

GERIATRIC DISEASES OF PET BIRDS

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Introduction

Older and geriatric birds are presenting more commonly for veterinary care and certain diseases are more common in older birds than younger ones such as arthritis, neoplasia, cardiac disease, obesity, atherosclerosis, chronic malnutrition, and cataracts. Below is an overview of these diseases, including the most common forms of neoplasia based on species of bird and location of tumor, as well as methods of diagnosing and treating common geriatric diseases of pet birds from basic to complex.

Companion avian patients are presumably living longer because they are receiving better care than in years past, or are they? The larger parrots purchased during the time when pet birds were popular, specifically the 1980's and 1990's, are now nearing a geriatric age and are now presenting with diseases that are accompanied by older age. Diseases that are more common in an older bird are neoplasia, arthritis, cardiac disease, obesity, atherosclerosis, chronic malnutrition, chronic aflatoxin exposure, and cataracts. Diagnosis of these diseases may require invasive techniques, but not always, and treatment of these diseases is possible with varying degrees of success depending on the disease. In most instances, if the disease process was detected sooner rather than later, a better outcome could be expected. Therefore, it is incumbent upon us to educate the public on the importance of regular examinations, especially in geriatric birds.

What is old for a bird?

Lifespan refers to the period of time that an individual is alive. Therefore, the average lifespan is the life expectancy for a particular group or breed. Longevity is the maximum lifespan that can be expected under ideal conditions. Unfortunately, ideal conditions are not present in many captive situations and an individual's lifespan may not reach maximum lifespan, or get even close. The lifespan of an individual bird depends on many factors including species, amount of genetic inbreeding, size, concurrent disease, diet and environment. Chronic malnutrition, specifically hypovitaminosis A, can lead to a decreased lifespan.

Recently a study evaluated 83,212 parrot life history records in the International Species Information System (ISIS) from zoos around the world providing us with some information on average lifespan and longevity of some species of parrots. (Table 1)¹

It is very difficult to age birds accurately and we are often at the mercy of the history we receive from the owner as to the age of the bird. Susan Clubb wrote an excellent article many years ago showing that aging macaws start to develop old age cataracts in their mid to late 30's and arthritis in their 40's.² This paper also showed anecdotally that sometimes the skin is wrinkled around the feet or hocks of an older bird, or on the face of birds with featherless areas on their face. It was also noted that the muscle mass over the pectoral muscles is not as robust. Jesse Fallon wrote an article evaluating the feathers of birds, especially wild birds, for the formation of a crosslinked compound called pentosidine, an advanced glycation endproduct, that correlates with age in various species of bird from a 2x2 cm skin sample.³

Neoplasia:

A list of the most common type of neoplasia found in each tissue of parrots is listed in Table 2.⁴ The most common tumor of captive parrots is the lipoma.⁴ There are many reports of which tumor is most common in various tissues, and the lists vary somewhat depending on the population evaluated.

Lipoma

Lipomas are accumulations of fat usually in the subcutaneous area over the breast and coelomic cavity area, but can also occur within the coelomic cavity. They are most often seen in some middle-aged budgerigars, Rose breasted cockatoos, and some older Amazon parrots. Dietary changes to healthier, lower fat diet and exercise can help, but there seems to be a genetic component. Other treatments may include surgery but severe hemorrhage is a concern. One paper by Ryan Devoe showed adding taurine to the diet as well as diet change may help. Do not place the birds on thyroid supplement as life threateningly high T4 levels can easily occur.

Renal adenocarcinoma

Renal adenocarcinoma is very common in budgerigars and some state that over 90% of budgerigars over 5 years of age will develop a leg lameness secondary to a renal tumor (usually renal adenocarcinoma) pressing on the ischiatic nerve (some refer to this as the sciatic nerve). This the highest tumor rate of any animal. A presumptive diagnosis is based on breed, age and clinical signs. A definitive diagnosis is based on renomegaly observed on radiographs and/or ultrasound. Sometimes a barium series can outline the GI tract being pushed ventrally by the tumor. Unfortunately, there is no *surgical treatment described for this tumor*.

Testicular tumors

Male budgerigars over 5 years of age can have a seminoma tumor or more commonly a Sertoli cell tumor that secretes estrogen and causes a male's blue cere to turn brownish like a female budgerigar. No surgical treatment is described, but a recent paper suggested that leupralide acetate seems to help with clinical signs for about 6 months.

