

## **Ultrasonographic diagnosis of renal disease in a bearded dragon (*Pogona vitticeps*)**

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### **Introduction**

Ultrasonography is a non-invasive method of assessing the structure of soft tissue in man and an animal. In a number of cases it is very useful in aiding in clinical diagnosis (Lamb et al. 1988).

So far, the use of ultrasonography in reptiles is mostly limited to its use in reptile reproduction, for example in the determination of pregnancy, or sex of individual animals.

Only few studies describe the use of ultrasound as help in the diagnosis of clinical disease (Redprobe and Scudamore, 2000).

This paper describes the use of ultrasound in the diagnosis of renal disease in a bearded dragon (*Pogona vitticeps*)

### **Case report**

A male, 7 years old bearded dragon was presented with the following clinical signs. The dragon weighed 281 grams; he lost weight (about 100 grams). He was softly shaking his legs, and would sometimes roll over. His behavior changed, he became aggressive when touched.

On clinical examination this animal was thin, his serosal membranes were very pale. He had tremors of the legs and the head. Palpation of the abdominal region did not reveal any abnormalities.

The animal had a history of deficient feeding, concerning calcium and vitamin D3.

A heparinised coccygeal venous sample was taken for hematochemical examination.

The animal was examined ultrasonographically from the ventral side.

The ultrasonic examination was performed using a 240 Parus Vet scanner with a curved array dual frequency probe (7,5 MHz) (Pie medical, Maastricht, The Netherlands, figure 1). An ultrasound coupling gel (Pie medical, Maastricht, The Netherlands) was applied to avoid interposition of air. The animal was manually restrained, no sedation was used.



Figure 1. The 240 Parus Vet scanner.

The Ultrasonographic examination revealed two hyper echoic masses at both sides of the medial line, just cranial to the pelvic girdle (figure 2).

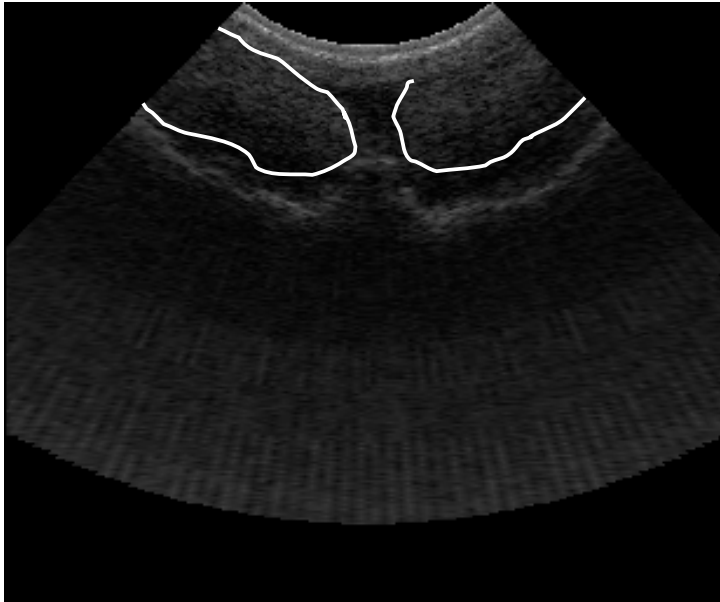


Figure 2. Within the white lines are the hyper echoic masses.

The blood samples showed a rather high, but within the normal range uric acid serum value. A normal calcium value, and extremely elevated inorganic phosphate levels: 20,75 mg/dl. The Calcium:Phosphorous ratio was  $< 1$ .

	Value (mg/dl)	Normal range (mg/dl) (Mader, 1996)
Calcium	9,56	8 - 20
Inorganic phosphate	20.75	1 - 5
Uric acid	9,56	0 - 10

Table 1. Results of the blood chemistry.

The animal was treated with calcium intraperitoneally 100 mg per kg bodyweight, he was forced fed with baby nutrients. But as expected his condition deteriorated. Therefore we decided to euthanase the animal.

On pathology 2 very enlarged kidneys were seen. The kidneys had a mottled irregular aspect and were very firm (figure 2).



Figure 3. The enlarged kidneys (arrows).

Histological, the changes in the kidneys consisted of interstitial fibrosis with numerous urate tophi scattered throughout the tissue. Multifocal calcium depositions were present. Only limited numbers of round nucleated inflammatory cells could be seen. The animal was suffering from renal disease.

## Conclusion

Chronic renal failure is rather often seen in captive lizards. Causes of renal inflammatory disease include bacterial infection, coccidiosis, and depositions of calcium due to a misbalance in the diet concerning vitamin D3, and calcium and/or phosphorous. Diagnosing renal disease in reptiles with uric acid serum levels is often unrewarding. The most consistent parameters are the changes in serum phosphorous levels, and the calcium to phosphorous ratio of less than one. Very often the kidneys are enlarged and protrude into the coelomic cavity, anterior to the pelvic canal. In this case, ultrasonography proved to be a useful tool in aiding in clinical diagnosis of renal disease.

In general ultrasonography is a fast, non-invasive, safe and accurate method of examining soft tissues in lizards. The 240 Parus Vet scanner with a curved array dual frequency probe (7,5 MHz) was very functional in assessing the renal enlargement. The use of ultrasonography in assessing soft tissues in reptiles is beginning to be appreciated by veterinarians in the field of reptile medicine.

## Literature

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