Worms won't tolerate new Equiban.

Horse strongyle resistance to the benzimidazole (BZ) group of anthelmintic compounds, including thiabendazole, cambendazole and mebendazole has been reported.**

New Equiban* Paste and Granules contain morantel tartrate which kills BZ resistant strongyles because it is chemically unrelated to the BZ anthelmintics.

Between stomach tubing with your preferred anthelmintic combination, dispense and recommend Equiban* for use every 6 weeks to break the strongyle life cycle and prevent the spread of BZ resistant strains.

New aniseed flavoured Equiban* is safe to give to pregnant mares and young foals providing the ideal complement to your year round drenching recommendations.

When you're not there - recommend Equiban.*

*Trademark Pfizer Inc.

You asked us to make it...

HARDJO
POMONA
bivalent

...we did

Now you can protect against Leptospira Hardjo and Pomona with one injection.

Dose rate 2 ml. subcutaneously — if previously unvaccinated, repeat four to six weeks later.

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Arthur Webster Pty. Limited. 226 Windsor Road, Northmead, N.S.W. 2152.
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CALCIGOL PLUS

Australia's number one treatment for milk fever and grass tetany now also available in a new unbreakable plastic dispenser bottle.

Now you can purchase either Calcigol or Calcigol Plus in a 350 ml plastic bottle as well as the standard polythene packs.
- Extra Economy in the bottle.
- Total Convenience in the pack.
Whatever your need—when it comes to fast, reliable treatment of milk fever or grass tetany—the Squibb Calcigol Range has the answer.

Ask for Calcigol or Calcigol Plus—more of Squibb's dairy products to create better animal health and increased profitability on the farm.

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For inflammation...

Voren® stands on its own

VOREN is a major pharmacological advance on the older free dexamethasone preparations.

VOREN is an ester, dexamethasone-21-isonicotinate, with six times the activity of existing dexamethasone preparations.

Voren in action

Glucocorticosteroids are now playing an increasing role in veterinary practice. The reason for this lies in the uncomplicated applicability of the modern synthetic drugs. These have been developed from cortisone & hydrocortisone respectively, via prednisolone to dexamethasone, in the search for substances with a stronger action but having fewer side-effects. The sole requirement remaining unfulfilled was that of prolonged action.

This gap has now been filled by Voren, a specially developed ester of dexamethasone, with an extremely long action.

INFLAMMATION-INHIBITION PROPERTIES

The anti-inflammatory activity of Voren consists of anti-proliferative and anti-exudative properties. This has been shown to be six times that of Dexamethasone.

Inflammation is accompanied by swelling, exudation and proliferation of tissue.

The suppression of the signs of inflammation is in many cases important.

In spite of its prolonged and increased specific glucocorticoid action, after parenteral administration, as compared with other corticosteroid derivatives, Voren does not show any significant increase in toxicity with acute or longer term usage.

In the same manner as all other glucocorticoids, Voren causes an inhibition of ACTH-production, which leads to a diminished activity of the adrenal cortex for the duration of the treatment. This state, however, is reversible, and only calls for extra caution in a prolonged treatment with repeated administration.

In such cases the doses of the Voren injections should be gradually withdrawn.

Stimulation with ACTH is unnecessary.

In the presence of bacterial conditions, Voren should be administered under antibiotic cover.

INDICATIONS

In all species as an anti-inflammatory and anti-allergic.

DOSAGE AND APPLICATION

Horses and Cattle 10-15ml.
Calves and Foals 3-5ml.
Pigs 3-5ml.
 Piglets 1-2ml.
Ewes 10ml.
Cats and Dogs 1-2ml.

Since Voren is excellently tolerated, all methods of parenteral administration are possible.

In the case of injections into synovial cavities, smaller doses corresponding to the size of the joint cavity should be used.

CONTRAINDICATIONS

Osteoporotic processes, diabetes mellitus, and active tuberculosis.

PRECAUTIONS

Like all other corticoids, Voren should not be used during the last third of pregnancy.

PRESENTATION

aqueous suspension (1mg/ml) 50ml bottle.

xlv
SUMMARY: A case of renal cortical hypoplasia in a Cocker Spaniel bitch is presented. The dog, under clinical observation between the ages of 15 and 26 months, was found to have advancing chronic renal insufficiency. Necropsy examination revealed a markedly hypoplastic renal cortex with a reduced number of glomeruli, some dilated Bowman's capsules, small glomerular tufts, and early interstitial nephritis and fibrosis characteristic of renal cortical hypoplasia.

