

Retroperitoneal ganglioneuroma

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Section: Uroradiology & genital male imaging

Area of Interest: Abdomen

Procedure: Diagnostic procedure

Imaging Technique: CT

Imaging Technique: MR

Special Focus: Neoplasia Case Type: Clinical Cases

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Patient: 59 years, male

Clinical History:

59-year-old male patient had a CT scan for lower quadrant pain. A mass was incidentally found in the retroperitoneum. MRI was performed later to further characterize the mass.

Imaging Findings:

Contrast-enhanced CT scan showed a well-defined smooth hypodense mass in the right retroperitoneum with few internal thin curvilinear calcifications. On MRI, the mass is T1 hypointense and T2 hyperintense. Post-contrast mass demonstrated internal gradual enhancement with enhancing curvilinear bands.

Discussion:

Ganglioneuromas are benign rare tumours composed of mature Schwann cells, ganglion cells and nerve fibres. They usually arise from sympathetic ganglia and can occur anywhere along the paravertebral sympathetic plexus and occasionally from adrenal medulla. The posterior mediastinum (41.5%) and retroperitoneum (37.5%) are the two most common locations, followed by cervical region (8%). This tumour is commonly seen in the 20-40 year old age group with no sex predilection [1].

Ganglioneuromas are often discovered incidentally as they grow very slowly and are usually endocrinologically inactive [2].

On imaging, ganglioneuromas appear as well circumscribed oval, crescentic, or lobulated masses which may surround a vessel without narrowing the lumen. On non-contrast CT, the tumour is homogeneous with attenuation less than the muscle. Calcifications can be present in 20% of cases. With intravenous contrast enhancement, some degree of heterogeneity may be seen in larger tumours, but attenuation remains less than muscle. At MR imaging, the ganglioneuromas are homogeneous with relatively low signal intensity on T1-weighted images. The T2 intensity of tumour depends on the proportion of myxoid stroma to cellular components and the amount of collagen fibres in the tumour. Tumours with intermediate to high signal intensity have very little myxoid stroma with predominant cellular and fibrous component, whereas the tumours with marked high signal intensity on T2-weighted images have a large amount of myxoid stroma. One of the MR imaging characteristics of ganglioneuroma is curvilinear bands of low signal intensity on T2-weighted images which represent interlacing bundles of longitudinal and transverse Schwann cells or collagen fibres. With contrast, ganglioneuromas demonstrate mild gradual increasing enhancement [2, 3].

The prognosis is excellent and recurrence is rare after surgical excision [3].

In a patient with circumscribed retroperitoneal mass, ganglioneuroma should be considered in the differential

diagnosis.

Differential Diagnosis List: Retroperitoneal ganglioneuroma, Retroperitoneal lymphangioma, Necrotic lymph node, Exophytic complex renal cyst

Final Diagnosis: Retroperitoneal ganglioneuroma

References:

Rha ES, Byun JY, Jung SE, et al (2003) Neurogenic tumors in the abdomen: tumor types and imaging characteristics. Radiographics 23(1):29-43 (PMID: [12533638](#))

Radin R, David CL, Goldfarb H, et al. (1997) Adrenal and extra-adrenal retroperitoneal ganglioneuroma: imaging findings in 13 adults. Radiology 202(3):703-707 (PMID: [9051020](#))

Shaaban AM, Rezvani M, Tubay M, et al. (2016) Fat-containing Retroperitoneal Lesions: Imaging Characteristics, Localization, and Differential Diagnosis. Radiographics 36(3):710-734 (PMID: [27163589](#))

Figure 1

a



Description: Axial CT scan shows a well-defined mass in the right retroperitoneum with internal linear calcification. **Origin:** Dallas VA Medical Center

