
CASE REPORT

Teratoma in the Region of an Adrenal Gland in a 77-year-old Man

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ABSTRACT

Teratoma in the region of an adrenal gland is an uncommon retroperitoneal tumour. Only a few cases — mostly in young patients — have been reported. This case report describes such a tumour in a 77-year-old man who presented with acute urine retention. Abdominal X-ray and computed tomography showed that the tumour displaced the left kidney downwards. The mass, which contained fat and had a stranding and calcified component, was excised. Intraoperatively, a large retroperitoneal lipomatous tumour encasing the left kidney but sparing other viscera was found. The lipomatous tumour was isolated within a well-defined pseudocapsule that covered most of the tumour, encased the left kidney, and was separate from the pancreas and spleen. The adrenal gland was present at the periphery of the tumour. To our knowledge, this is the first reported case of teratoma in the region of an adrenal gland occurring in an elderly person.

Key Words: Adrenal glands; Retroperitoneal space; Teratoma; Tomography, X-ray computed

INTRODUCTION

Mature teratoma is a primary germ-cell neoplasm that is composed of well-differentiated tissue derived from the embryonic germ cell layers.¹ Mature teratoma in the region of an adrenal gland is a rare entity that can mimic other types of lipomatous adrenal tumour. Only a few cases have been reported in the literature.²⁻⁴ Most cases are asymptomatic and present with incidental findings at an early age. Conventional imaging techniques cannot exactly distinguish the various types of lipomatous tumour. In this case report, we describe the incidental finding of teratoma occurring in the region of an adrenal gland in an elderly man.

CASE REPORT

A 77-year-old man with a history of cerebrovascular disease, hypertension, and rheumatoid arthritis, presented to the United Christian Hospital in November 2003 with acute urine retention. He had no abdominal

pain or any other urinary symptoms. Physical examination was unremarkable except for an enlarged prostate. Renal function test results were normal, and urine culture yielded negative results. The abdominal X-ray showed a few roundish radio-opacities over the left renal area, which suggested the presence of renal stones (Figure 1). Ultrasonography was thus performed and revealed a large hyperechoic tumour of 11 cm in diameter with irregular internal hypoechoic areas and calcifications over the upper-left quadrant of the abdomen (Figure 2). The tumour also displaced the left kidney inferiorly. Further investigation with computed tomography (CT) showed a large space-occupying lesion that measured about 17 x 14 x 16 cm at the left side of the retroperitoneum (Figure 3).

The mass was mainly fat-containing and had a stranding and calcified component. Because it displaced the left kidney downwards, the left adrenal gland could not be visualised clearly. Intravenous contrast agent was administered, but no particular enhancement pattern for the tumour was observed. The provisional diagnosis at this stage was lipomatous tumour with retroperitoneal origin.

In view of the possibility of the malignant nature of a tumour such as liposarcoma, the tumour was excised.

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Figure 1. X-ray of the kidney, ureter, and bladder, showing roundish radio-opacities around the left renal area, suggestive of renal stones.



Figure 2. Ultrasonogram of the abdomen showing a large hyperechoic tumour with irregular internal hypoechoic areas and calcifications over the upper-left quadrant of the abdomen.

Intraoperatively, a large retroperitoneal lipomatous tumour encasing the left kidney but sparing other viscera was found. The lipomatous tumour was isolated within a well-defined pseudocapsule that covered most of the tumour, encased the left kidney, and was separate from the pancreas and spleen. The renal pedicle was ligated and divided, and the excision appeared complete (Figure 4).

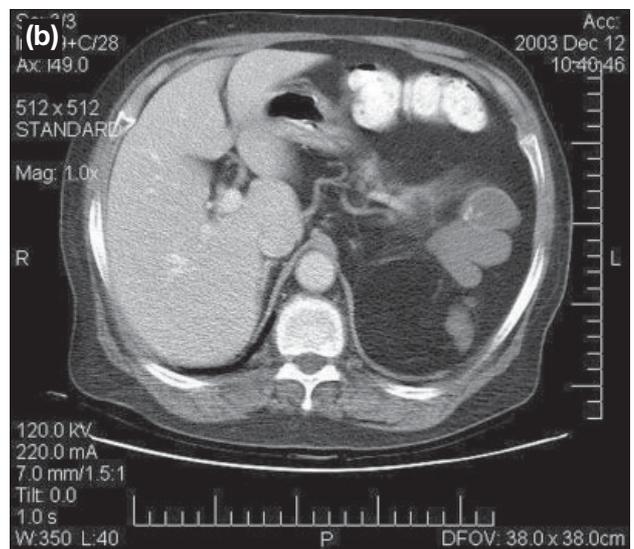
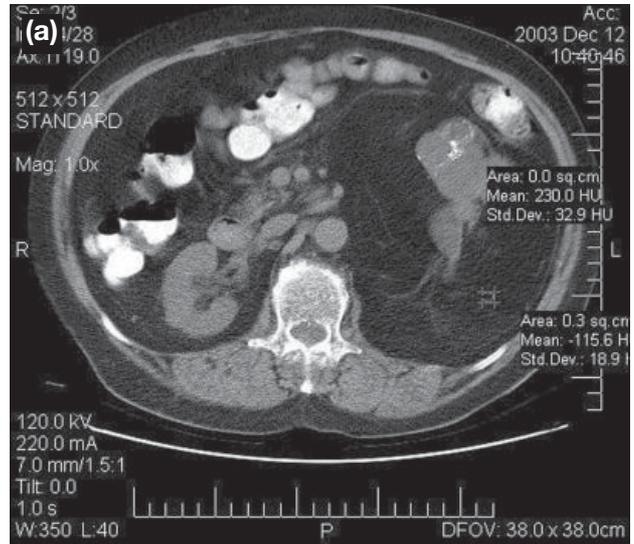


