POLYCYSTIC KIDNEYS AND OVARIAN CYST IN A DONKEY: A CASE

RIÑONES POLQUISTICOS Y OVARIOS QUISTICOS EN UN BURRO: UN CASO

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ABSTRACT

The aim of this study was to report a case of polycystic kidneys and ovarian cyst in a donkey. A 24-year-old female Andalusian Breed Donkey (Extremadura, Badajoz, Spain) with weight loss syndrome chronic for date six month. The eyes had sclera ecchymoses, edema and icteric. Haematology and blood biochemistry revealed an increased leukocyte count, an elevated blood lactate concentration. Serum calcium, phosphorous, and potassium concentrations were within the normal ranges. The blood urea nitrogen and the serum glutamic oxaloacetic transaminase levels (SGOT) were 75mg/dL, and 337U/L, respectively. The necropsy revealed glade with distention severed for cumulus for urine and no change in the walk. Kidney left present atrophy severed (10 centimeters). Both kidneys were polycystic diffuse of different diameters with bilateral pyelic ectasia, ureteral dilation, lack of cortico-medullary differentiation, and sponge-like appearance of the renal parenchyma. In the sections histology demonstrated marked alteration of the normal renal parenchymal architecture, bilaterally. The renal cortices contained numerous round cysts ranging in size from 150 milimeters (mm) to 2.5 mm in diameter, lined by low cuboidal to flattened epithelium, and filled with clear fluid containing a small amount of flocculent proteinaceous debris. Both ovaries had multiple cysts. In conclusion, it was reported a case of severed polycystic kidney disease and ovarian cyst in a donkey.

Key words: Donkey; cyst; kidney; polycystic; pathology

RESUMEN

El objetivo de este estudio fue presentar un caso de riñones poliquísticos y quistes de ovario en un burro. Un burro de 24 años de edad, de sexo hembra Raza Andaluz (Extremadura, Badajoz, España) con síndrome de pérdida de peso crónica con data de seis meses. En la mucosa ocular se observó equimosis, edema y esclerótica ictérica. Hematología y bioquímica de la sangre mostraron un aumento de recuento de leucocitos, una elevada concentración de lactato en sangre. Concentraciones de calcio, fósforo, potasio y concentraciones séricas estaban dentro de los rangos normales. El BUN en sangre y los niveles de Transaminasas séricas glutámico oxaloacético (SGOT) fueron de 75mg/dL y 337U/L, respectivamente. La necropsia evidencio la distensión quística renal por cúmulos de orina. El riñón izquierdo presentó atrofia aproximadamente 10 centímetros. Ambos riñones fueron poliquísticos, quistes difusos de diferentes diámetros con ectasia bilateral piélico, dilatación ureteral, falta de diferenciación cortico-medular y aspecto esponjoso del parénquima renal. En las secciones histológicas se evidenció marcada alteración de la arquitectura del parénquima renal normal, de forma bilateral. Las cortezas renales contienen numerosos quistes redondos que varían en tamaño desde 150milimetros (mm) a 2,5 mm de diámetro, recubierto por células cuboidales a epitelio aplanado, y llenas de un líquido claro que contiene una pequeña cantidad de residuos proteico floculante. Ambos ovarios tenían múltiples quistes. En conclusión se presenta un caso de la enfermedad renal poliquística y el quiste de ovario en un burro.

