

AVIAN GERIATRICS

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INTRODUCTION

The word 'geriatric' came into usage in the 1920s and was derived from two Greek words: *geri-* old man, and *iatic* - of, or pertaining to, a physician or medicine. Geriatrics is therefore the prevention and treatment of diseases of the elderly.

It has long been a neglected area in avian medicine – probably because poor diets and husbandry meant that few birds lived long enough to be classified as geriatric. But as bird owners gain more knowledge and experience in keeping their charges, the life expectancy of many birds is increasing. A word of caution - the popularly held belief that some birds can outlive their owners is rarely true.

So how long do birds live for? The Appendix Table may give some idea of how long to expect birds to live for.

Geriatric medicine could then be defined as the care of birds in the last quarter of their lives; this will obviously vary between species, and even between individuals (as dictated by their lifestyle and diet).

MUSCULOSKELETAL PROBLEMS

- **Pododermatitis:** years of a combination of poor diet, inadequate perches and often obesity result in the plantar surfaces of the feet and hock subjected to a high degree of wear. This results initially in a callus, which then thins and becomes susceptible to infection. The final outcome is infection is not just the superficial layers of the dermis, but sometimes extending deeper into the tendons, joints and bone. Antibiotics, analgesia, anti-inflammatories and sometimes even surgery are needed to address this problem. In addition, diet and husbandry changes are essential components of both prevention and treatment protocols.
- **Arthritis:** Degenerative joint disease is common in older birds, as it is in other species. It is aggravated by restricted exercise, poor diets and obesity. Diagnosis can be made on the basis of clinical signs and radiographical evidence. Treatment is similar to other species: weight control, a NSAID, controlled exercise and perhaps pentosan polysulphate.
- **Metabolic bone disease:** nutritional secondary hyperparathyroidism is common in older birds. The effects of a calcium deficient diet are often compounded by inadequate exposure to unfiltered sunlight in birds housed indoors, The thin cortices that result are frequently subject to pathological fractures, especially if the bird falls heavily or is restrained forcefully (e.g., for veterinary examination).
- **Neoplasia:** Chondromas, haemangiomas, and malignant tumours including

osteosarcoma, chondrosarcoma, spindle cell sarcoma and leiomyosarcoma have all been reported in birds. As with other species, the incidence is higher in older birds than young.

PRACTICE TIP

Prevention of many of the geriatric musculoskeletal problems lies in early recognition of risk factors (poor diet, inadequate exercise, poor quality perches, and lack of unfiltered sunlight). Once these risk factors are identified, advice should be given to clients on what they are and how they can be avoided; compliance with this advice should be monitored during annual health checks. **Annual weighing (and recording of this weight) is a key element in monitoring the bird's propensity for potential musculoskeletal problems.**

CARDIOVASCULAR PROBLEMS

It is thought that somewhere between 10% and 40% of companion birds have some form of cardiovascular disease. These estimates are, however, based on retrospective pathology studies. The difficulties that can be encountered in diagnosing cardiovascular disease ante-mortem are probably why it is relatively rarely diagnosed.

As diagnostic capacities improve, an increase in the incidence of diagnosed cardiovascular disease can be expected. Pre-disposing factors appear to include:

- Restricted exercise
- Poor nutrition
- Keeping birds in a climate that they did not evolve in (e.g. keeping South American parrots in European winters)

Some of the conditions seen include:

- **Endocardial disease:** vegetative endocarditis of the aortic and mitral valves may cause vascular insufficiency, lethargy and dyspnoea. It is most common in birds with chronic infections (e.g., salpingitis, hepatitis and bumblefoot). Commonly implicated bacteria include *Streptococcus* spp, *Staphylococcus* spp, *E coli*, *Pasteurella* spp, *Pseudomonas aeruginosa* and *Erysipelothrix rhusiopathiae*. Lesions consist of yellow irregular masses on any of the heart valves. Detection of a heart murmur during physical examination should arouse suspicion of valvular endocarditis; the diagnosis can be made on ultrasound and echocardiography. Treatment is often not warranted unless clinical signs of congestive heart disease develop (see below).
- **Atherosclerosis:** Many avian orders may be affected but Psittaciformes and Anseriformes appear to be particularly susceptible. Amazon parrots, macaws and African Greys seem to be particularly prone. Predisposing factors appear to include:
 - Age – most affected birds are more than 8-15 years old
 - Lack of exercise

