SQUAMOUS CELL CARCINOMA (SCC) IN A HORSESHOE KIDNEY: REPORT OF A RARE DISEASE

Pham Ngoc Hung[1], Nguyen Xuan My[1], Truong Van Can[1],
Bui Cong Le Kha[1], Cao Xuan Thanh[1]

ABSTRACT

A horseshoe kidney (HSK) is the most common congenital renal fusion anomaly. HSKs are more likely than normal kidneys to have associated problems of stones, ureteropelvic junction obstruction, hydronephrosis, infection, kidney cancer. However, kidney cancer is very rare in horseshoe kidneys. Due to its rarity, accurate diagnosis may be difficult. Of similar significance is the fact that problems may arise during surgery on these kidneys due to altered anatomy and aberrant blood supply. We report a case of HSK with a renal tumour in a 65-year-old man and highlight our challenges in the management of the case. To the best of our knowledge, this is the first reported case of a squamous cell carcinoma in an HSK in province of Thua Thien Hue

Key words: *squamous cell carcinoma, horseshoe kidney*

I. INTRODUCTION

Horseshoe kidney (HSK) is one of the most common congenital diseases of abnormal kidneys, with an incidence of 1 in 400 live births, (about 0.25%) of the population [5] [7] [10] [12]. Two hypotheses about embryonic horseshoe kidney have been proposed. One hypothesis is that horseshoe kidney is formed in the early stages of developing fetal organs, the lower pole of the kidneys that just formed touched each other, connecting in the midline. This theory is believed to be true in cases where the horseshoe kidneys are attached to fibrous tissue. In addition, another theory is that horseshoe kidney is caused by abnormal movement of kidney parenchyma cells, which results in the cells sticking together to form the isthmus of an HSK. Horseshoe kidney has the pathological risk more than normal kidney. The rate of urinary stones in horseshoe kidney is 20-60%, ureteropelvic junction obstruction is 35%, hydronephrosis and urinary tract infections are 27-41%. Cancer is also easy to appear on horseshoe kidneys, renal cell cancer accounts for the highest percentage of 45%, Wlims tumor accounts for 28%, transitional cell carcinoma accounts for 20%, other types of cancer are much less common [1] [9]. SCC is very rare in kidney cancer, especially on horseshoe kidneys. SCC is often associated with chronic kidney stones and chronic infection [3] [8].

In fact, when treating the horseshoe kidney is a challenge for surgeons due to abnormalities in kidney surgery and blood vessels for kidney horseshoes. We reported a case of 65-year-old male patient with squamous cell carcinoma (SCC) on the left kidney of horseshoe kidney that had surgery to remove the tumor with the left kidney. As far as we know, this is the first case reported in Thua Thien Hue.

1. Hue Central Hospital
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- Corresponding author: Pham Ngoc Hung
- Email: drhungg@gmail.com

II. CASE REPORT

A 65 years old man hospitalizes with hematuria and left loin pain. Patient has been having left loin pain for 3 months with hematuria for 20 days. The left kidney is large, left flank area has a mass of about 15x15 cm, solid density, clear limit, smooth surface, not mobile. Patients with a history of open surgery to take the right kidney stone and left kidney stones on the horseshoe kidney 3 years and 4 months ago, a history of hypertension for 10 years, smoking. After the left kidney stone surgery, the patient appeared left loin pain and hematuria, discovered a mass of extreme heterogeneous density under the left kidney, measured 3x3 cm. The patient came to us with left hip pain and hematuria.Uroscan showed that large-sized left kidneys, thick lesions, irregularly infiltrated lesions spread along the walls of the pyelonephritis, left lower kidney calyx, forming blocks of size 9x10cm causing hydronephrosis. There are many stones in the middle and lower pole the size of 2-16 mm. Function on the left kidney decreases. Large lymph nodes beside the left psoas major muscle, measured 3.8x4.8cm. After that prepared for surgery to remove the left tumor of the horseshoe kidney. We chose the left subcostal incision. The tumor lies in the lower pole of the left kidney, about 10x12 cm in size, its density is strong, the surface has many blood vessels proliferating, sticking with the mesenteric lining of the colon and lumbar mass. The isthmus of the horseshoe kidney is removed first, then we remove the abnormal blood vessels of the left part of the horseshoe kidney along the aorta, then removing the left kidney and the tumor and the small lymph nodes along the aorta. The amount of blood loss during surgery is negligible. Eventually the patient was discharged 2 weeks after surgery. When examining pathology, measuring 300g 12cm × 12cm specimens of soft, heterogeneous, follicular, and a mass of size 8x8cm, white, decayed. The tumor in the specimen is located at the lower pole of the left kidney, about 2cm from the isthmus of the kidney. Histology confirms the diagnosis of squamous cell carcinoma (SCC), multifaceted cells stacked, irregularly small and large cells, with horny area, large nucleus, sharpened, clear nucleus, human shaped share. Tumor cells disrupt the basal membrane into the connective tissue.