Other carcinomas

Anecdotally, cockatoos and Amazon parrots tend to get adenocarcinoma more often than other species. Respiratory adenocarcinoma can be found in the wing, axillary or lung area in cockatoos. The respiratory epithelium lining of the pneumatic humerus can develop a respiratory adenocarcinoma. In Amazon parrots bile duct carcinoma is found in the liver, especially if the bird also has papillomatous masses in the cloaca due to Psittacine Herpesvirus-3. Radiographs may indicate bony involvement of a respiratory adenocarcinoma or hepatomegaly in the case of bile duct carcinoma (a CT would be even better). A PET scan could also help indicate an area of neoplasia or infection/inflammation. A needle aspirate and cytology may aid in diagnosis of bile duct carcinoma, but an endoscopic or key-hole access hepatic biopsy is better. Treatment is surgical removal/debulking if possible, which is most successful with wing amputation of a respiratory adenocarcinoma in the humerus of a cockatoo.

Squamous cell carcinoma (SCC) is common and may be more often seen in Amazon parrots, macaws, and African grey parrots. It can be found in the mouth or beak area, or under the wing of the Amazon parrots and macaws, whereas it often involves the uropygial gland in African grey parrots. Biopsy is the best method of diagnosis. Radiation therapy at higher doses than that used in mammals did not slow the growth of SCC in a Buffon's macaw (Volgeneau and Greenacre) and has not generally been recommended for treatment. A study by Barron-Wilson showed birds can tolerate high levels of radiation

therapy with little effect. Treatment of skin SCC has been attempted with Strontium-90 topical radiation and intralesional cisplatin or carboplatin with some success after initial debulking procedures.

Chronic aflatoxin exposure

Chronic aflatoxin exposure occurs most commonly from eating peanuts either in or out of the shell. Since peanuts grow underground they invariably have some degree of *Aspergillus* fungus which produce aflatoxins. Even peanut butter made for human consumption has “acceptable levels” of aflatoxin. It is one of the most potent toxins, which when ingested chronically even in small amounts can cause characteristic bile duct hyperplasia. Presumptive diagnosis is based on history and elevated bile acids, but definitive diagnosis is based on a liver biopsy. There is no treatment to reverse the damage done, but colchicine can prevent further fibrosis from occurring. Perhaps lactulose and milk thistle (silymarin) can help the liver function.

Chronic malnutrition

Chronic hypovitaminosis A is the most common malnutrition that we see in pet birds, usually from eating an all, or mostly, seed diet. Years of not ingesting enough vitamin A causes unhealthy epithelial tissues due to squamous metaplasia (especially skin, liver, kidney, mouth and sinuses, etc.) Blunted choanal papillae are characteristic of hypovitaminosis A. Unhealthy tissues easily become infected by bacteria and fungus. Aspergillosis occurring at the tracheal bifurcation is common secondary to hypovitaminosis A changing the epithelium in that area.

Arthritis

In Clubb’s aging macaw article, decreased range of motion and joint stiffness was noted typically in macaws over 40 years of age.² Perching on the same size perch for years, lack of exercise, and old age are associated with arthritis. Low or no perches near food, pain relievers and nutritional supplements that increase fluid in the joints may help. Chondroitin sulfate and glucosaminoglycans orally may help. Injectables of these products have been associated with adverse events, including death.

Cataracts

In Clubb’s aging macaw article, they noticed immature cataracts in at least one eye in all macaws over 35 years of age.² The cataracts tended to stay immature for many years after onset and the birds were still visual, but when the change to mature cataract and blindness finally occurred, onset was rapid and involved phacoclastic uveitis. The eyes of even the large macaws are too small for the tools generally used in phacoemulsification, therefore a needle is used to evacuate the abnormal lens, but fraught with problems due to the firmness of the lens.

Obesity

Birds in captivity rarely get enough exercise and sometimes their diet is too high in fat (seed diets especially). The typical “perch potato” is at risk for liver disease, obesity, atherosclerosis and heart disease. Many organs don’t function normally in an obese animal. Often darkened, even black, feathers are seen in green and blue feathers over the wing of birds with liver disease due to abnormal refraction of light on abnormal feathers.