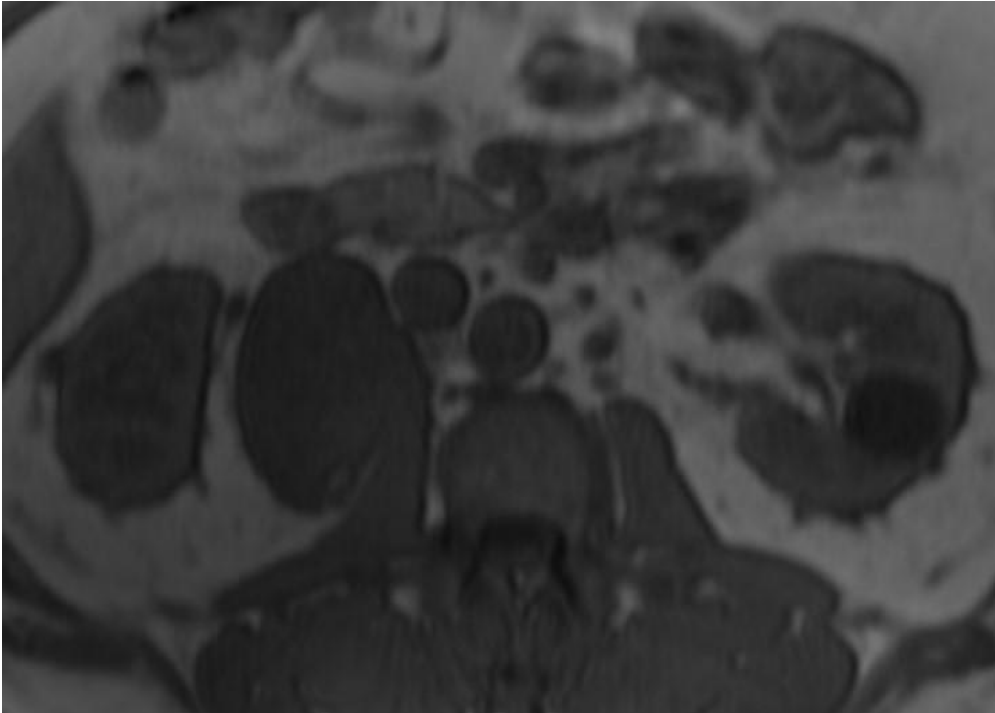
b



Description: The same right retroperitoneal mass at slightly lower level. **Origin:** Dallas VA Medical Center

