Laparoscopic Treatment of an Adrenal Schwannoma Embedded in Liver: A Case Report
Karaciğere Gümüllü Bir Adrenal Şwannomun Laparoskopik Tedavisi: Olgu Sunumu

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Abstract
We report a case of adrenal schwannoma, which is an extremely rare neoplasm. The patient was a 49-year-old woman, with abdominal discomfort for three months, who had been referred to our unit after detection of a right adrenal mass on abdominal magnetic resonance imaging. Although the mass was embedded in the liver, laparoscopic adrenalectomy was successfully accomplished. The definitive diagnosis was made only after immunohistochemical studies, which revealed a benign schwannoma. Complete laparoscopic excision is the treatment of choice whenever feasible. Turk Jem 2010; 14: 20-2

Key words: Laparoscopic adrenalectomy, adrenal gland, schwannoma

Özet

Anahtar kelimeler: Laparoskopik adrenalektomi, adrenal bez, schwannoma

Introduction
Schwannoma is a benign nerve sheath tumor originating from the normal peripheral nerve, which is composed of neoplastic cells demonstrating features of constituent Schwann cells of the normal peripheral nerve sheath. Schwannomas are found most commonly in the cranial and peripheral nerves, and occurrence in the retroperitoneum is rare (1). Schwannomas make up approximately 1%-5% of all retroperitoneal masses (2). Herein, we report our experience with the surgical treatment of an adrenal schwannoma case by a minimally invasive technique.

Case Report
A 49-year-old woman with a 3-month history of abdominal discomfort, had a right suprarenal mass found on abdominal imaging studies, and was referred to our department for surgical treatment of the mass, which was thought to be arising from the right adrenal gland. She was on antihypertensive medications due to primary hypertension, and had undergone cholecystectomy because of cholelithiasis fifteen years ago. Physical examination was unremarkable. Laboratory tests were within the normal range and studies revealed no evidence of hormonal hypersecretion. A magnetic resonance imaging (MRI)
of the abdomen and pelvis was performed. Coronal contrast-enhanced T1-weighted image demonstrated a spherical mass measuring 45x36 mm, arising from the right adrenal gland, with homogenous enhancement and a few unenhanced, small hypointense areas resembling cystic degenerations. The lesion was in close relationship with the liver cranially and laterally (Figure 1).

The patient underwent transperitoneal laparoscopic excision of the mass. The patient was placed in the right lateral decubitus position. Initial access to the peritoneal cavity was obtained by open insertion of a Hasson cannula at the right anterior axillary line, approximately two finger breadths below the costal margin. After performing pneumoperitoneum, three additional ports were inserted in the right subcostal and flank region by spacing 5-cm apart. Despite the tumor’s close proximity to the inferior side of the liver and the existence of intraabdominal adhesions due to previous laparotomy for cholecystectomy, complete resection of the mass with the right adrenal gland could be successfully performed by meticulous dissection. Since the main adrenal vein was quite short and thick, it was ligated with an endoscopic vascular linear stapler (Figure 2). Operative time was 2 hours.

The resected specimen consisted of a 44-gram adrenal gland with a solitary tumor measuring 46x42x35 mm in dimensions (Figure 3). Histopathological examination revealed a neoplastic lesion with a pattern of elongated spindle cells arranged in fascicles in areas of moderate to high cellularity with little stromal matrix (Antoni A pattern) and also hypocellular areas with a loose meshwork of cells accompanied by focal myxoid changes (Antoni B pattern) (Figure 4). No ganglion cells were observed. Immunohistochemical study showed diffuse expression of S-100 protein and the tumor had a low proliferation index (Ki-67: 1%). Based on these findings, the tumor was diagnosed as a schwannoma.

The clinical course of the patient was uneventful and she was discharged on the second postoperative day.

