Oncology

A rare case of renal gastrointestinal stromal tumor

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ABSTRACT

Renal cell carcinoma (RCC) accounts for about 3% of adult cancers. RCC is the third most common cancer among the urogenital cancers, clear-cell RCC being the most common histological subtype. Gastrointestinal stromal tumors (GISTs) are the most common mesenchymal tumors of the gastrointestinal tract and are derived from interstitial Cajal cells (ICCs). The ICCs in the urinary system were first shown in 2003 in a study by Solari et al. However, there is no publication of a GIST of renal origin yet. Here we report a case of renal GIST that has not previously been published in the literature.

Introduction

Renal cell carcinoma (RCC) accounts for about 3% of adult cancers. RCC is the third most common cancer among the urogenital cancers after prostate and bladder cancers. The highest incidence is in the age range 60–70, and the male/female ratio is 3/2. Recently, the number of incidental cases has increased due to the more frequent use of advanced imaging technologies. Among the incidentally identified kidney tumors during imaging, 60% are those smaller than 4 cm in size. The gold standard in the treatment of renal masses is radical nephrectomy. In cases with renal masses, the definitive diagnosis cannot be established by imaging methods alone; pathological examination is standard for the final diagnosis and treatment of renal masses. RCC is a disease with diverse histopathological and genetic features. Clear-cell RCC is the most common histological subtype and accounts for approximately 75% of all RCCs. Papillary tumors (10%), chromophobe tumors (5%), Bellini (collecting) duct carcinoma (1%) and other subtypes are rarely seen. Gastrointestinal stromal tumors (GISTs) are the most common mesenchymal tumors of the gastrointestinal tract (GIT) and are derived from interstitial cells of Cajal (ICCs), which are responsible for intestinal motor function. GIST may originate anywhere in the GIT from the esophagus to the anus, most commonly located in the stomach (50–60%), to a lesser extent in the small intestine (25–30%), esophagus (5%), and colon-rectum (5%). Occasionally, it may be observed in mesentery, peritoneum, omentum, and membranes of internal organs such as liver, pancreas, ovaries, and uterus. The most frequent metastatic sites of GISTs are liver and abdominal membranes (peritoneum, mesentery, omentum). The ICCs in the human urinary system were first shown in 2003 in a study by Solari et al. Interstitial cells of various features and ICCs with c-kit immune reactivity have been shown to exist in small numbers in several mammalian ureteropelvic regions, similar to the pacemakers detected in the small intestine previously.

Case report

A heterogeneous solid mass lesion of approximately 9 cm in diameter with clear boundaries was observed in lower pole of the left kidney in the ultrasonography (USG) of a 58-year-old male who presented to the clinic with pain on his left side. In the subsequent computed tomography (CT), a heterogeneous mass lesion with contrast-enhanced necrotic areas and hydronephrosis were found in lower pole of the left kidney (Fig. 1).

Firstly, diagnostic left ureteroscopy (URS) was performed during the operation, and ureter and renal pelvis tissues were found normal. Then, the patient underwent radical left nephrectomy. No complication was observed in the postoperative period. The patient was drained on postoperative day 2 and discharged on the postoperative day 3 when the general condition was good and the vital findings were stable. Histopathology of the patient reported malignant mesenchymal tumor with hematoxylin-eosin (original magnification x 400) (Fig. 2). Surgical
margin negative, and pT3a N0 M0. Since a definitive histopathological diagnosis could not be established on site, samples were sent to a more qualified laboratory. Immunohistochemistry examination of specimen revealeed strongly stain for CD 34 and CD 117 (Fig. 3).

The histopathological examination at the higher-level laboratory was reported as GIST.

No residue or pathological finding that could be judged as metastatic was observed in the positron emission tomography/computed tomography (PET/CT) on 2nd postoperative month. The medical oncology clinic was consulted and the patient was started on imatinib by the oncology team. The patient currently has no clinical complaint and is routinely followed-up.

Discussion

GISTs are the most common mesenchymal tissue-derived tumors of the GIT. GISTs can be seen anywhere in the GIT from esophagus to rectum, most commonly located in the stomach and jejunum. GISTs have been found to originate from Cajal cells, which mediate the communication between the myenteric layer and the muscular layer, upon the mutation of some tyrosine kinase receptors such as c-kit and platelet-derived growth factor receptor alpha (PDGFRA). Omentum, mesenteric or retroperitoneal tumors with similar clinical and
Pathologic findings have also been reported. The stromal tumors originating from outside the GIT are described as extragastrointestinal stromal tumors (EGIST). Occasionally, EGIST cases originating from gallbladder, abdominal wall, perivesical area, pharynx, posterior mediastinum, liver, and pancreas have been reported. To the best of our knowledge, a GIST of renal origin has not been reported in the literature.

The most effective treatment for GISTs is surgery. It is thought that mitotic activity and cellularity determine disease-free and overall survival in EGISTs, as is the case in GISTs. It has been reported that the risk of early recurrence is higher in lesions of 5 cm and above in size. In this case, mass size was 9 cm, mitotic activity was high, and necrosis areas were present. In these cases, surgery is the primary choice of treatment. There are no alternative chemotherapy regimens other than c-kit inhibitor chemotherapeutics for oncologic treatment of those with overall condition unfit for surgery or in presence of recurrence and metastasis. PET/CT is important in monitoring the treatment response in GIST patients. Long-term monitoring of a case is very important for the detection of biological and clinical features of the tumor. It is also of great significance in determining the diagnosis, treatment, prognosis, and survival parameters of GIST and in planning for the future. Presently, there are no data in the literature on the pathology and clinical features of renal GIST, and there is a need for long-term studies in this topic.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.eucr.2019.100881.

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