CASE REPORT

Off Clamping Laparoscopic Resection of An Extreme Rare Renal Mesenchymal Tumor: An Angiomyolipoma of Renal Capsule

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Renal mesenchymal tumors are described as neoplasms with vascular, fibrous, and adipose tissues. The renal lipoma is an extremely rare renal mesenchymal tumor, typically originating from renal capsule and it is usually presented as well circumscribed homogenous fat containing mass. Angiomyolipoma (AML) is the most common benign mesenchymal renal tumor which is composed of mature epithelioid cells. The renal AML usually presented as exophytic, non-infiltrative, and fat contain tumor. The well differentiated renal retroperitoneal liposarcoma and lipoma seem to be misdiagnosed by exophytic renal angiomyolipoma but the renal AML usually arises from renal parenchyma with characteristic images. A 37-year-old woman came to our clinic with rapid growth renal mass and pain. The spiral abdominopelvic computed tomography scan (CT-scan) showed well-circumscribed hypoheterodense fat-containing mass near to middle pole of the right kidney with minimal fat stranding without neovascularity and cortical defect. The Patient underwent off-clamping laparoscopic resection of renal mass with pre-operative impression: liposarcoma versus lipoma of the kidney. The cross-section of the surgical specimen revealed irregular lobulated fatty tissue with hemorrhagic streaks. Definite diagnosis was made by immunohistochemistry study. Spindle cells and epithelioid cells are diffusely and strongly positive for α-smooth muscle actin. The perivascular cells and epithelioid cells are positive for HMB-45 and Melanin. The immunostaining pattern was compatible with angiomyolipoma that originated from renal capsule. In our experience, a rapid growing mass that is accompanied by pain draws the attention to malignant process. The renal AML rarely arises from renal capsule without characteristic images so having high doubt may lead to proper pre-operative diagnosis.

Keywords: laparoscopy; off Clamping; capsular; angiomyolipoma

INTRODUCTION

Renal mesenchymal tumors are described as neoplasms with vascular, fibrous and adipose tissues. According to clinical and pathological features, renal mesenchymal tumors include benign and malignant tumors such as leiomyoma, leiomyosarcoma, lipoma, liposarcoma, and angiomyolipoma (AML)[(1)]. Renal lipoma is an