Figure 3. (a) Precontrast and (b) postcontrast computed tomograms showing a fat-containing space-occupying lesion with a stranding and a calcified component at the left side of the retroperitoneum.

Histological examination revealed a mature teratoma with a prominent lipomatous component. Mature adipose tissue, smooth muscle bundles, and glands with mucin production were also noted. Dystrophic calcification and ossification were seen focally. The adrenal gland was present at the periphery of the tumour. Therefore, the final diagnosis was teratoma in the region of the adrenal gland. Because there was no immature element or malignant transformation, no chemotherapy or radiotherapy was given. The patient's condition was stable after the operation and he was discharged uneventfully.

DISCUSSION

Teratomas are congenital tumours that contain tissue from the germ layers — that is, the ectoderm, mesoderm,

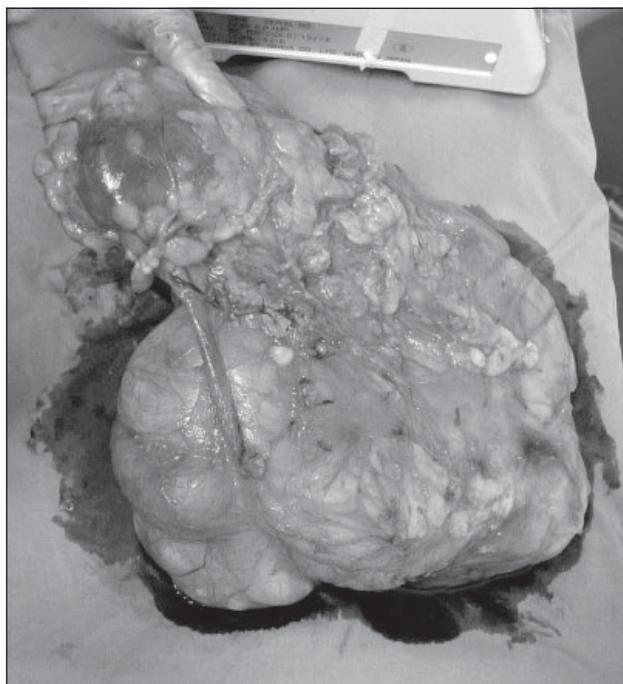


Figure 4. The tumour consisted of the kidney, a lipomatous component, and calcification; the adrenal gland was deep-seated inside the tumour.

or endoderm. These tumours are thought to arise from pluripotent embryonal cells.¹ Teratomas can occur in almost any region of the body and in any organ, but they are most commonly found in the paraxial and mid-line locations.⁵ The most common sites of teratomatous growth are the ovaries and the testes. Less often, they are found in the sacrococcygeal region, head region near the pineal body, neck region near the thyroid, anterior mediastinum, and retroperitoneum. Teratomas usually present during childhood. Gonadal teratomas are most often seen in postpubertal patients, whereas extragonadal teratomas usually occur during infancy and early childhood. Retroperitoneal teratomas are more common during childhood than at any other time, and they are a rare entity in adults.⁶⁻⁸ Malignant change is also more commonly found in adults than in children (26% vs 10%).^{6,7,9} Retroperitoneal teratomas are commonly found at the left side of the body near the upper pole of the kidney, and they are usually asymptomatic or present with non-specific complaints.

Abdominal radiography may demonstrate a mass with fat with either calcification or bone. Similarly, ultrasonography shows uncomplicated fluid and calcification. Fat is not reliably distinguished from other soft-tissue components by ultrasonography. The most characteristic radiographic findings of mature retroperitoneal teratoma are heterogeneous mass containing a

well-circumscribed fluid component of variable volume, adipose tissue or sebum in the form of a fat-fluid level, and calcification. These findings are better demonstrated by CT than ultrasonography.¹⁰ Magnetic resonance imaging (MRI) may demonstrate the characteristic signal of fat (hyperintensity in T1-weighted images) and water (hypointensity in T1-weighted images and hyperintensity in T2-weighted images). In addition, MRI may help delineate the relationship between the tumour and adjacent structures by means of sagittal and coronal images; this relationship is not well demonstrated by CT.