Palabras clave: Burro; quiste; riñón; poliquístico; patología

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INTRODUCTION

Renal cysts are a heterogeneous group comprising heritable, developmental, and acquired disorders. The classification general presented [3] here has been developed, as have several others in the past, to incorporate radiographic, functional, and genetic contributions in its clinicopathologic correlations. Its major categories are as follows: dysplastic cysts arising in kidneys that have undergone abnormal morphogenesis and differentiation; polycystic disease of autosomal recessive and autosomal dominant types; heritable syndromes of multiple malformations with renal cysts resulting from presumed metabolic injury; isolated cortical cysts of unknown pathogenesis; medullary cysts of several types, including medullary sponge kidney and the progressive syndromes of medullary cystic disease, familial juvenile nephronophthisis, and renal-retinal dysplasia; acquired parenchymal cysts of diverse origins; and extraparenchymal cysts. Four types of abnormalities have been recorded on a study about cystic diseases of donkey's kidneys, collected at the Madrid Slaughter-house [2]. These four categories were: a) simple isolated renal cysts; b) multiple renal cysts; c) adult polycystic kidneys; and d) focal renal cystic dysplasia and hypoplasia [2, 4-7]. In horses (*Equus caballus*) have been describe polycystic kidneys as a cause of chronic renal failure and secondary hypoparathyroidism [1]. A female donkey (*Equus africanus asinus*) present both kidneys were polycystic, and multiple calculi were found in the right kidney. Both ovaries had multiple cysts [10]. Renal dysplasia and cystic renal disease have been infrequently documented in horse. Cystic renal disease diagnosed as polycystic kidney disease (PKD) has been described in adult and aged horses (9 to 24 years (yr) of age) [1,4,5,9]. Polycystic kidney disease (PKD), a morphologically distinct form of congenital cystic renal disease, was the differential diagnosis for this case at the time of postmortem examination. The aim of this study was to report a case of polycystic kidneys and ovarian cyst in a donkey.

MATERIALS & METHODS

Case history

A 24-yr-old female Andalusian Breed Donkey (Extremadura, Badajoz, Spain) with weight loss syndrome chronic for date six months (mon). The eyes had ecchymosis, edema and jaundice (of the ocular conjunctiva).

Clinical pathology

Haematology and blood biochemistry revealed an increased leukocyte count, an elevated blood lactate concentration. Serum calcium, phosphorous, and potassium concentrations were within the normal ranges. The blood urea nitrogen and the serum glutamic oxaloacetic transaminase levels (SGOT) were 75 miligrams (mg) / deciliters (dL) and 337 units (U) / L, respectively. The blood glucose concentration was increased to an abnormally high level of 155 mg/100 mililiters (mL). During last week (w) the donkey's condition deteriorated and was euthanized.

RESULTS AND DISCUSSION

Post mortem findings

A necropsy was performed immediately after euthanasia. The necropsy revealed a general mucosa icteric (oral and ocular conjunctiva) and severe loss of muscle mass and weight loss syndrome. Lesions (fibrosis and mineralization) were found in the liver milk spot associated a chronic migration of parasites, lungs with equine chronic obstructive pulmonary disease (ECOPD) and confluent areas of chronic-active bronchitis, heart with cardiopathy hypertrophic concentric and gastric parasite infection by *Gasterophillus* spp. The urogenital organs present glade with distention severed for cumulus for urine and no change in the walk, with ectasia of the pelvis and dilatation of the ureters compatible with non-severe hydronephrosis. There is a deficiency in the corticomedullary differentiation due to the fact that the macro and microstructural anatomy are completely distorted by the excessive dilation of the renal tubules. However, no alteration in the cortical structure is observed due to polycystic disease. Compensatory changes (hypertrophy) are seen to fulfill the filtering function of the undamaged nephrons. Kidney left present atrophy severed 10centimeters (cm). Both kidneys were polycystic diffuse of different diameters with bilateral pyelic ectasia, ureteral dilation, lack of cortico-medullary differentiation, and sponge-like appearance of the renal parenchyma. Both ureters were present and dilated. On cut section, the entire renal parenchyma resembled a sponge, consisting of a myriad of 1 to 3 cm cysts filled with clear fluid. Both ovaries had multiple cysts.