- High fat diets (i.e. seed)

It is a diffuse or local degenerative condition of the internal and medial tunics of the wall of arteries. The degenerative changes include proliferation of smooth muscle cells, the deposition of collagen, proteoglycans and cholesterol. As tissue damage progresses, dystrophic mineralisation occurs in the wall of the blood vessels. The resultant plaque protrudes into aortic lumen and retards blood flow, increases surface tension, results in aortic aneurism and possibly aortic rupture. These changes are most commonly seen in the aorta, brachiocephalic trunks, pectoral and carotid arteries.

The accumulation of pathogenic material in the arterial wall has been explained by the insudative theory. Normally a transfer of plasma proteins occurs through the arterial wall with subsequent removal from the outer coats by lymphatic vessels. During this process of permeation, fibrinogen and very low density lipoproteins are selectively entrapped in the connective tissue of the arterial wall. Their presence stimulates reactive changes that give rise to the production of atherosclerotic lesions. Variations in vascular permeability and arterial blood pressure can explain the preference of atherosclerotic lesions for certain areas. What triggers these changes is still the subject of debate:

- Genetic predisposition in some birds
- Hyperlipaemia
- Endothelial inflammation
- Toxins
- Immune complexes
- Hypertension
- The role of cholesterol and lipoproteins remains unclear.

Atherosclerosis is rarely reported in birds, and the condition is often associated with sudden death. Subtle and intermittent signs include dyspnoea, weakness and neurologic signs (e.g. seizures, tremors, and paresis). Galliformes and Anseriformes may die acutely from dissecting aneurysms that result in aortic rupture secondary to hypertension and atherosclerosis.

Diagnosis is rarely straightforward. There may be elevated plasma cholesterol, but this is not consistent. Radiography may reveal an increased density and size of the right aortic arch.

A variety of medical treatments have been advocated, but none appear to be consistent in their efficacy. A change in diet to formulated foods and vegetables, and a gradual increase in exercise play an important role in reducing obesity and increasing cardiovascular fitness.

Congestive heart failure is a compensated condition associated with fluid retention resulting from a sustained inadequacy of the cardiac output to meet the demands of the body. The causes are numerous and include endocardial, epicardial, myocardial, and combined diseases. The pathophysiology of congestive heart failure involves both backward failure and forward failure. Backward failure involves increased atrial and venous pressure due to a failing ventricle, while forward failure involves decreased renal blood flow resulting in sodium and fluid retention.

Both mechanisms ultimately result in increased venous and capillary pressure, so that more fluid escapes by transudation in the interstitial spaces. Pulmonary oedema predominates in isolated left ventricular disease. Systemic oedema with hepatomegaly and ascites will predominate in isolated right ventricular disease, or when both ventricles are affected. In birds, the right AV valve (muscular flap) thickens along with the right ventricle in response to an increased workload, and it has been postulated that this predisposes birds to right AV valvular insufficiency and right-sided heart failure.

Birds in the early stages of CHF may demonstrate episodes of periodic weakness and even syncope. They are often lethargic and have varying degrees of exercise intolerance. As the disease progresses birds may develop dyspnoea and coughing, and there may be coelomic distension due to ascites and hepatomegaly.

Auscultation of the heart is best performed on the left and right ventral thorax. Pleural or pulmonary fluid accumulation may cause muffled lung sounds or rales when a bird is auscultated over the back between the shoulder blades. Unique to birds, hepatomegaly can cause muffled heart sounds as the enlarged liver partly envelops the heart. Some subtle murmurs may best be heard when bird is anaesthetised.