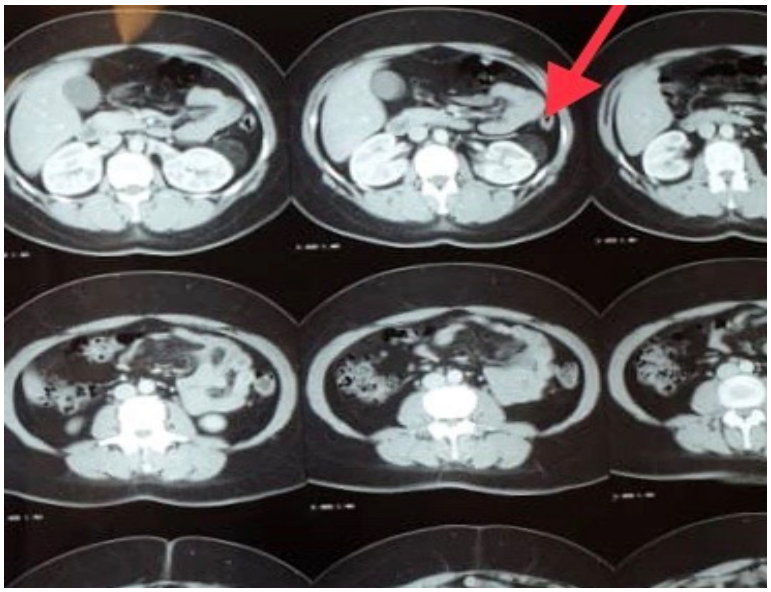

Figure1. Pre-operation abdomino-pelvic CT-Scan

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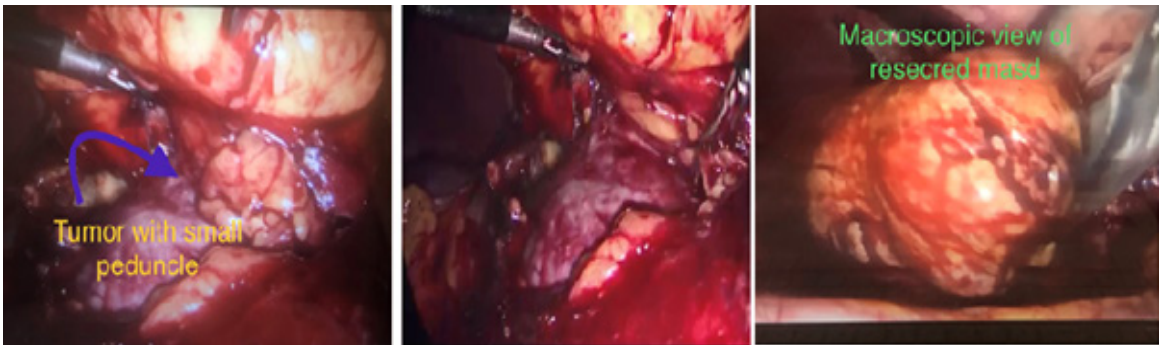

Figure 2: A: Macroscopic appearance of the renal capsular tumor. The tumor was attached to the renal capsule by a small peduncle. **B:** The bed of tumor without any obvious bleeding. **C:** Macroscopic view of the resected mass.

extremely rare renal mesenchymal tumor, typically originating from the renal capsule and it is usually presented as well-circumscribed homogenous fat-containing mass[2,3]. Angiomyolipoma (AML) is the most common benign mesenchymal renal tumor which is composed of mature epithelioid cells and originates from renal cortex. The renal AML usually presents as exophytic, non-infiltrative, and fat-containing tumor. It is composed of variable amounts of fat, smooth muscle, and abnormal blood vessels. The AML is usually asymptomatic and diagnosed incidentally but the most common symptoms are flank pain and hematuria[4]. The well differentiated renal retroperitoneal liposarcoma and lipoma seem to be misdiagnosed by exophytic renal angiomyolipoma but the renal AML usually arises from renal parenchyma with characteristic images[5]. We present an extreme rare capsular renal tumor with unusual clinical presentation.

CASE PRESENTATION

A 37-year-old woman came to our clinic with a chief compliant of non-colic right flank pain that underwent abdominopelvic ultrasonography and abdominopelvic computed tomography scan (CT-scan). Compared to previous imaging, there was a significant increase in size. Recent CT-scan showed well-circumscribed hypoheterodense fat-containing mass at the middle pole of the right kidney with minimal fat stranding without neovascularity and cortical defect (**Figure 1**). The Patient was scheduled for laparoscopic resection of renal tumor with an impression of renal lipoma or a well-differentiated renal liposarcoma.

Thirty minutes before surgery one gram cephazolin was intravenously injected. After general anesthesia, patient's position was changed to left lateral decubitus, laparoscopic ports (3,3,3,10 mm (umbilicus port)) were inserted in a triangular shape and ascending colon was medialized. The perinephric fat was dissected up to Gerota's fascia and renal hilum vessels were dissected. The tumor was attached to renal capsule with a very small peduncle and it was extended into the perirenal adipose tissue (**Figure 2A**). We used bipolar for clamping the pedicle then the tumor was resected with a safety margin without main renal vessels clamping and finally the bed of tumor was free of blood (**Figure 2B**). The frozen section was sent to pathologist and it was confirmed that the margin of resection was free of

