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Case Report and Review of the Literature

A Unique Case of Anal Atresia with Vestibular Anus, Colorectal Cancer and Renal Cancer in Horseshoe Kidney in Adult Woman: A Case Report and Literature Review

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ABSTRACT

Introduction: Colorectal cancer is a very common malignancy, however the association with kidney cancer is very unusual, even more so if kidney cancer occurs on a horseshoe kidney. Horseshoe kidney is a congenital malformation in which the kidneys appear fused. It is often accompanied by abnormalities of the ureteropelvic and vascular systems, so patients in need of surgery should be carefully evaluated.

Materials and Methods: A 64-year-old woman came to our observation with abnormalities of the perineum such as the "vestibular anus", horseshoe kidney, kidney cancer and colorectal cancer. She underwent left open hemicolectomy and right polar resection of the horseshoe kidney.

Results: The patient was discharged on the sixth operating day without complications. At the follow-up 54 months after surgery, she was negative for distant metastasis and local disease recovery.

Conclusion: From a literature review this is the first case report in a patient with these four associated comorbidities. Preoperative evaluation in these patients by CT is important to evaluate the relation between the nervous, vascular and urinary structures to avoid iatrogenic injury.

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Introduction

Colorectal cancer (CRC) is the third most commonly diagnosed cancer among men and women in the United States [1]. However, association with renal cell carcinoma and other unusual alterations such as horseshoe kidney is extremely rare [2-4]. The horseshoe kidney is a common anomaly consisting of a renal fusion, accompanied by anomalies in the course of the ureter, renal vascularization and anomalies of relation with the inferior mesenteric artery. Anorectal malformation is a congenital disease of the anal canal, rectum and colon that occurs from 1.33 to 4.93 out of 10,000 births worldwide. We present a rare case of a female who suffered from horseshoe kidney, genitourinary anomalies with vestibular anus, renal cancer and left colon cancer. There is no evidence in the literature of the association of these four comorbidities. Successfully

treated with left open hemicolectomy, right polar resection of the horseshoe kidney.

Case Report

A 64-year-old woman presented at another hospital with abdominal pain, and episodes of rectal bleeding. The patient had no family history of cancer. She was born with a vestibular anus that had been not corrected (Figure 1). She reports that she often suffered from recurrent cystitis and recurrent vaginal infections due to the proximity between the anus and the vagina but never wanted to undergo surgery, the patient underwent virtual colonoscopy which showed in addition to a suspicious mass of the left colon, also a suspicious mass in a fused kidney (Figure 2). Colonoscopy demonstrated, at 20 cm from anal verge, a polypoid colon neoplasm of 3, 5 cm in diameter, whose biopsy were positive for

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malignancy. CT scan showed anomalous locations of left ureter adherent to the medial sigmoidal mesocolon and upper polar mass in the right kidney, solid nodular neof ormation which has an altered enhancement about 4 x 3.5 cm suggesting a renal neoplasm.



Figure 1: Conformation of the patient's perineum with anal atresia and vestibular anus, this condition makes difficult to introduce circular trans-suture staple.



Figure 2: CT axial and sagittal images showing the fused kidney.



Figure 3: Intraoperative image of the right upper pole renal tumor.

Due to the conformation of the patient (Figure 3) that made it impossible to carry out a trans-anal anastomosis with circular trans-suture staple 29 mm, an open left hemicolectomy was performed with trans-colic anastomosis and upper right polar resection of the horseshoe kidney (Figure 4) using a 20 cm median incision. Division of IMA at its origin and anterior colon resection was successfully performed by careful mobilization of the mesocolon to avoid exposing the retroperitoneal organs. The operative time was 162 min, and the blood loss was 40 mL.

Pathological examination demonstrated the presence of adenocarcinoma with no metastasis of the lymph node and chromophobe renal cell carcinoma confined to the kidney. The tumor was type 2, 25 × 30 mm pT 2, pN0, corresponding to pStage IIA. The post-operative period was uneventful, and she was discharged six days after the surgery. The patient remains well without any sign of recurrence and metastasis at 54 months after surgery.

Discussion

The correlation between renal cancer and colorectal cancer is rare [7]. Even more rare is the coexistence of patients with horseshoe kidney and colorectal cancer. A literature search revealed 27 patients who underwent surgery for colon cancer with concomitant horseshoe kidney including our patient, from 1983 to 2020 [4, 8-10]. Only in one case was confirmed the presence of renal carcinoma arising on horseshoe kidney and colorectal cancer [9]. Laparoscopy is widely used to approach colorectal cancer, but the treatment of renal tumors in patients with renal anomalies must be performed in specialized centers and require extensive experience of the surgeon [11-13]. Kidney cancer in a horseshoe kidney is about 50 cases treated with a minimally invasive approach [14-21]. Although there is no previous report describing colonic resection and polar upper resection in horseshoe kidney in patient with double primary tumor, fused kidney and the genitourinary anomaly with anus in the vaginal vestibule. In this patient, anus was divided by a thin membranous septum from the vagina.

Taking into consideration the patient's genital malformation, the inability to use a circular suture device via the anal route, the localization of the tumor (approximately 20 cm from the external anal margin) and a suspected renal mass, the obligation to make a manual anastomosis, laparotomic surgical treatment was chosen. Before the surgery we studied the vascularization of the kidney and the relationship with the left colon with CT. The patient presented an aberrant course of the left ureter that was posterior to the inferior mesenteric artery and with a more medial course than normal. This has made us even more inclined towards open surgery. The presence of the horseshoe kidney is often accompanied by aberrant renal arteries, by an abnormal course of the ureter. CT is useful to determine the position of these structures and avoid intraoperative lesions of such structures as of the organs retroperitoneal, gonadal vessels, aberrant renal veins, the kidney itself and urinary tract. In these cases, injuries to the fused kidney and urinary tract would involve much more complex repair operations. In general, properly dissecting the layer behind the prehypogastric nerve fascia, while recognizing the autonomic nerves as landmarks of the retroperitoneal organs that should be preserved, is the key procedure for safe mesocolon mobilization in both open and laparoscopic surgery [4, 22-24].

Conclusion

We suggest that adequate preoperative planning be implemented to perform procedures that adhere to the principles described above for patients with renal malformations, who must undergo surgical treatment. In the case of anorectal malformations, not previously treated surgically, the risk of performing a transanal anastomosis should always be evaluated, in order to avoid injury to the sphincter as well.

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Author Contributions

DG, LG, MTC and MT conceptualized and designed the study, acquired, and analysed data, interpreted the study results, drafted the manuscript, and critically revised the final version of the manuscript.

Ethics Approval and Consent to Participate

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Consent for Publication

Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

Competing Interests

None.

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