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Peritoneal dialysis in a dog with chronic kidney disease

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Abstract
A three-year-old female Labrador Retriever dog, diagnosed with chronic kidney disease was undergone peritoneal dialysis using two cuffed Swan neck Tenckoff catheter. Peritoneal dialysis helped to reduce the serum creatinine level from 17.6 mg/dL to 5.3 mg/dL, blood urea nitrogen from 234 mg/dL to 52 mg/dL. The catheter was placed in the abdomen for 26 days without any complication.

Keywords: Dog, peritoneal dialysis, chronic kidney disease, swan neck tenckoff catheter

Introduction
Chronic kidney disease is an irreversible condition characterized by a gradual decline in kidney function (Polzin, 2011) [4]. Peritoneal dialysis is recommended when the creatinine levels exceed 8 mg/dL in dogs. It involves the removal of uremic toxins through a filterable membrane.

Materials and Methods
A Three-year-old female Labrador Retriever dog weighing 35 kg was presented to Veterinary Clinical Complex, Pookode with complaints of vomiting, loss of appetite, polyuria, polydipsia and weight loss for a period of 4 months. Haemoglobin value of 10.3 mg/dL, volume of packed red cells of 20.5 per cent, Red Blood Cell count of 3.6×10^6 /µL, creatinine level of 17.6 mg/dL, blood urea nitrogen of 234 mg/dL and phosphorus value of 15.06 mg/dL were the hematobiochemical findings. Electrocardiography showed sinus arrhythmia and echocardiography revealed a left atrial width of 25.51 mm, an aortic diameter of 11.88 mm and an LA: Ao ratio of 2.14.
Peritoneal dialysis was performed with a two cuffed Swan-neck Tenckoff catheter under general anaesthesia using midazolam at a dosage of 0.3 mg/kg, butorphanol at 0.2 mg/kg, and propofol at 1 mg/kg (Delgado and Anderson, 2020) [3]. Isoflurane was administered at a concentration of 1.5 per cent and 4 mg/kg of lignocaine was infiltrated locally at the entry site.
The abdominal entry site was 3–5 cm to the right of the midline and passed through the rectus muscle at the level of the umbilicus. With the patient in dorsal recumbency, a small 3–5 cm incision was made in the skin and subcutaneous tissue over the entry site. A stay suture was placed in the rectus sheath and a 2–3 cm incision through the rectus muscle and the parietal peritoneum was incised. The catheter was directed caudally and positioned in the lower pelvis. The inner cuff was secured with purse string suture in the rectus muscle, and the catheter was tunnelled subcutaneously through the exit site with the other cuff in the subcutaneous tunnel (Bersenas, 2011) [2]. A dialysate solution (Baxter peritoneal dialysis solution) with a pH of 5.2 containing 1.5 percent dextrose, sodium, chloride, lactate, calcium, and magnesium was infused into the peritoneal cavity at a rate of 10 ml per kg of body weight. After a dwell time of 20 minutes, the fluid was drained into a collection bag. The dose rate was increased to 30 mL/kg body weight and dwell time was set for 40 minutes after the first cycle. The whole procedure was repeated five times a day for 26 days. The catheter remained intact throughout this period without any complication and the dialysate was drained out.

Results and Discussion
A decrease in serum creatinine to 5.4 mg/dL, BUN to 56 mg/dL and phosphorus to 6 mg/dL were observed. Peritoneal dialysis catheter was maintained for a period of 26 days without any complications.
In this case, peritoneal dialysis effectively removed exogenous toxins and restored balance of endogenous substance as observed by Ann *et al*., (2000) [1]. Peritoneal dialysis catheter with two cuffs could be placed for a long period without any complications as reported by Vitalaru (2020) [5].

Fig 1: Dog placed in dorsal recumbency

Fig 2: Entry site and exit site

Fig 3: Securing catheter with purse string suture

Fig 4: Dog with PD catheter

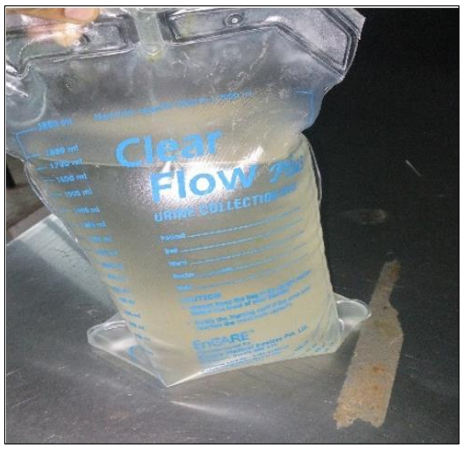

Fig 5: Drained dialysate solution

Conclusion

Peritoneal dialysis effectively reduced uraemia in a CKD affected dog. Swan neck Tenckoff two cuffed catheter could be maintained without any complication for a period of 26 days in a dog with renal and cardiac disorders.

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Conflict of interest

The authors declare that they have no conflict of interest.

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