Radiographic detection of cardiovascular abnormalities may be difficult, although an enlarged cardiac silhouette or microcardia can often be visualised. The maximum width of the cardiac silhouette in a VD radiograph should be 35-45% of the length of the sternum; 51-61% of the width of the thorax, and 54-62% of the width of the coracoid. Radiographic detection of an enlarged cardiac silhouette with muffled heart sounds is suggestive of pericardial effusion. An increased cardiac silhouette with normal heart sounds is suggestive of an enlarged heart. Microcardia is indicative of severe dehydration or blood loss that has resulted in hypovolaemia. Other radiographic changes that suggest cardiac disease include congestion of pulmonary vessels, pulmonary oedema, pleural effusion, hepatomegaly and ascites. Echocardiography is the imaging technique that generally provides the most diagnostic information about CHF.

Treatment of CHF revolves around the use of diuretics such as furosemide 0.15 – 2mg/kg SID or BID. (Overuse or high doses of diuretics can reduce the blood volume and trigger the renin-angiotensin-aldosterone system. Therefore it is necessary to use the lowest effective dose.) Angiotensin converting enzyme (ACE) inhibitors e.g. enalapril 0.5mg/kg BID can be used to block the formation of angiotensin II, thereby blocking the renin-angiotensin-aldosterone system. They also have a diuretic effect.

PRACTICE TIP

Prevention of many of the cardiovascular problems lies in maintaining a healthy diet and bodyweight. Misdiagnosis of cardiovascular disease is unfortunately common, with antibiotics prescribed for the early signs of lethargy, weakness and dyspnoea. ***Clinicians need to recognise that infectious diseases are much less common in geriatric patients, compared to degenerative diseases such as cardiovascular disease.***

RENAL DISEASE

Although birds of any age can develop renal disease, older birds are more likely to develop chronic renal insufficiency. This can be due to a variety of disease processes, including membranous glomerulonephropathy (deposition of immune complexes, usually from a previous polyomavirus infection), tubular gout, and chronic low grade bacterial nephritis. Affected birds present with PU/PD, weight loss and occasionally articular gout.

Diagnosis is made by demonstrating a persistent hyperuricaemia before and after three days of fluid therapy. Radiology may demonstrate renal enlargement and sometimes mineralisation. Uretoliths are occasionally seen. Kidney biopsy can help to determine the disease process, but fibrosis may mask the underlying cause.

A variety of medications can be used to control renal disease and alleviate the clinical signs. Increasing fluid intake, analgesia, colchicine and allopurinol may all have a role in treating this condition.

LIVER DISEASE

Although there are many hepatopathies that can affect older birds, the most common is hepatic lipidosis. This is the result of many years of high-fat, low-protein seed diets. In end stage liver disease, normal liver architecture may be effaced by fibrosis; the result is decreased liver function and eventually failure.

Birds affected with liver disease may present with PU/PD, biliverdinuria, inappetance, overgrown beaks and nails, feather and colour abnormalities, and 'SBL' – sick bird look. Birds with hepatic lipidosis are often overweight or even obese; birds with end stage liver disease are often very thin. Clinical pathology often reveals non-regenerative anaemia, elevated AST (with normal CK), bile acids and GLDH. Birds with hepatic lipidosis often have lipaemia associated with elevated cholesterol and triglycerides. Radiology may show either hepatomegaly or microhepatica, depending on the stage of liver disease. Liver biopsy is the preferred means of confirming liver disease and characterising its aetiology and/or pathogenesis.

Treatment revolves around supporting the patient (fluids, dietary improvement, vitamin supplementation), treating the specific hepatopathy (where known), and supporting the recovery of the liver through the use of medications such as UDCA, colchicine and silibinin.

Birds that are still in good to overweight body condition carry a reasonable to good prognosis; thin

to emaciated birds carry a guarded to poor prognosis.

REPRODUCTIVE DISEASE

Older birds are more likely to develop reproductive diseases such as cystic ovaries, salpingitis and metritis, egg binding and retention, yolk peritonitis, hernias, and neoplasia. Affected birds present for coelomic enlargement, dyspnoea, straining, paresis of one or both legs, and perhaps SBL.