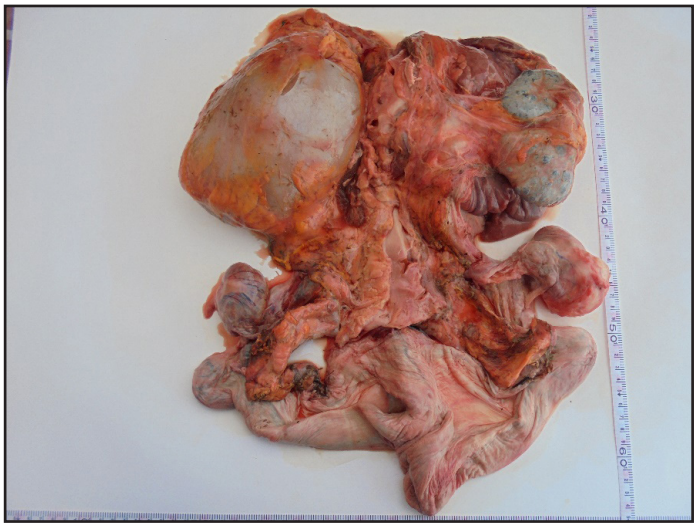

FIGURE 1.- DONKEY (ANDALUSIAN BREED): necropsy with urogenital system

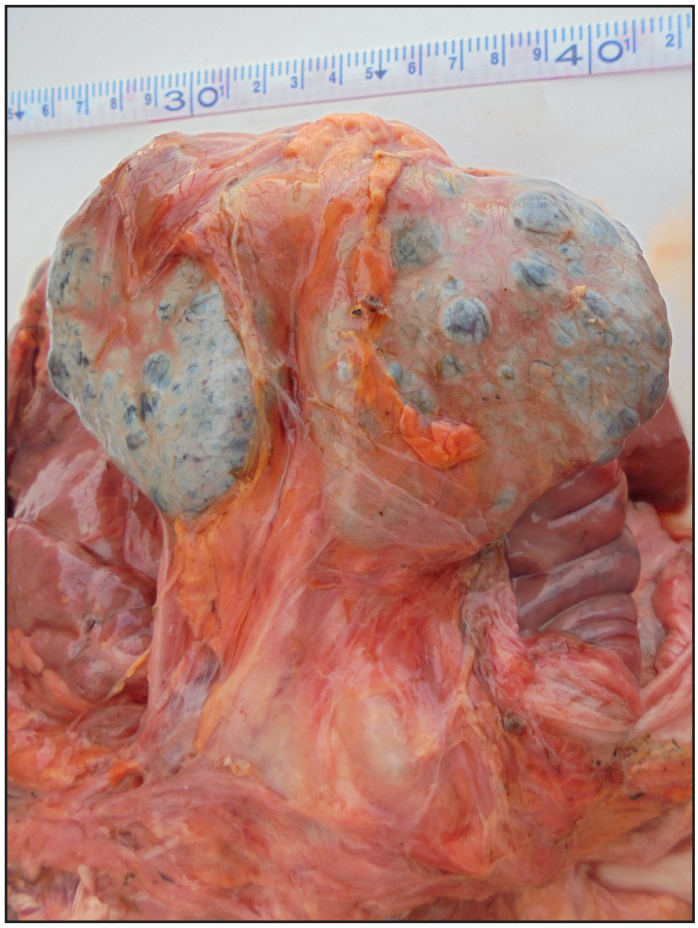

FIGURE 2.- KIDNEY LEFT. Present atrophy severed (10cm) and polycystic kidney

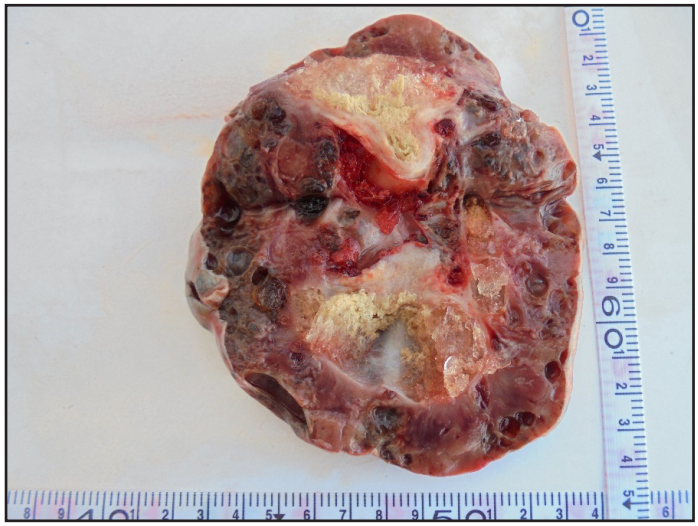

FIGURE 3.- KIDNEY LEFT (SAGITTAL SECTION). Present atrophy severed (10cm) and polycystic kidney

For histopathological examination, sections were stained with haematoxylin and eosin (H&E). In the sections demonstrated marked alteration of the normal renal parenchymal architecture, bilaterally.