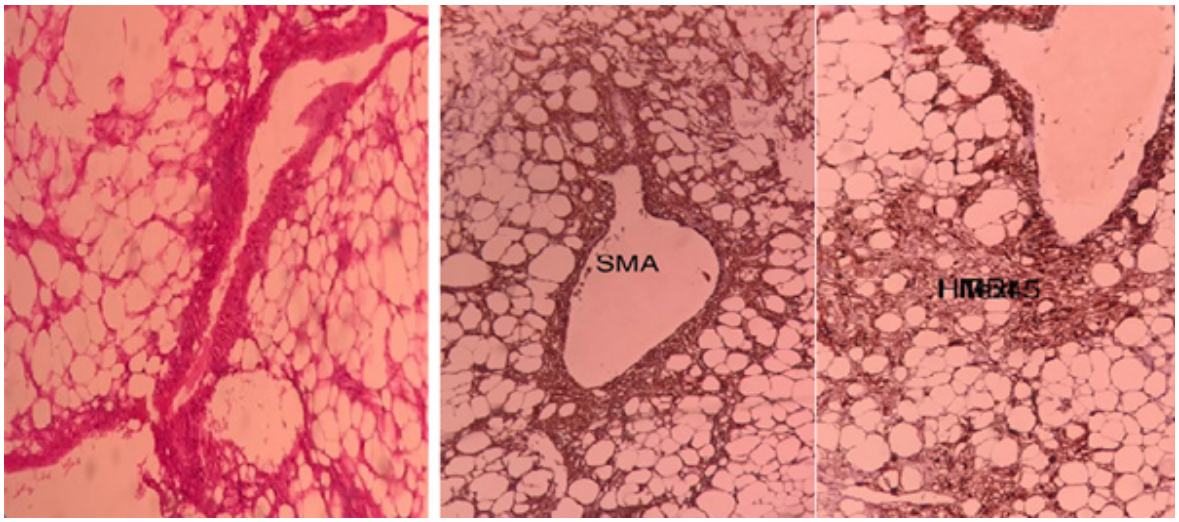

Figure 3A: Tumor showing adipocytes, proliferating spindle cells, and thickened vessels (40X). **3B:** The spindle cells and epithelioid cells are diffusely and strongly positive for α-smooth muscle actin (×10). The perivascular cells and epithelioid cells are positive for HMB-45 (×10).

tumor. The cross-section of the surgical specimen revealed irregular lobulated fatty tissue with hemorrhagic streaks measuring 5.5*5*3 cm (**Figure 2C**). Cut sections showed solid homogenous fatty tissue with thin fibrous strands. Histological examination revealed mature adipose tissue and large thick-walled vessels surrounded by few layers of epithelioid cells with mildly pleomorphic nuclei, clear to eosinophilic cytoplasm without mitotic activity, atypia, or necrosis. The permanent diagnosis was highly suggestive of angiomyolipoma. Definite diagnosis was made by immunohistochemistry study. Spindle cells and epithelioid cells are diffusely and strongly positive for α-smooth muscle actin (Figure 3A). The perivascular cells and epithelioid cells are positive for HMB-45 and Melanin (**Figure 3B**). The immunostaining pattern was compatible with angiomyolipoma.

DISCUSSION

Renal mesenchymal tumors include benign and malignant tumors such as leiomyoma, leiomyosarcoma, lipoma, liposarcoma, and angiomyolipoma[6]. The tumor originates from renal capsule or exophytic fat-containing renal tumor conflict the pre-operation diagnosis with retroperitoneal tumor which originates from tissues near kidney[5]. The renal mesenchymal tumors which arise from renal capsule include leiomyoma, lymphangioma, solitary fibrous tumor, leiomyosarcoma, angiosarcoma, and renal lipoma and are extremely rare renal tumors. The well-differentiated renal liposarcoma cannot be distinguished from renal lipoma and fat-containing benign renal lesions[7]. The AML is the most common mesenchymal renal tumor and it is usually sporadic with middle-aged woman predominance [8]. AML in spiral abdomino-pelvic CT-scan usually appears as heterogeneous mass with various proportions of fat and soft tissue angiogenesis[9]. The exophytic renal AML cannot be easily differentiated from renal lipoma or liposarcoma however the presence of neovascularity and renal cortical defect are infavor of renal AML so meticulous evaluation of pre-operative imaging is recommended[8]. In a review of the literature four cases of AML arising from renal capsule were reported and in their experience, there were not possible to make a definitive diagnosis before histopathologic evaluation[1,5,10]. Three of them underwent open radical nephrectomy and only one underwent laparoscopy surgery in which partial nephrectomy was performed, we suggest macroscopic evaluation of mass and frozen pathology evaluation during the surgery which sometimes prevents from a radical approach in benign renal lesions with unusual pre-operative clinical and radiological presentations.

In this study there was a rapid growing mass that was accompanied by pain which draws the attention to malignant process, a well-circumscribed fatty mass without visible renal cortical vessel and parenchymal defect that we cloud not clearly differentiate between renal lipoma and liposarcoma, so the definite diagnosis was not possible based on preoperative imaging. The prolonged ischemic times during partial nephrectomy is associated with increased risk of acute kidney injury, decreasing early post-operative GFR, and increasing chance of stage 4 chronic kidney disease[11]. The Off clamping partial nephrectomy prevents ischemia-reperfusion injury and leads to saving functional outcomes without adverse effects on operation time, hospital stay, and complication rates[12]. In our center, we prefer off clamping laparoscopic surgery in cases with small or exophytic renal tumor that is determined by tumor characteristic at the time of surgery. In this case, the tumor had a small peduncle that was suitable for off-clamping resection of tumor without resection of renal parenchyma.

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