Diagnosis is made by a combination of clinical pathology and diagnostic imaging, including ultrasound. Exploratory surgery can help to confirm the diagnosis and perhaps offer a surgical solution.

CATARACTS (NUCLEAR SCLEROSIS)

Nuclear sclerosis is an age-related change in the density of the crystalline lens nucleus that occurs in all older animals. It is caused by compression of older lens fibers in the nucleus by new fiber formation. The denser construction of the nucleus causes it to scatter light. These changes are not uncommon in older birds, and rarely require treatment.

DERMATOLOGY

Skin and feather changes in older birds are not uncommon. In particular, darkening of the skin and feather loss/untidiness are age related changes. However, some endocrinopathies e.g. suspect hypothyroidism can also cause dermatological changes; these changes should not be attributed to age without a thorough investigation.

PRACTICE TIP

Many of these conditions discussed above are aggravated by poor diet, obesity and poor husbandry. ***Careful attention to such risk factors can prevent or minimise these problems, leading to a longer and happier life for your patients.***

HEALTH MONITORING

A key element in managing the health of companion birds is the annual health check. This is even more so when we are dealing with geriatric patients. Surprisingly, many veterinarians are reluctant to offer this service; at the same, many clients are expecting and requesting it.

The minimum database that should be collected on an annual health check for an older avian patient includes the following:

- A review of the patient's behaviour, demeanour and husbandry since the last visit
- A review of the patient's diet since the last visit
- Weighing the patient, recording this weight, and comparing it to both expected weights for this species and previously recorded weights
- A thorough physical examination, paying particular attention to the problems discussed above

- Clinical pathology, including haematology and biochemistry

Abnormalities or uncertainties should be investigated further, using tools such as biopsy, cytology, radiology, ultrasound or endoscopy. **Remember, the most dangerous words heard in veterinary practice: *Let's just keep an eye on that...***

Further reading

Doneley B. 2010 Avian medicine and surgery in practice; companion and aviary birds. Manson Publishing, London

Life expectancies of commonly kept species

Species	Life expectancy (years)
Alexandrine Parrot (<i>Psittacula eupatria</i>)	25-35
Amazon Parrot, <i>Amazona</i> spp	50-70
Budgerigar (<i>Melopsittacus undulatus</i>)	7-12
Caique, <i>Pionites</i> spp	30-40
Canary (<i>Serinus canaria domestica</i>)	6-12
Cockatiel (<i>Nymphicus hollandicus</i>)	10-15
Corella, Short-billed (<i>Cacatua sanguinea</i>)	30-40
Cockatoo, Greater Sulphur Crested (<i>Cacatua galerita</i>)	50-70
Cockatoo, Major Mitchell (<i>Lophochroa leadbeateri</i>)	40-60
Cockatoo, Rose Breasted (Galah - <i>Eolophus roseicapilla</i>)	20-40
Conure, <i>Aratinga</i> spp	15-25
Conure, <i>Pyrrhura</i> spp	15-25
Eclectus, Red-Sided (<i>Eclectus roratus polychloros</i>)	25-30
Grey Parrot, Congo (<i>Psittacus erithacus</i>)	50-60
Lorikeet, Rainbow (<i>Trichoglossus haematodus</i>)	15-20
Lory, Chattering (<i>Lorius garrulus</i>)	30-35
Lory, Red (<i>Eos bornea</i> or <i>Eos rubra</i>)	25-30
Lovebirds, <i>Agapornis</i> spp	7-15
Macaw, Blue and Gold (<i>Ara ararauna</i>)	50-80
Macaw, Green Wing (<i>Ara chloropterus</i>)	60-90
Macaw, Hahn's (<i>Diopsittaca nobilis nobilis</i>)	25-30
Quaker (Monk Parakeet) (<i>Myiopsitta monachus</i>)	20-30
Ring-neck Parrot (Indian) (<i>Psittacula krameri</i>)	25-30