Figure 1. The tumoral mass originating from the right adrenal gland on MRI

Figure 2. Large and short main adrenal vein of the gland before its ligation with endoscopic vascular stapler

Figure 3. Resected specimen: adrenal gland with a solitary tumor

Figure 4. Panoramic view of encapsulated neoplastic lesion (the upper part of the left side) with the normal adrenal cortical tissue (lower part of the left side). Lesion composed of spindle-shaped tumor cells arranged in areas of moderate to high cellularity with little matrix and small area with a loose meshwork of cells and focal myxoid changes (H&E, original magnification)
Discussion

Schwannomas were first described by Verocay in 1908, with further sub-classification into 2 distinct histologic patterns performed by Antoni in 1920 (3). Schwannomas are usually benign tumors that arise from neural sheath Schwann cells. They originate mostly from the cranial nerves or nerves of the upper extremities (4). A schwannoma arising primarily from the adrenal gland is a very rare entity, about which only several cases had been reported in the world literature (5-10).

Patients with a retroperitoneal schwannoma are usually asymptomatic, although some present with nonspecific abdominal or back pain. Laboratory studies are typically unremarkable. Although retroperitoneal masses are usually detected preoperatively via cross-sectional imaging studies, preoperative diagnosis of an adrenal schwannoma is difficult because none of these modalities have shown any pathognomonic features unique to this tumor (11). In addition, due to heterogeneity and degeneration in some retroperitoneal schwannomas, they mimic pheochromocytoma and malignant tumors on MRI findings (4). However, the diagnosis of a retroperitoneal mass will remain unclear until surgical intervention, and histomorphological examination can provide the definitive diagnosis (12). Thus, surgical resection is required to make the differential diagnoses of retroperitoneal or adrenal masses and to confirm benignity. Since primary schwannomas of the adrenal gland are very rare, it is quite difficult to discuss about the gross appearance of the adrenal schwannomas. The surgical dissection of the adrenal schwannomas can be challenging, since the lesion may be buried inside the liver parenchyma, if it is large and superiorly located, as was in our case.

The ideal treatment of retroperitoneal nerve sheath tumors is complete excision (13). However, some controversies exist over the necessity of negative soft tissue margins especially when adjacent tissue or viscera need to be sacrificed (13). We preferred complete excision of the mass together with the adrenal gland, because the probability of malignancy could neither be excluded preoperatively, nor intraoperatively. With the advent of minimally invasive methods, in most centers laparoscopic adrenalectomy has replaced open adrenalectomy as the procedure of choice for patients who have benign adrenal tumors (14). Laparoscopic adrenalectomy has been compared with open adrenalectomy in retrospective studies by several groups (14). These studies have consistently shown that although laparoscopic adrenalectomy is associated with somewhat longer operative times, it results in decreased pain, a more rapid return to a normal diet, a shorter hospitalization, and a quicker resuming of normal activities than open adrenalectomy (14). Complication rates have also been lower with the laparoscopic approach, including a reduced rate of blood transfusion (14). In the world literature, there are only thirteen cases of retroperitoneal schwannomas reported (PubMed search), which had been removed by laparoscopic approach, while there are numerous adrenalectomy cases performed laparoscopically for various pathologies. Three of the 13 schwannomas had originated from a suprarenal location (4-16). One of them was reported by Inokuchi et al., where a 35-year-old woman who had bilateral adrenal masses had undergone laparoscopic adrenalectomy under the suspicion of a malignant tumor, however, pathologic findings indicated a retroperitoneal ancient schwannoma (4). Ohigashi removed a benign schwannoma, arising from the right adrenal, with the adrenal gland by laparoscopic approach. In addition, he stated that if a malignant tumor had been suspected, laparotomy should have been considered because of tumor implantation at the abdominal wall (15). Morrison et al. resected a suprarenal mass of 7 centimeter in diameter laparoscopically, which final pathology revealed a benign schwannoma (16). Our case is the seventeenth reported adrenal schwannoma, of which only 6 had been resected laparoscopically (17-21).

Conclusion

Although rare, schwannoma should be considered in the differential diagnosis of masses of the adrenal gland. The definitive diagnosis cannot be made until histopathologic examination. Despite the benign pathology of these lesions, surgery is the treatment of choice. The minimally-invasive approach can be performed safely for removal of most adrenal neoplasms.

References