The aim of this paper is to point out the significance of the rare urinary system anomaly such as horseshoe kidney. Tumors of the horseshoe kidney are rarely described as single cases in literature. Bilateral tumors of the horseshoe kidney can present a health and therapeutically challenge. In this paper we have analyzed characteristics of the horse shoe kidney tumors and their diagnostics. Primary means of the horseshoe kidney tumors treatment are surgical with different techniques depending on the size, presentation of the tumor and other indications. The review of the available literature is also included.

Key words: horseshoe kidney, malignant neoplasm, surgical treatment, literature review

INTRODUCTION

Horseshoe kidney is a rare anomaly which accrue in 0.25% of the population. Association of tumors with horseshoe kidney is uncommon, with fewer than 200 cases having been reported in the literature to date. In the diagnostics of this disease we use echo tomography, computerized tomography, nuclear resonance imaging and renovasography.

Vascular anomalies are diagnosed in over 70% of the cases. In 30% of the patients with vascular anomalies the vascularisation of the kidney is provided with renal artery for each of the kidneys.

Blood supply for the horseshoe kidney can come from the aorta, inferior mesenteric artery, iliac or sacral artery. Because of the diversity it is very important to perform an arteriography as essential preoperative diagnostic procedure to plan the surgical approach, which in principle should be organ-sparing.

CHARACTERISTICS OF THE TUMOR OF THE HORSESHOE KIDNEY

Tumors of the horseshoe kidney are very rare disease, but urologist must be aware of the condition when performing the diagnostics of the horseshoe kidney. The biggest series of the cases with the horseshoe kidney tumors was published by Schubert. Bilateral tumors of the horseshoe kidney are rare but have been described in literature. Also two cases of the horseshoe kidney with the localization of the tumor on the place of cortical-isthmus. Up to the year 2011, single cases have been described, usually from one to four cases have been reported. Bilateral presentation of horseshoe kidney tumors are uncommon and only two cases have ever been reported up to the present day. So far only one case has been reported of surgical management of the horseshoe kidney in our country. The treated patient is still alive and with no signs of the recurrence of metastasis spread.

Fazio and all have reported three cases of the horse shoe kidney tumor. Histopathological findings for two patient revealed renal cell carcinoma and one patient had histopathological finding of transitional cell carcinoma.

Stimac and all also reports four cases of the horseshoe kidney tumor with histopathological findings of two transitional cell carcinoma and two oncocytoma. Single cases of adenocarcinoma have been reported. In children hyperneproma is most commonly seen, followed by renal pelvis tumors and Wilms tumor with frequency up to 8 times higher than in normal kidney.

TUMOR DIAGNOSTICS

Optimum preservation of renal function after radical tumor removal requires accurate preoperative imaging. The symptomatology of the horseshoe kidney tumor is the same or similar to the tumors of kidneys with no know anomalies. Varicocele can develop in cases of the larger
tumors masses also with recurrent painless hematuria. Painful recurrent hematuria can occur as a symptom if there is presence of the blood cloths in the urine. Tumors that arise predominantly in the bridge of a horseshoe kidney can mimic the symptoms of an intraabdominal disease process. Diagnostics of the tumor consists of bimanual examination, KUB X-ray and intravenous pyelography. Additional diagnostics consist of echo and computerized tomography, nuclear resonance imaging and angiography. Since the vascular supply in fusion anomalies is extremely variable, angiography is mandatory and essential to plan the surgical approach, which in principle should be organ-sparing. Magnetic resonance imaging was most suitable to predict the tumor extent and localization, because it simultaneously gave the most comprehensive anatomical overview of the malformation.

SURGICAL TREATMENT

Surgical treatment of the horseshoe kidney is the same as the surgery of the normal kidney. A pure transperitoneal approach to cancer surgery of the horseshoe kidney is effective. Open transperitoneal heminephrectomy can be performed. In the literature radical nephrectomy with isthmus division via a transperitoneal approach is the treatment of choice.

Surgeon must be aware of the vascular anomalies and the route of the ureters as these wouldn’t get damaged during the surgery. Laparoscopic surgery of the horseshoe kidney has been limited to benign conditions, hand assistance, and retroperitoneal approaches for small tumors. Super selective arterial embolisation is used preoperative which can improve the chance of sparing surgery and can be an effective tool to facilitate organ-preserving surgery in a horseshoe kidney.

SUMMARY

The importance of the horseshoe kidney tumors is emphasized due to its rarity and the presence of malignancies in the horseshoe kidney. The limitations of the surgery depend on the size of the tumor and the renal vascularisation. Super selective arterial embolisation can improve the chance of sparing surgery and can be an effective tool to facilitate organ-preserving surgery in a horseshoe kidney.
Tumors of the horseshoe kidney

REFERENCES


