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Tom graduated from the University of Edinburgh in 2011 before completing a one-year rotating internship working extensively with exotic species, particularly raptors and reptiles. He began his residency in avian medicine at Great Western Exotics, Vets Now, in 2012, where he is now clinical lead.

Tom successfully gained his RCVSCertAVP(ZooMed) in January 2014 and completed his residency in avian medicine the following year.

He obtained his European diploma DipECZM(Avian) and European specialist status in 2017. Tom lectures to veterinary professionals on all aspects of exotic animal medicine.

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**Suggested Personal & Professional Development (PPD)*

FEATHER PLUCKING

Feather destructive behaviour

Feather destructive behaviour – or ‘feather plucking’ – is a frequent cause for the presentation of parrots to veterinary professionals. It is estimated that between 10 and 15 per cent of captive parrots suffer from a feather destructive disorder. Some cases progress beyond the feathers to damage to the skin and underlying muscle – termed auto-mutilation – which is particularly prevalent in cockatoos.

Some species are predisposed to feather destructive behaviour (FDB), with grey parrots and cockatoos being overrepresented – upwards of 40 per cent prevalence. There are other predisposing factors – females are more commonly affected and hand rearing has been shown to increase the risk. It is proposed that single pet parrots are more likely to be affected by behavioural disease predisposing them to FDB – and, as a consequence, keeping a single pet parrot in a cage is now prohibited in some European countries.

There are varying patterns of FDB – with different parts of the body affected. What you will see in all cases, however, is that the head and upper neck are preserved because these are areas that cannot be reached by the bird’s beak. Some cases of FDB are more subtle – with the bird chewing barbs, stripping or tipping feathers, but not removing them.

The causes of FDB are wide-ranging – roughly categorised into medical and behavioural components; although some cases will have both medical and behavioural aspects concurrently.

In-depth consultation essential

When presented with a case of FDB, the treating veterinary professional needs to take a long and extensive history. In many cases, this clinical history is the most important part of the appointment. It is not possible to investigate a case of FDB in a normal 10- to-15 minute consultation



– it simply takes too much time. We typically book 60 to 90 minutes for the initial behaviour ‘consult’.

The history will go all the way back to how a bird was reared, its husbandry, enrichment, human and conspecific interaction. It will also cover medical aspects – disease screening and pre-existing conditions. The history will then turn to the FDB itself – when it started, which areas were first affected, its progression, as well as any treatment attempted by the owner to date. The latter is particularly important because,

owing to the frustrating and complex nature of FDB, owners have often sought multiple different opinions before presenting the patient to their veterinary practice.

Many questions may not seem relevant to the owner, but are important given the wide range of potential causes of FDB. A number of sources, such as the Association of Avian Veterinarians (AAV), produce proforma husbandry sheets to help in the gathering of this information, to speed up the process and assure vital questions are not missed

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during the consult. Some of these may be specific to behaviour and FDB consults.

One caution, however, with such sheets. If they are given to owners prior to the consult, the 'correct answer' may be researched by an owner, particularly with regard to husbandry. Therefore, the questionnaires can be misleading. It is important to establish a good relationship with the client when investigating FDB – the process may take many weeks/months and repeat visits will inevitably be required. A good vet/client relationship will also mean the owner is likely to be open and honest when giving a history, updates and discussing compliance with proposed treatment strategies.

Feather destructive behaviour can have a number of physical consequences for an affected bird. If blood feathers are damaged, potentially serious blood loss can occur – particularly if the large flight feathers are involved. Flight itself may be impaired, leading to a degree of disability. Skin infections can occur as a result of continued damage and inflammation associated with FDB.

Birds may become cold and struggle to thermoregulate – particularly if kept outdoors. Serious wounds can result if FDB progresses to automutilation. In the most severe cases, temporary collars may be placed to protect the bird from further damage while the underlying cause is treated.

Medical causes

Medical conditions that cause discomfort, pain,

itching, or irritation can be considered possible causes of FDB. Disease that leads to the formation of dystrophic (abnormal) feathers may also lead to the bird removing them. No single disease has been shown to be causative for FDB – but resolution or improvement following successful treatment of various conditions indicates there is likely a contributing factor.

Implicated disease categories include:

- infectious (bacterial, viral, fungal and parasitic)
- endocrine, hepatic, toxicosis – in particular heavy metal
- nutritional (common with seed-based diets)
- inflammatory/allergic skin disease
- reproductive disease
- orthopaedic disease.

A balanced approach is required for the investigation of FDB. As well as making a behavioural assessment, the veterinary professional investigating a case will need to select a number of diagnostic tests to rule out the common medical conditions. These tests will probably include disease-screening blood tests, examination of skin/feather samples and diagnostic imaging. Sadly, many of the pet insurance companies exclude feather destructive behaviour from their policies, so these potentially expensive diagnostic work-ups often end up being owner-funded.

Blood tests

Blood samples are frequently taken as part of an investigation of FDB. In most cases, a complete blood count and biochemistry are



performed. In addition to these, some useful infectious disease screening can be carried out on blood samples, including for psittacine beak and feather disease (PBFD), polyoma PCR tests and bornavirus serology.

In-house haematology analyses are rarely suitable for avian blood samples – so either in-house manual technique (using haemocytometers and blood film analysis) can be performed or the services of an external laboratory will be required.

In-house biochemistry machines, in contrast, are useful for avian patients; although a standard dog/cat biochemistry panel is unlikely to be suitable. Parameters tested should be specific to avian species and many exotic specialist laboratories will even offer a feather destructive behaviour profile.

As a minimum, the author tests:

- AST, LDH, bile acids
- CK
- uric acid and urea
- zinc
- amylase
- total protein, albumin/globulin

- calcium (ionised and total)
- phosphorus
- cholesterol.