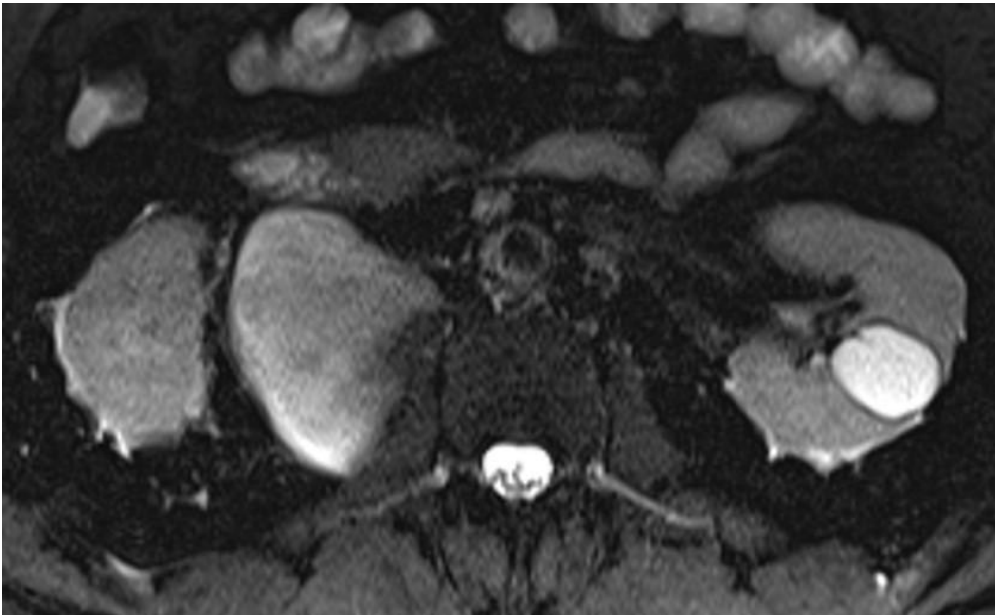
Figure 2

a



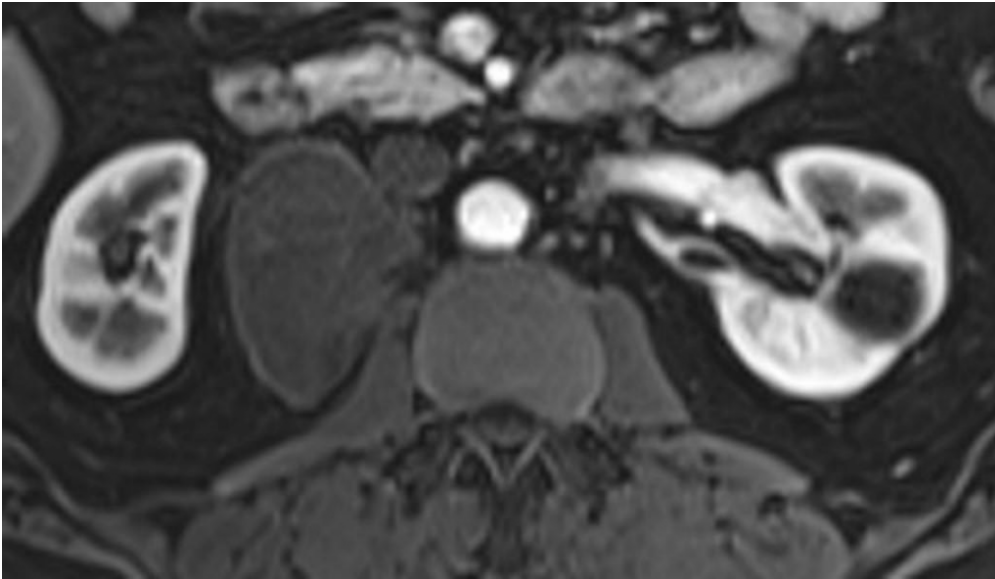
Description: T1-weighted axial image shows hypointense mass in the right retroperitoneum. **Origin:** Dallas VA Medical Center

b



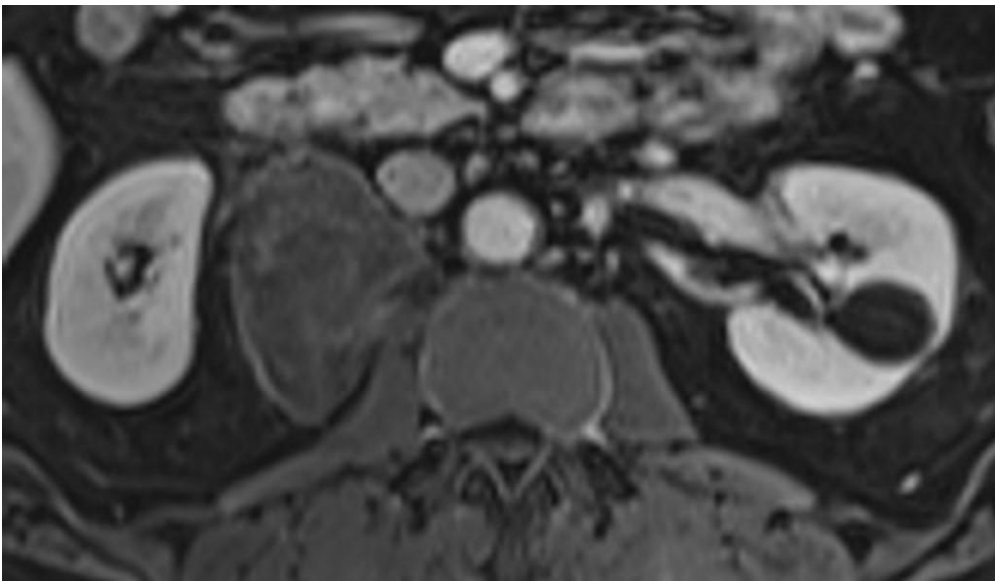
Description: On T2-weighted image the mass is slightly heterogeneous and hyperintense. **Origin:** Dallas VA Medical Center