Introduction

Renal cortical hypoplasia is a bilateral renal dysplasia causing renal insufficiency and failure in the young dog. It has been described in Europe (Krook 1957; Persson et al 1961; Freudiger 1965; Kelly 1972) and North America (Kaufman et al 1969; Johnson et al 1972), mainly in Cocker Spaniels, but also in other breeds of dogs. A similar disease was described in the Norwegian Elkhound (Finco et al 1970). The presence of renal cortical hypoplasia in Australia has not been previously reported.

History

A blue roan Cocker Spaniel bitch when introduced to the final owner's home at 6 months of age, was observed to pass urine frequently. Two weeks later it was spayed and, between the ages of 8 and 15 months, was presented on several occasions to a private practitioner for treatment of the urinary problem. On first presentation to us at 15 months of age, the dog drank excessively (up to 2.4 l on a hot day) and at times showed enuresis. Intermittently, it had also shown signs of gastrointestinal upset, with inappetence and vomiting.

Physical and Laboratory Examinations

Three series of clinical examinations were carried out on the dog over the ensuing 11 months: the first over a 2-month period following its presentation, the second during the 22nd month of the animal's life, and the third over the last 6 weeks of its life. Throughout the series the dog appeared relatively normal, although lean and small; the body wt fluctuated about a mean of 8.5 kg. Body temperature, pulse rate and respiratory rate remained within normal ranges. On cardiac auscultation the first heart sound was slightly prolonged, although no valvular murmurs were detected.

First Series of Examinations (Dog 15 to 17 months)

Buccal mucus membranes were pale, with injection of the superficial blood vessels and the teeth were slightly yellow. Laboratory medicine findings revealed a mild azotaemia, with blood urea nitrogen (BUN) and plasma creatinine (Pcr) concentrations of 21.4 mmol/l and 124 pmol/l, respectively. There was mild anaemia. Urine was positive for protein, the specific gravity (SG) was low (1.008-1.010) and no bacteria were found on culture. The condition was diagnosed as a compensated, chronic renal insufficiency.

Second Series of Examinations (Dog 22 months)

The BUN and Pcr concentrations were perceptibly higher, indicative of an advancing azotaemia. The degree of proteinuria present indicated a daily protein loss of 6-10 mg/kg body wt, and red blood cells were found in the urine twice.

The following tests of renal function were applied: modified external water balance with water freely available, the ability to concentrate urine after both acute water deprivation and the injection of pitressin tannate (Richards 1970), and the determination of glomerular filtration rate (GFR), using endogenous creatinine clearance (Finco 1971). External water balance measurements, over a 72 h period, revealed a daily mean free water intake of 185 ml/kg body wt and a urine output of 130 ml/kg, a four-fold increase over normal (Smith et al 1964; Richards 1970). In the water deprivation test (Table 1), lack of ability to concentrate urine was manifest. This test was halted after 8 h, because by that time the dog had lost...
Table 1: Acute Water Deprivation Test

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Time (hr)</th>
<th>Volume (ml)</th>
<th>Osmolality (mosm/kg)</th>
<th>SG</th>
<th>Wt Loss (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>10</td>
<td>343</td>
<td>1.008</td>
<td>8.70</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>20</td>
<td>321</td>
<td>1.008</td>
<td>8.50</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>20</td>
<td>344</td>
<td>1.008</td>
<td>8.40 3.4</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>30</td>
<td>377</td>
<td>1.009</td>
<td>8.25</td>
</tr>
<tr>
<td>4</td>
<td>8</td>
<td>10</td>
<td>364</td>
<td>1.008</td>
<td>8.20 5.7</td>
</tr>
</tbody>
</table>

Over 5% of its body wt. Following pitressin tannate injection, urine SG rose from 1.006 to a maximum of 1.013 at the end of a 10 h period. The GFR determined by endogenous creatinine clearance was 0.81 ml/kg body wt, a value less than 30% of normal (Osborne et al. 1972).

Third Series of Examinations (Dog 24 to 26 months)

Although disturbances of appetite with vomiting increased in frequency, and ulcers began to develop in the mucous membranes of the buccal cavity, the most significant change was a further elevation in BUN and Pcr concentrations to 64.1 mmol/l and 265 µmol/l, respectively.

The assessment of the case at this time was that renal insufficiency was moving toward the stage of decompensation and uraemia. The owner agreed to euthanasia and necropsy.