Cardiac Disease

An enlarged, poorly functioning heart, specifically dilated cardiomyopathy, is being diagnosed more frequently in older birds. Diagnosis is based on echocardiogram. All the typical cardiac drugs used in

mammals are used in birds (furosemide, pimobendan, enalapril). There is a great chapter on Cardiology by Dr. Brenna Fitzgerald in Dr. Brian Speer's Avian Medicine book.

Atherosclerosis

Diets high in animal fats cause hardening of the arteries. Hugh Beaufrere has many excellent proceedings and articles on this disease.^{5,6,7} One study of Quaker parrots fed a 1% cholesterol diet quickly (induced at 2 months, advanced at 4-6 months) developed atherosclerosis.⁶ In the other study age, female gender, being of the genera *Psittacus*, *Amazona* or *Nymphicus*, and having certain diseases (reproductive, hepatic, myocardial fibrosis) were associated with atherosclerosis.⁵ Antemortem diagnosis is difficult and treatment is also difficult. It is much easier to prevent this disease with a good diet and exercise. If a high cholesterol is found (I consider over 200 high just like in humans although many say higher), then a lipid profile is recommended (and a diet change!). Oftentimes owners don't realize sources of cholesterol for their birds such as egg yolks, butter, meat, and cheese (commercial instant cheese grits is not good but a common culprit in the southern US!) Recommend A diet change to add sweet potatoes, remove sources of fat and cholesterol, and slowly over months, change to pelleted diet with about 20% fresh vegetables and some fresh fruits. Atherosclerosis in birds leads to progressively decreasing lumen diameter and not necessarily a plaque breaking off and causing a stroke, therefore isoxuprine has been found to be helpful in these cases.

Laying first egg in life and it is huge!

Anecdotally, I have seen many older female birds presenting egg bound because for the first time in their life, at an old age, they decide to lay their first egg. Usually these eggs are larger than normal and are difficult to lay. They present as an emergency situation because the huge egg is placing pressure on the kidneys causing shock. Abnormally high estradiol levels can sometimes be measured in these birds and may be due to cystic ovaries which stimulate the bird to start laying eggs. Polyostotic hyperostosis (POHO) may be present as well which is abnormal calcium deposition in multiple bones. Palpation of an egg and radiographs are most helpful for a diagnosis. Standard procedures for an egg bound bird must be performed understanding that this case is different since it is usually an egg that is too big to be laid. Therefore first oocentesis, is performed to relieve the pressure on the kidneys. Then determination of the underlying cause (usually chronic exposure to long light cycles) of more aggressive therapies such as surgery are performed.. Further study is needed in this area. For prevention, some give a monthly leuprolide acetate injection or a deslorelin injection every 3-12 months. A salpingohysterectomy may ultimately be needed. Sometimes just adjusting the light cycle is enough.

Prevention Program

Good diet, exercise and sunshine. Regular check-ups and bloodwork. Teach clients how to examine their bird, their eating and drinking habits, and their droppings routinely for any changes and to see a veterinarian familiar with birds immediately if any changes are noted.

References

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Table 1: Lifespan and Longevity of commonly kept parrots

✦ Species	average lifespan	approximate longevity record
✦ Budgie	5-7 years	18 years
✦ Cockatiel	5-7 years	32 years
✦ Lovebird	10 years	13-34 years
✦ Conure	20 years	6-60 years
✦ Amazon	15-50 years	22-66 years
✦ African Grey	15-40 years	48 – 60 (92) years
✦ Cockatoo	15-30 years	27 - 92 years
✦ Macaw	15-30 years	32-63 years
✦ Lory	7 years	17-30 years

Table 2. Most Common neoplasms based on tissue. ⁴

Tissue	Neoplasia
Muscle	Leiomyosarcoma
Bone	Osteosarcoma
Kidney	Renal carcinoma
Testicular	Sertoli cell tumor/seminoma
Ovarian	Granulosa cell tumor
Proventricular	Proventricular carcinoma
Hepatic	Bile duct carcinoma
Endocrine	Pituitary adenoma
Hemolymphatic	Lymphoid neoplasia
Fat	Lipoma (most common tumor overall in captive parrots)