c



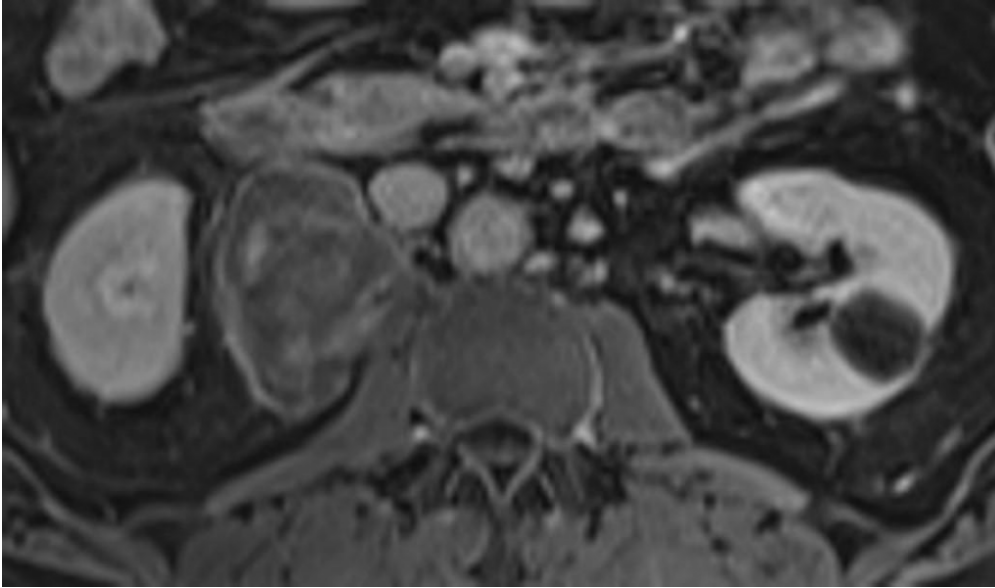
Description: Post-contrast arterial phase T1-weighted image shows minimal enhancement within the mass. **Origin:** Dallas VA Medical Center

d



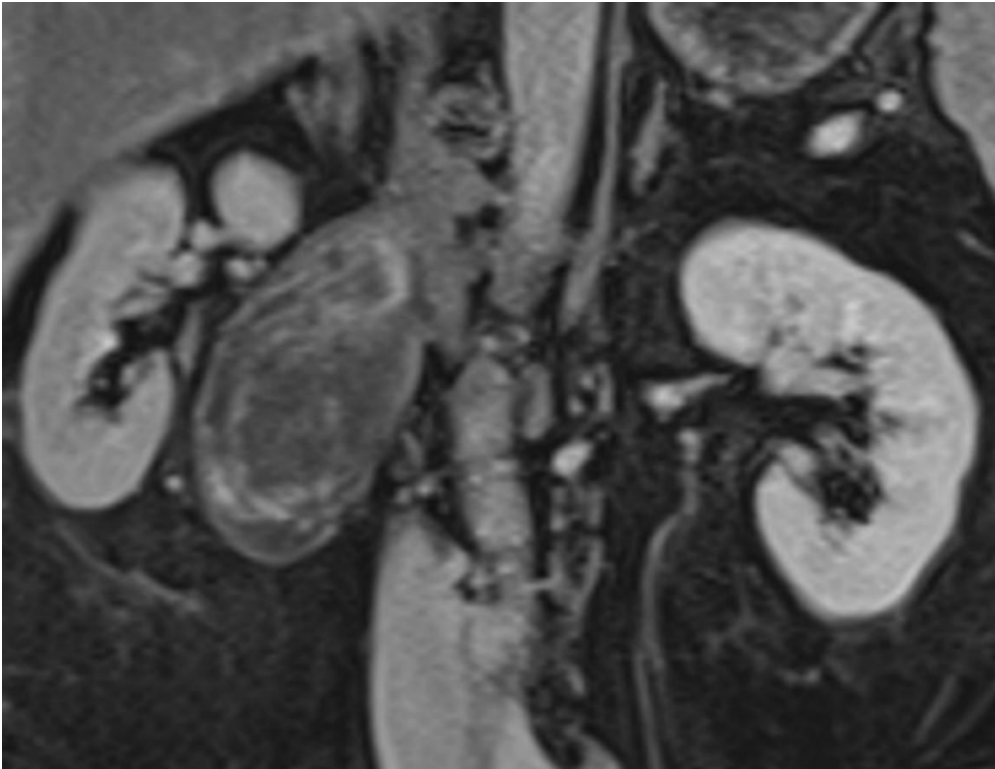
Description: During the portal venous phase there is further internal enhancement in the mass. **Origin:** Dallas VA Medical Center

e



Description: Progressive internal enhancement is seen in the mass at 3 minute delayed image. **Origin:** Dallas VA Medical Center

f



Description: Three minute delayed post-contrast coronal image depicts the enhancing curvilinear bands representing interlacing bundles of longitudinal and transverse Schwann cells or collagen fibres, highly suggestive of diagnosis of ganglioneuroma. **Origin:** Dallas VA Medical Center