Rickets & Metabolic Bone Disease In Growing Poultry

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Species

Rickets and nutritionally based bone problems occur very frequently in backyard and specialty types of birds. All birds, particularly fast growing birds fed "home-formulated" diets may be affected.

Status in Canada

Nutritional bone problems occur commonly any bird species fed diets other than those commercially formulated and targeted for that species and particular age of bird. The disease occurs relatively frequently in ostriches and emus due to their nutritional requirements and rapid early growth rates.

Etiology

Commercially formulated diets are scientifically balanced for protein, energy, vitamin and mineral content and other essential ingredients. These diets are formulated for particular species and specific ages of bird as the dietary requirements for the bird will change as it grows and develops. Home-formulated diets including the feeding of whole grains or scratch grain diets are generally poorly balanced, particularly in the amount of calcium and essential vitamins such as vitamin D3 or vitamin A. An imbalance in the calcium/phoshorus ratio in the diet will also result in abnormal bone development and high phosphorus levels in the diet even with normal calcium levels can result in bone disease.

Rickets and metabolic bone disease is caused by a deficiency of calcium or vitamin D3 in the diet, or an imbalance in the calcium to phosphorus ratio in the diet.

Group of young turkey poults with rickets. All of these birds are alive but refuse to stand and walk because of the painful changes in the bones.

FACTSHEET 6.1

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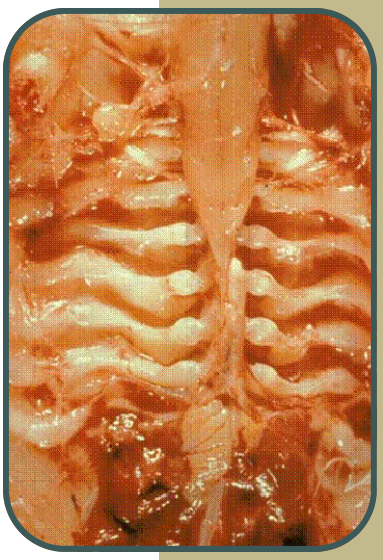
The Disease

The skeleton of young animals grows extremely quickly. Species that grow very rapidly like commercial strains of chickens and turkeys and ostriches and emus are particularly susceptible. Calcium and phosphorus are essential minerals that are critical for proper bone growth and bone strength. The absorption of these minerals and the ability to incorporate them into the growing skeleton is dependent on the availability of Vitamin D3.

If either of these nutrients are lacking in the diet, the skeleton will not mineralize properly and the bone strength will be affected. As the bird gains in weight, the soft, poorly mineralized and rubbery bones bend and twist easily. These lesions are painful and the birds are lame and reluctant to walk. Because of the pain and physical deformities the birds have difficulty reaching the feed and water and will lose body condition and eventually die if not treated.



Rib cage from a young duck with rickets. Note the banding and twisting of the ribs and swollen areas where the ribs join the back bone. This softening and swelling of the bone at this location has been referred to as the "ricketic rosary".

At post mortem the bones may be twisted and bent. Because they are poorly calcified the bones bend like rubber rather than snap and the growth zones at the end of each bone are wider than normal. There is often beading of the ribs at the junction of the spinal cord. The beak may bend easily. Folding fractures of the long bones and the ribs, and flattening of the rib cage, may also be seen The parathyroid glands are usually enlarged.

Treatment

Treatment involves correcting the diet as soon as possible before the bone deformities become too severe to be reversed. Placing birds on a commercial diet designed for that age and species of bird and supplementing the feed with calcium (for example top-dressing the feed with dicalcium/phosphate or oyster shell etc.) and adding vitamin D3 in the drinking water. Remember, birds can only utilize vitamin D3 not other forms of vitamin D packaged for mammals. It is generally safe to assume that if the birds are developing rickets on a home-formulated diet, then they likely have other vitamin/mineral dietary problems as well, and so supplementation with multi-vitamin mineral packs may be helpful.

Proper diets are critical to raising healthy birds. Resist the temptation to buy cheap scratch grains and whole corn. Your investment in properly formulated and well balanced diets will pay dividends in good growth and healthy birds.

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