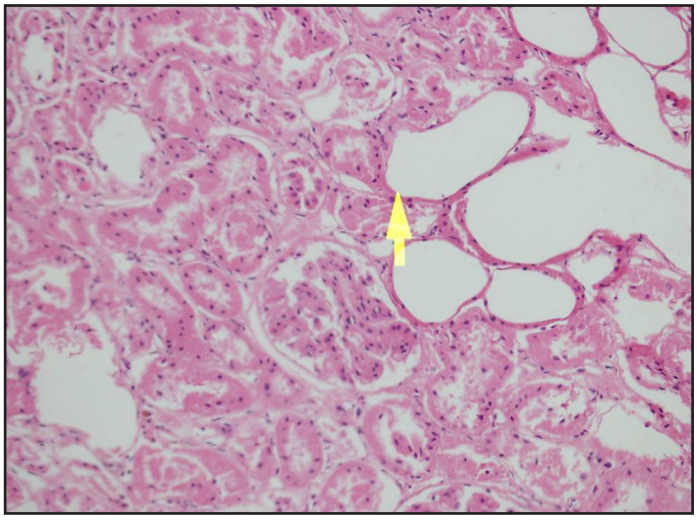

FIGURE 4.- HISTOPATHOLOGY OF KIDNEY. Marked alteration of the normal renal parenchymal architecture, bilaterally. the renal cortices contained numerous round cysts ranging in size from 150 mm to 2.5 mm in diameter, lined by low cuboidal to flattened epithelium (Hematoxilin & Eosin 10x)

The renal cortices contained numerous round cysts ranging in size from 150 mm to 2.5 mm in diameter, lined by low cuboidal to flattened epithelium, and filled with clear fluid containing a small amount of flocculent proteinaceous debris. Interspersed between the cysts were glomeruli of varying sizes. In some sediment and renal cysts consistent mineralization is observed with calcium oxalate. These included dilated Bowman's spaces, and larger, hypertrophic and/or hyperplastic glomeruli, which often exhibited segmental to global fibrinoid necrosis of the glomerular tuft, with hemorrhage and fibrin exudation into Bowman's space. Cortical tubules included those lined by cuboidal epithelium with a high nucleus to cytoplasm ratio, resembling proximal tubules, as well as those lined by pale cuboidal epithelium with a lower N: C ratio. Cysts, glomeruli, and tubules were embedded in an edematous, slightly myxoid stroma populated by spindled to stellate mesenchymal cells. Both ovaries had multiple cysts.

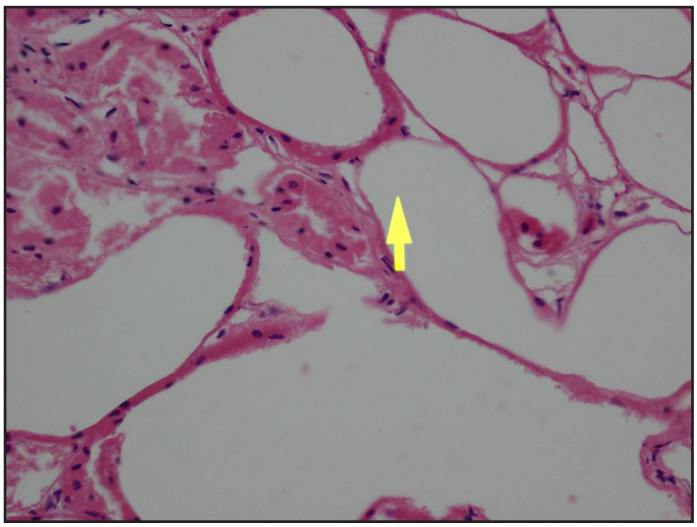

FIGURE 5.- HISTOPATHOLOGY OF KIDNEY. The renal cortices contained numerous round cysts ranging in size from 150 mm to 2.5 mm in diameter, lined by low cuboidal to flattened epithelium (Hematoxilin & Eosin 20x)