Disease screening

A number of infectious diseases – both viral and bacterial – suffered by psittacines have been linked with FDB. The most common are: psittacine beak and feather disease, polyoma virus, bornavirus disease and *Chlamydia psittaci*. Some birds may have been tested prior to sale, others may be tested as part of routine health examinations by a veterinary practice; the majority of birds, however, may never have been tested.

The choice to test for these diseases will depend on signalment, history and concurrent clinical pathology and diagnostic findings. To complicate matters, testing for some of these conditions – bornavirus is a good example – can be problematic, and the choice of test and diagnostic sampling could fill a single article on its own.

Radiographs

Survey radiographs are an important part of the investigation. Critical

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to obtaining diagnostic radiographs is correct positioning. This will almost always require anaesthesia – legs and wings need to be positioned to avoid superimposition – and this is nigh on impossible without anaesthesia. If there is a suspicion of gastrointestinal distension – seen with PDS (but also other gastrointestinal disease) – then contrast radiographs are often performed. Fluoroscopy may be used to assess proventricular motility.

Further imaging

Ultrasound (particularly of the liver), computer tomography and diagnostic endoscopy can be an important part of the diagnostic investigation, depending on the results of the preliminary diagnostics.

Psychological/behavioural factors

Entire books have been written on the subject of parrot behaviour and this article can barely scratch the surface. If medical investigations are not forthcoming with a potential cause of feather destructive behaviour, then a process of behaviour analysis and

assessment will be required. This aims to identify any triggers, reinforcements and environmental deficiencies that may be contributing to the FDB.

Each and every bird should be assessed as an individual – general rules and assumptions should not be made. Taking the clinical history is the first step, and home visits, video footage and ‘in consult’ assessment may form part of the behavioural investigations. ‘In consult’ assessments can be affected by the bird being outside of the home environment; because behaviours displayed at home may not be apparent in the consulting room, or when strangers are present.

The parrot’s age and the age of onset of a behaviour are particularly relevant. Different life stages are characterised by different behaviour patterns; behaviour that an owner finds troublesome can actually be a normal part of psittacine development – owners who are not expecting behaviour change throughout life can become quite distressed when their ‘soppy’, tame, juvenile,

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hand-reared bird starts showing typical adolescent territorial, hormonal and, possibly, aggressive behaviours. Mistakes made at this stage may allow this unwanted behaviour to be reinforced and remain problematic throughout life.

Some cases of FDB may have had a medical or behaviour trigger that is historic and the syndrome is now habituated and reinforced, despite the fact the original cause is no longer present. Sometimes, a good history may be able to unravel the mystery; but with birds that are rehomed or rescued cases, finding the original trigger for a behaviour is not always possible, and the focus will be on displacement.

Following this analysis, where necessary, a programme of behavioural modification and environmental stimulation

will be suggested. In some cases, medical treatment will also be required – hormone implants and pharmaceuticals are appropriate in specific cases, but should never be used to ‘paper over’ the problem. Applied behaviour analysis focuses on identifying the conditions that lead up to a particular behaviour, and also the consequence of that behaviour. It is extremely common for owners to be inadvertently reinforcing an unwanted behaviour – what some owners assume to be negative reinforcement, can actually be positive reinforcement to a parrot.

Obvious positive reinforcement includes food treats, access to a favourite toy and praise; but subtle changes in body language – even eye contact – can act as a reinforcement. All members of the household have to be on board – if the children find it funny and laugh every time mum or dad gets bitten, then the laughter will likely be reinforcing the behaviour!

Treatment is based around enrichment, positively reinforcing ‘good behaviours’. These are often termed replacement behaviours and ensure no unwanted behaviour is being inadvertently reinforced. This is commonly termed ‘extinction’, which is the permanent removal of specific reinforcers that maintain a particular problem. This can be common in FDB, because an owner who is distressed by the behaviour will often be provoked to react when the bird starts plucking – the



commotion or attention inadvertently reinforcing the behaviour.

Enrichment comes in many different forms. It is important that not just one type is provided and that balanced and varied enrichment is implemented. Enrichment provides activities and stimulation that will fill time which had been taken up previously with excessive preening and feather destructive behaviours. It is important to remember that each bird needs to be treated as an individual – and enrichment strategies that work for one case will not necessarily benefit another. Some parrots, for example, will show phobias to new toys in the environment – and gentle/gradual habituation may be required. Birds often need to be taught how to forage – particularly if they have only ever been fed from a bowl.

Categories of enrichment include:

- sensory
- manipulatory
- environmental
- puzzles
- foraging/feeding
- social training.

Summary

Improvement with behaviour modification can take many weeks or months in some cases – and follow-up visits and close monitoring of treatment is often required. A great deal of commitment and engagement is needed from owners for a successful outcome to be achieved.

Given the wide range of possible causes, FDB can be a challenging and frustrating condition to treat; but given the clear welfare concerns associated with its manifestation, it should be approached as seriously as any other medical condition in our pet parrots. ■



PPD Questions

1. Hepatic disease has been proven as a cause of feather destructive disease. True or false.
2. Which species is most prone to feather plucking – Amazon parrots, grey parrots or *Electus* parrots?
3. Feather plucking often progresses to auto-mutilation in Amazon parrots. True or false.

Answers
1. false
2. grey parrots
3. false. Self mutilation/auto-mutilation is most common in cockatoos.

Further reading

Speer B (2016). *Current therapy in avian medicine and surgery*, 1st edn, Elsevier. ISBN 9781455746712

van Zeeland, Yvonne RA et al (2009). *Feather-damaging behaviour in parrots: A review with consideration of comparative aspects*. *Applied Animal Behaviour Science*, 121(2): 75-95.