (6.6%) | 5\(^c\) | 0 Patients |

\(^a\) No distinction between antecedent, concurrent or subsequent malignancies.
suggested that papillary RCC was more commonly associated with extrarenal secondary primary malignancies than other RCC subtypes, it also pointed that patients suffering from chromophobe RCC were exhibiting the highest rates of concurrent primary malignancies specifically of the colon (5.5% of chRCC cases). Despite this high rate there was no significant difference between patients suffering from papillary RCC and chRCC regarding colon carcinoma. While this analysis presents the association between RCC subtypes and other secondary primary malignancies, no distinction is made over the antecedent, synchronous and subsequent presence of these cases.

Another report was found in the literature, analyzing the possible association of RCC subtypes and other secondary primary malignancies. In 228 patients suffering from RCC, Yu-Chun Lin et al. recorded 15 of them having a chRCC, with only one of them being associated with a secondary primary malignancy, and that was of the prostate. A summary of all reports is presented in table (Table 1).

Conclusion

The synchronous presence of RCC and other types of primary malignancies is a well described phenomenon. Unfortunately not many data exist regarding the association of various RCC subtypes and the synchronous presence of other malignancies. While chRCC is a rare subtype of RCC, there could be a possible association between chRCC and the synchronous presence of colon cancer. More studies and research should be made on this field in order to better correlate RCC types and secondary synchronous primary malignancies, and subsequently introduce an appropriate evaluation method for patients.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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Conflict of interest

All authors declare that they have no conflict of interest.

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