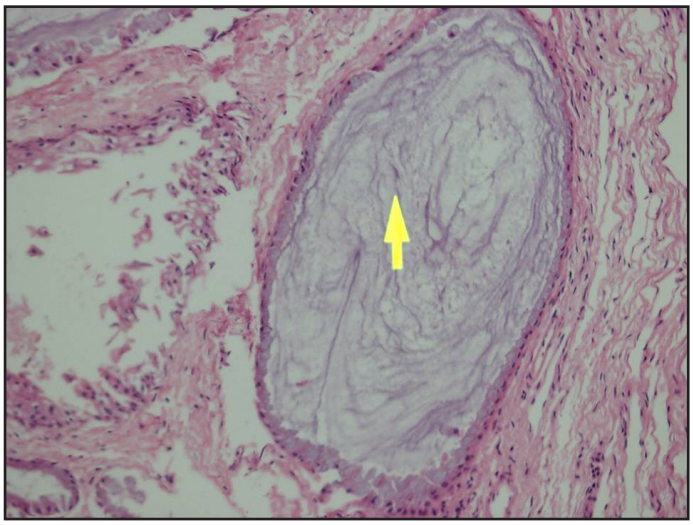

FIGURE 6.- HISTOPATHOLOGY OF KIDNEY. The renal cortices contained round cyst range of 2.5 mm diameter, lined by low cuboidal to flattened epithelium with sediment and renal cysts consistent mineralization is observed with calcium oxalate (Hematoxilin & Eosin 20x)

Polycystic Kidney Disease (PKD) is an inherited disorder in which clusters of cysts develop primarily within of kidneys. Cysts are round sacs containing water-like fluid. The cysts vary in size and, as they accumulate more fluid, they can grow very large. Although kidneys usually are the most severely affected organs, PKD can cause cysts to develop in liver, ovary and elsewhere in the body. The presentation of cysts in kidneys and ovaries coincide with some reports in the literature [10]. The disease causes a variety of serious complications. A common complication of polycystic kidney disease is high blood pressure, laminitis and others pathologies. Kidney failure is another common problem for animals with polycystic kidney disease. Polycystic kidney disease varies greatly in its severity, and some complications are preventable but its diagnosis can be confused. Some studies the major inherited types are autosomal dominant (AD) and autosomal recessive (AR) [8]. ADPKD is caused by at least two (and possibly three) genes located on separate chromosomes, while ADPKD-1 is due to a 14 kb transcript in a duplicated region on the short arm of chromosome 16 very near the alpha-globin gene cluster and the gene for one form of tuberous sclerosis. ADPKD-2 has been assigned to the long arm of chromosome 4. ARPKD is due to a mutated gene on both copies of the long arm of chromosome 6 [8]. Cysts originate in renal tubules. Proliferation of tubule epithelial cells modulated by endocrine, paracrine, and autocrine factors is a major element in the pathogenesis of renal cystic diseases. In addition, fluid that is abnormally accumulated within the cysts is derived from glomerular filtrate and, to a greater extent, by transepithelial fluid secretion. Abnormal synthesis and degradation of matrix components associated with interstitial inflammation are additional features in the pathogenesis of renal cystic diseases [8]. The ADPKD genotypes are characterized by bilateral kidney cysts, hypertension, hematuria, renal infection, stones, and renal insufficiency. ADPKD is a systemic disorder; cysts appear with decreasing frequency in the kidneys, liver, pancreas, brain, spleen, ovaries, and testis. Cardiac valvular disorders, abdominal and inguinal hernias, and aneurysms of cerebral and coronary arteries and aorta are also associated with ADPKD [8]. Although there have been cases of polycystic kidney disease in horses and donkeys, secondary clinical complications have been described recently as the reports have been like finding occasional necropsy or slaughter inspections. Unfortunately, this case has the limitation of not conducting a genetic study to determine polycystic familial kidney disease in donkeys, to consider a hereditary origin. However, the observed lesions show severe pathological changes of the kidneys associated with a polycystic kidney disease, they may be associated with recurrent infections although secondary bacterial infection was ruled out, or a previous obstruction of the urinary tract is not described in the history of this donkey. In this case, although a unilateral polycystic kidney deterioration of the conditions of the patient, the secondary complications and chronic liver injury and chronic obstructive pulmonary disease ultimately led to euthanasia.

CONCLUSION

In conclusion it was reported a case of severed PKD and ovarian cyst in a donkey. Future studies are needed to elucidate the pathogenesis of polycystic kidneys in a donkey as well as its etiology considering the similarity between the observed clinical signs in animals.

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