Reports of teratomas in the region of the adrenal gland are rare in the literature.³ They have been seen in adolescents or young adults who presented with non-specific back pain, with the finding of lipomatous lesions on radiological examination.^{4,11} Histological examinations have revealed prominent lipomatous content and bone or calcification.^{2,3} Lipomatous tumours of the adrenal gland are also not commonly seen. They include myelolipoma, lipoma, teratoma, angiomyolipoma, and liposarcoma,^{12,13} and patients often present with non-specific complaints or are asymptomatic.^{14,15} Myelolipoma is the most commonly found fatty tumour of the adrenal gland and consists of various amounts of fatty material.

A review of CT scans has shown the presence of fat in all cases, with the presence of calcification in only about a quarter of cases; hence, calcification in myelolipomas is not as common as in teratomas.² In contrast to myelolipoma, adrenal lipomas are very rare. Only a few cases have been reported. The presence of calcification in adrenal lipomas is also an uncommon finding. Angiomyolipoma comprises adipose tissue, smooth muscle cells, and blood vessels. The CT images demonstrate a mainly fatty component and tiny soft-tissue densities interspersed within the tumour. Calcifications are also very rare in angiomyolipomas. Liposarcoma is the most common adult form of soft-tissue sarcoma. It may present on CT imaging with cystic, muscle, or fat density.

The presence of calcifications is more common in teratomas than in other lipomatous tumours. In our case, the presence of both fat and calcifications raised the suspicion of teratoma. The final diagnosis, however, still depends on the findings of the pathological examination. The elderly patient in our case had an incidental finding of retroperitoneal lipomatous tumour in which

the possibility of malignancy, such as liposarcoma, could not be excluded. Surgical resection was thus performed and we found a teratoma in the region of the adrenal gland.

In conclusion, the elderly man in this case had an incidental finding of teratoma in the region of the left adrenal gland. To our knowledge, only a few cases of teratoma have been reported to occur in the adrenal region. All of them have been found in young people. This is the first described case of this pathological condition in an elderly patient. We believe that with the increasing use of various imaging modalities and improving modern imaging techniques, these unsuspected incidentally found tumours may become more prevalent than before. In particular, teratoma should be considered in the differential diagnosis of adrenal lipomatous tumours — not only in children and young adults, but also in elderly patients.

REFERENCES

1. Ashley DJ. Origin of teratomas. *Cancer* 1973;32:390-394.
2. Lam KY, Lo CY. Adrenal lipomatous tumours: a 30 year clinico-pathological experience at a single institution. *J Clin Pathol* 2001;54:707-712.
3. Lam KY, Lo CY. Teratoma in the region of adrenal gland: A unique entity masquerading as lipomatous adrenal tumor. *Surgery* 1999;126:90-94.
4. Khong PL, Lam KY, Ooi CG, Liu MJ, Metreweli C. Mature teratomas of the adrenal gland: imaging features. *Abdom Imaging* 2002;27:347-350.
5. Azizkhan RG, Caty MG. Teratomas in childhood. *Curr Opin Pediatr* 1996;8:287-292.
6. Bruneton JN, Diard F, Drouillard JP, Sabatier JC, Tavernier JF. Primary retroperitoneal teratoma in adults: presentation of two cases and review of the literature. *Radiology* 1980;134:613-616.
7. Tezel E, Sare M, Edali N, Oguz M, Uluoglu O, Gokok NH. Retroperitoneal malignant teratoma. A case report. *Mater Med Pol* 1995;27:123-125.
8. Goyal M, Sharma R, Sawhney P, Sharma MC, Berry M. The unusual imaging appearance of primary retroperitoneal teratoma: report of a case. *Surg Today* 1997;27:282-284.
9. Polsky MS, Shackelford GD, Weber CH Jr, Ball TP Jr. Retroperitoneal teratoma. *Urology* 1976;8:618-621.
10. Davidson AJ, Hartman DS, Goldman SM. Mature teratoma of the retroperitoneum: radiologic, pathologic, and clinical correlation. *Radiology* 1989;172:421-425.
11. Bedri S, Erfanian K, Schwaizberg S, Tischler AS. Mature cystic teratoma involving adrenal gland. *Endocr Pathol* 2002;13:58-64.
12. Kenney PJ, Wagner BJ, Rao P, Heffess CS. Myelolipoma: CT and pathologic features. *Radiology* 1998;208:87-95.
13. Behan M, Martin EC, Muecke EC, Kazam E. Myelolipoma of the adrenal: two cases with ultrasound and CT findings. *AJR Am J Roentgenol* 1977;129:993-996.
14. Lam KY, Chan AC, Ng IO. Giant adrenal lipoma: a report of two cases and review of literature. *Scand J Urol Nephrol* 1997;31:89-90.
15. Buttner A. Lipoma of the adrenal gland. *Pathol Int* 1999;49:1001-1009.