Retroperitoneal Mullerian Cyst of Renal Origin in A Cat - A Case Report

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Abstract
Retroperitoneal cysts can be categorized into lymphatic cysts, mesothelial cysts, enteric cysts and urogenital cysts based on embryological origin and histogenesis. A twelve months old intact female domestic short hair cat was presented with a history of progressive abdominal distension, anorexia, lethargy and oliguria. On abdominal palpation, an extensive globular mass was palpable in the cranial abdomen. A survey radiography revealed a soft tissue contour at the cranial abdomen at the left renal position. Hematobiochemical profiles and preoperative assessment were done. Renal functional status was ascertained with intravenous pyelography which revealed unilateral cystic dysgenesis of left kidney and agenesis of left ureter. Exploratory laparotomy confirmed the cystic renal distension that was excised through an unilateral nephrectomy and had an uneventful recovery.

Keywords: Mullerian cyst, Renal Cyst, Nephrectomy and Cat

Introduction
Renal cysts are fluid-filled, epithelial-lined, benign cystic structures within the renal cortex or medulla. Renal cysts in dogs and cats can be congenital, such as polycystic kidney disease (PKD) in Persian cats or bull terrier dogs, with an autosomal dominant trait; Renal cysts can also be acquired, developing secondary to chronic nephropathies (Beck and Lavelle, 2001)

Extreme rarely reported mullerian cysts of the retroperitoneum are considered to be a subtype of urogenital cysts. Retroperitoneal cysts can be categorized into lymphatic cysts, mesothelial cysts, enteric cysts and urogenital cysts based on embryological origin and histogenesis. Urogenital cysts are further sub classified into pronephric, mesonephric, metanephric and Mullerian types (Yohendran et al., 2004).

Case History and Observation
A twelve months old intact female domestic short hair cat was presented with a history of progressive abdominal distension, anorexia, lethargy and oliguria. General examination revealed dehydration, pale mucous membrane and tachycardia. On abdominal palpation, an extensive globular mass was palpable in the cranial abdomen. Survey radiography of abdominal lateral revealed the presence of a considerable radio dense homogeneous space occupying lesion with sharp regular margins in the cranial abdomen (Fig.1). The density of the shadow was similar to that of parenchymal organs.

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In ventro-dorsal view, the mass was delineated rather in the left and contacted the left abdominal wall(Fig.2). Abdominal ultrasonography demonstrated severe anechoic enlargement of left kidney with smooth borders measuring 8.5 × 5.0 sq.cm. The right kidney was normal in size with echotexture, measuring 4.1 × 2.0 sq.cm. Liver, spleen, gastrointestinal tract and uterus showed normal echotexture and size. For further diagnosis, an intravenous pyelography was performed using Iohexol positive contrast. There was no clear demarcation between the infundibular and calyceal structures upon excretory urography, which led to tentative diagnosis of unilateral cystic dysgenesis of left kidney and agenesis of left ureter (Fig.3).

Treatment and Discussion
An exploratory laparotomy was performed after routine hematobiochemical profile. The patient was premedicated with Butorphanol @ 0.2 mg/kg and Midazolam @ 0.2 mg/kg intravenously. The patient was administered intravenous crystalloids (0.9% Sodium chloride @ 4 ml/kg/h) preoperatively and intravenous antibiotics (Amoxicillin- cloxacillin) @ 20 mg/kg intravenously. Anaesthesia was induced with Propofol @ 3 mg/kg intravenously and maintained under inhalant anaesthesia with 2% Isoflurane in 100 percent Oxygen with non-rebreathing circuit. Cranial midventral laparotomy was performed, massive cystic fluid filled mass was identified, isolated from adhesions if any, and exteriorized from the retroperitoneal region (Fig.4). From meticulous dissection, the development of cyst was identified to be originated from the left kidney and...
complete agenesis of left ureter was noticed. Absence of renal function in the left kidney with absence of adjoined ureter warranted unilateral nephrectomy. The cystic kidney was freed from sub-lumbar attachments and renal artery was double ligated with Polydioxanone (2-0) close to abdominal aorta. Renal vein was ligated separately, avoiding the left ovarian vein and the left kidney was removed. Laparotomy incision was closed as per standard operating procedures. Post-operatively parental fluid therapy and antibiotics were administered for 7 days and evaluated for any recurrence or any abnormalities through radiography (Fig.5). Adequate postoperative care and periodic review with appropriate advice resulted in an uneventful recovery.

The pathogenic mechanism for the development of Mullerian epithelium-lined cysts in the retroperitoneum is not clear. Retroperitoneal tissue may include aberrant embryologically-derived Mullerian duct remnants that might have the capacity to grow in later life under the influence of abnormal hormonal stimuli. Paskalev et al., (2012). Alternatively, the coelomic epithelium or peritoneum may undergo differentiation to become serous/tubal-type epithelium, later invaginating into the underlying tissue and eventually lost its connection with the surface, thereby producing a cystic structure. The present case study reveals an acquired Mullerian cyst due to renal origin for which surgical intervention was the only recommended option. Post Unilateral nephrectomy contralateral right normal kidney compensated the renal function that was evident through abnormal anatomical and physiological disruptions and progressive clinical status of the pet. Prompt presentation, early diagnosis and surgical intervention favored good prognosis in renal cyst.
Conclusion

Surgical management of retroperitoneal mullerian cyst of renal origin by unilateral nephrectomy in a cat was performed with nil recurrence during the observation and periodical reviews.

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Reference