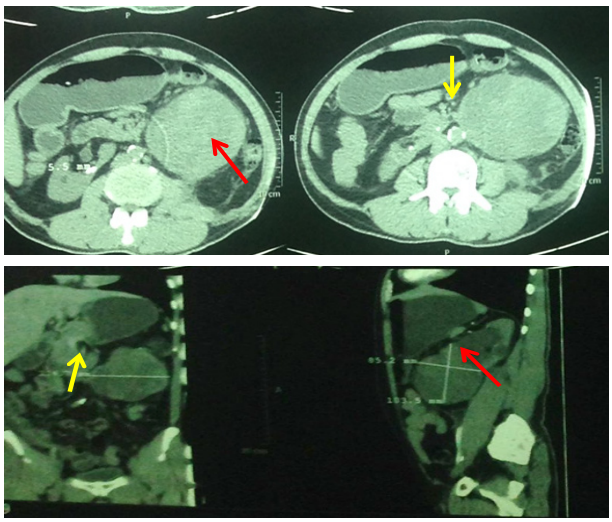

Figure 1: Tumor in the lower pole of the left kidney horseshoe (yellow arrow) and isthmus of horseshoe kidney (red arrow)

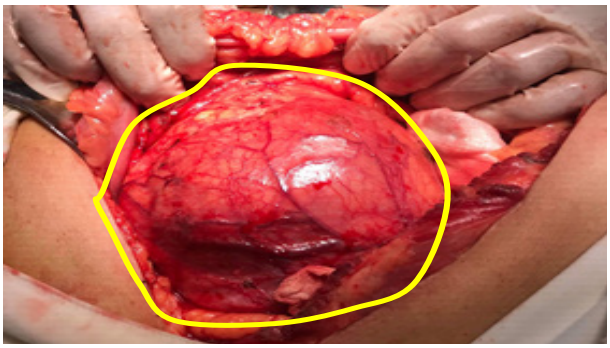

Figure 2: Left horse kidney and tumor (black arrow), isthmus of horseshoe kidney (green arrow)

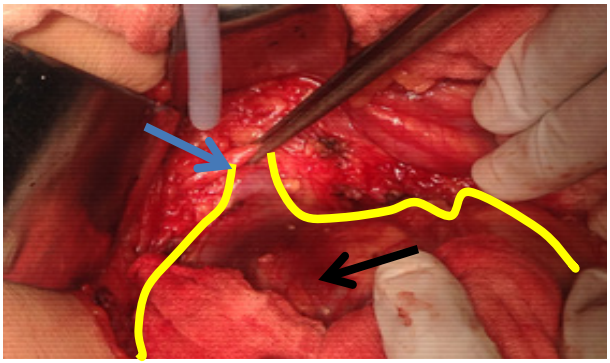

Figure 3: Left kidney with tumor of horseshoe kidney (black arrow), isthmus of horseshoe kidney (blue arrow)

Figure 4: Remove the isthmus of the horseshoe kidney

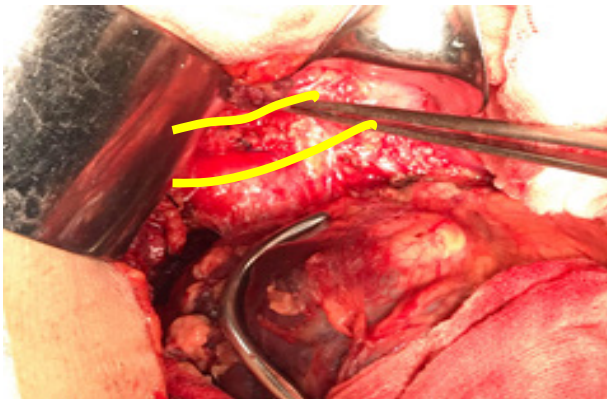

Figure 5: Remove the artery of the left kidney (the yellow line is the aorta)

Figure 6: Tumor lies at the lower pole of the horseshoe kidney, necrosis organization, invading the renal pelvis