Necropsy

Both kidneys were small (left 17g, right 21g), yellowish-brown, firm with finely granulated surfaces and the cut surface of the cortex was narrow and of irregular thickness (Figure 1). Apart from a light hyperaemia of the gastric mucosa, no significant changes were observed in other organs.

The number of glomeruli in the kidneys was markedly reduced. Few of those existing appeared normal; others were small, or consisted of small glomerular tufts in dilated Bowman's capsules filled with pale acidophilic, slightly granular material (Figure 2). Many glomerular capsules were thickened and some showed early calcification. The proximal tubules contained acidophilic material similar to the glomeruli, many were dilated, but a few were shrunken and degenerated. There was irregular interstitial fibrosis, which was more pronounced in the medulla than in the cortex. A minor degree of calcification was present in the interstitial tissue and the walls of tubules. Scattered, small foci of mononuclear inflammatory cells, mainly lymphocytes and plasma cells, were found in the cortex.

Although macroscopically normal, the parathyroid gland consisted predominantly of light chief cells with occasionally water-clear cells (Krook, 1957). The darker chief cells were towards the periphery of the organ.

Although the basic of markedly hypoplastic renal cortex and characteristic histopathological findings (Krook 1957), a final diagnosis of renal cortical hypoplasia was made.

Discussion

The adult body wt (8.5 kg) of the Cocker Spaniel bitch would suggest that growth had been retarded by the metabolic disturbances accompanying chronic renal disease. Degree of polydipsia/polyuria and blood levels of nitrogenous waste (BUN, Pcr), over the 11 months of observation, indicated that functional nephron numbers were less than 25% of normal (Coburn et al. 1965; Slatopolsky et al. 1971). The advancing azotaemia, terminally, showed that the functional nephron number was decreasing even further. and that
decompensation and uraemia were imminent at 26 months. On clinical findings, the diagnosis of chronic renal failure was justified.

Histopathological findings showed this to be due to renal cortical hypoplasia. This condition is regarded as a genetic abnormality (Freudiger 1965), in which numbers of glomeruli in the cortex are markedly lower than normal (Persson et al 1961). The age of onset of clinical signs in affected dogs has varied from a few months to 3 years, with the peak incidence at 1 year (Kelly 1972), and duration of the subsequent illness from a few weeks to several months.

A secondary hyperparathyroidism with bone decalcification and some soft tissue calcification is expected in cases of compensated chronic renal insufficiency, particularly if it is present during growth. The elevation of plasma phosphate concentrations, occurring in compensated chronic renal insufficiency, reciprocally depress plasma calcium ion concentrations, so stimulating the production of parathyroid hormone. This hormone acts on the renal tubules, to increase phosphate excretion (proximal tubules) and decrease calcium excretion (distal tubules), and on bone to release calcium in a futile attempt to maintain a normal plasma calcium concentration (Slatopolsky et al 1971; Aurbach and Heath 1974). The speed of onset of bone and soft tissue change is modified by levels of dietary phosphate and the rate at which vitamin D resistance develops to decrease enteric absorption of calcium (Slatopolsky et al 1971). Also in such cases, some interstitial nephritis develops sooner or later (Krook 1957), further reducing renal function and enhancing secondary hyperparathyroidism.

In advanced cases of secondary hyperparathyroidism, skeletal lesions, particularly involving the bones of the head, are apparent. The first changes seen on radiography are a decrease in density of the lamina dura dentae (Henrikson 1968; Kaufman et al 1969). Although in the case presented, the disease had not caused macroscopic bone changes, the kidney lesions were advanced and characteristic of renal cortical hypoplasia.

Acknowledgments

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References


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BOOK REVIEW

MANAGEMENT AND DISEASES OF DAIRY GOATS

This is an excellently prepared and presented book*, covering as it does the peculiarities of the milch goat from management through nutrition, reproduction, infectious diseases, and a routine herd health program for dairy goats. Dr. Guss is an Emeritus Professor from Pennsylvania State University, and has gone to great lengths to bring together in one place the information needed by both veterinarian and the lay public.

While being impressive for its scientific content, it has been written in readily understandable English to meet the layperson's needs. At the same time it is well sprinkled with good practical goat husbandry common sense. So from every point of assessment, it must be judged as a valuable contribution in a very deficient area. I can recommend it to anyone who is looking for such a reference text.

G. McIntosh