III. DISCUSSION

Because of the embryonic and anatomical characteristics of the disease, horseshoe kidneys have a higher incidence of diseases than normal kidneys. The change in blood supply, the presence of abnormal and sticky parts of the ureters lead to other serious diseases such as hydronephrosis, kidney stones, infections, and cancers. Tumors on horseshoe kidney are uncommon, only less than 200 cases are reported in the literature [7]. The cause of cancer in horseshoe kidney is related to the teratogenic factors that appear at birth and the susceptibility of horseshoe kidney disease to cancer cells. Renal cell carcinoma is the most common type of kidney cancer in horseshoe kidney, accounting for 45% of tumors. Recent articles by Michael Kongnyuy, Michal Tkocz, Shinji Ohtake, Tijani KH [5] [6] [11] [12] also reported cases of renal carcinoma (RCC) on kidney horseshoes . This tumor mostly appears in the isthmus of horseshoe horseshoe

In 1976, Buntly presented 111 cases of cancer on horseshoe kidneys, in which renal cell carcinoma accounted for more than 50%, the rest were transitional cell carcinoma and Wilm tumor. The rate of squamous cell carcinoma (SCC) is very rare in normal kidneys and the rarer on horseshoe kidneys, only a few articles mention SCC in the kidneys with urinary stone disease, rate SCC only accounts for 1% of kidney cancer and SCC mainly occurs in the bladder and male urethra rather than appearing in the upper urinary tract [8]. Our patient is the first case reported in Thua Thien Hue. Kidney cancer is thought to be related to problems such as obesity, hypertension, smoking, chronic urinary tract infections. In our patients with a history of hypertension, smoking, especially a history of kidney stones for a long time. In 2011, Massimo Imbriaco also reported a case of 69-year-old male with SCC on horseshoe kidney related to kidney stones [3] Some studies show that SCC in the kidneys is a rare kidney cancer and involves patients with kidney stones in a long process, but people still cannot explain the appearance of kidney stones that cause inflammation. Infection, chronic irritation, leading to overproduction of the epithelium, resulting in cancer or the occurrence of kidney cancer leading to the formation of kidney stones [8]. In our patients, there was a history of kidney stones twice for 3 years and 4 months, the second time for kidney stones removal was 4 months ago related to left kidney, nince then the patient had a lot of left

loin pain, hematuria, and re-examined at in found, a left kidney tumor on the horseshoe kidney. This suggests that SCC kidney tumors in the patient's left kidney were associated with a history of kidney stone disease as mentioned in the literature. After the removal of kidney stones left an extremely heterogeneous mass under the kidneys appeared that made clinicians think of a fluid accumulation because SCC images were difficult to distinguish from an infiltrate or a renal cyst, due to it is necessary to consider kidney cancer or SCC before a patient with kidney stones with an image of an infiltrate. And it is noticeable that when kidney stone surgery is performed, it is necessary to carefully examine the renal pleural mucosa to detect suspicious lesions to get the organ to do pathological surgery, to help better disease screening.

Vascular abnormalities on the horseshoe kidney are what make the surgeons care and study before surgery on the horseshoe kidney to avoid the occurrence of complications during the surgery, especially if the blood vessels are shown well, when bleeding occurs, we can damage blood vessels of kidney horseshoe. The blood vessels of the horseshoe kidney has many variations. According to Milan Petrovi Tae-Hoon Kim [7] [13] in 30% of cases including an artery trunk for each kidney, but it may be atypical, the renal arteries may have 2 branches or 3 branches in one or both horseshoe kidney. The isthmus of horseshoe kidney and the adjacent parenchyma may be provided by a branch from each major renal artery, either from the aorta or from the superior mesenteric artery. Therefore, current recommendations should be taken prior to surgery to accurately determine the blood vessels to effectively plan and prevent serious complications in surgery [5] [13]. But due to the economic problem and the image of CT scan, we showed the blood vessels of the kidneys, which partly helps us to prepare for the surgery plan. The blood vessels of the left horseshoe kidney are from a large artery and two small branches originating from the aorta, and the kidney tumor has a small branch that comes from the aorta. Compared to the reported cases, the blood vessels that provide horseshoe kidneys on our patients are quite complex, combining the difficulty of this case with a history of kidney surgery 4 months ago, and there have been signs of invasive the left psoas major muscle. The prognosis for patients is not good, although we have completely operated the whole tumor with left kidney but the tumor has progressed rapidly, within 2 months the tumor has increased in size from 3 cm to 12 cm and the tumor has invaded the left psoas major muscle with the presence of lymph nodes.

IV. CONCLUSION

Cancer on horseshoe kidneys is rare, especially squamous cell carcinoma. This is a condition related to kidney stones that have been present for a long time. Successful treatment requires preparation and clear planning before surgery.

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