

# Exotic Pet

## P R A C T I C E

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### SCIENTIFIC ARTICLE

## Obesity in Pet Birds

### Part 2

Jerry LaBonde, M.S., D.V.M.

Last month, we discussed the characteristics of obesity in pet birds, including factors that predispose avian pets to obesity and how diet is related to fat utilization and metabolism. This month, we will expand on the relationship of diet to obesity and take a look at pediatrics and medical problems associated with the condition.

### Diet Related to Obesity

Because of species variability and a lack of information on nutritional requirements for all species, ideal protein and fat levels have not been determined.<sup>1,2</sup> A diet ranging from 16% to 18% protein and 6% to 8% fat content appears to be a rough guideline for adult psittacines. However, these levels are not exact for all species; factors such as age, reproductive status, and activity level need to be taken into consideration.

Not all obese birds have an inappropriate diet or a metabolic dysfunction. Amazon parrots considered to be receiving a healthy, well-balanced diet have been observed to have a hyperphagic condition. Whether this is behavioral or related to hypothalamic satiety control dysfunction is unknown.<sup>3</sup> These birds will eat anything and everything put in front of them.

Many people have advocated a twice-daily (AM and PM) feeding protocol to stimulate the natural food-gathering habits of species in the wild. The result is for the bird to develop a normal appetite; food then is not used just to relieve boredom.

### Pediatric Considerations

Hand-fed baby birds are often given a number of commercial and home feeding formulas. The emphasis on having rapid weight gains and mixing formulas without thought to nutrient content may be predisposing these birds to obesity as they get older. Rapid growth can lead to excessive fat accumulation and adipocyte hyperplasia.<sup>4,5</sup> Because adipocyte hyperplasia continues up to 3–4 months of age, the hand-feeding diet may be critical in setting the bird up to become obese. A high-fat diet given to weak babies can slow digestion of gastrointestinal contents by 4–11 hours. Neonates that are mobilizing egg yolk will have some hepatic lipidosis, and this may be normal. Studies have been done on neonates and the relationship of high-fat diets and tendencies toward obesity as the birds get older. These studies show that nutritional factors should be considered in relationship to the possibility of obesity predisposition.<sup>2,6,7</sup>

### Medical Problems Associated With Obesity

Obese birds are prone to a number of medical problems (see Table 1). The general health of the birds is usually poor, and shorter life spans can be expected. These birds are immunologically depressed and more prone to stress than birds of optimum weight.

Hepatic lipidosis is prevalent in overweight birds, and in severe cases depression may be exhibited as a result of a condition resembling hepatic encephalitis. For example, an obese (35% greater than optimum weight) yellow nape Amazon became acutely anorexic and depressed. Clinical chemistries revealed elevations in cholesterol, aspartate aminotransferase, triglycerides, and amylase. Hepatomegaly was observed on radiographs, and liver biopsy confirmed severe hepatic lipidosis. The bird did not eat on its own for 30 days and had to be hand-fed. It lost 25% of its original body weight before recovering. In adult overweight cockatiels that have been brought in dead, swollen fatty livers or small fibrotic livers with extensive fat infiltration have been noted.

Cardiovascular function is compromised in obese birds.<sup>7</sup> Circulatory problems, elevations in blood pres-

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**Obesity in Pet Birds**

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**Table 1.—Medical Problems Associated with Obesity\***

1. Poor general health	9. Hypothyroid/thyroiditis
2. Immunologic depression	10. Lipoma tumors
3. Hepatic lipidosis	11. Reproductive problems
4. Elevated blood pressure	12. Egg binding
5. Circulatory problems	13. Egg yolk peritonitis
6. Atherosclerosis	14. Pododermatitis
7. Necrotizing pancreatitis	15. Anesthetic and surgical risks
8. Diabetes mellitus	16. Musculoskeletal problems

\*1, 5, 7, 9, 11–14, 17

sure, atherosclerosis, and an increased tendency toward respiratory disease and distress have been attributed to an obese condition.

Obesity caused by a high-fat, high-caloric diet is thought to predispose birds to acute necrotizing pancreatitis, which is usually fatal. In the early stages of the disorder, these birds exhibit polyuria/polydipsia, anorexia, vomiting, and depression.<sup>8,9</sup> Yellow urates may be observed in tissues because of secondary hepatic inflammation. Peritonitis, fat necrosis, and splenic enlargement are also observed.

Diabetes mellitus is most often seen in obese cockatiels. This condition is often transient and usually considered secondary to another problem. It is not clearly understood whether the diabetes is a predisposing factor to obesity or if it is caused by obesity as pancreatitis is considered to be.<sup>1,10,11</sup>

Thyroid dysfunction can be found in some obese birds and may be related to genetics, nutrition, or disease. In some cases it is not clear whether the thyroid dysfunction is the initiating cause of obesity or a result of the obese state. Hypothyroidism and thyroiditis have been documented in cases of obesity. Some birds are thyroid responsive or may be euthyroid as a result of obesity.<sup>6,10</sup>

The most common tumor reported in obese birds is the lipoma. This kind of tumor is most commonly found in budgerigars and rose-breasted cockatoos.<sup>12</sup> Many of the tumors can be reduced with thyroid supplementation and dietary management. Surgical excision is also an option.

Reproductive performance can also be influenced by obesity. Fertility decreases, and the mechanics of breeding are difficult with obese birds. Smaller species—canaries, budgies, cockatiels—are prone to egg binding. Egg yolk peritonitis is often seen in obese birds.<sup>13</sup> For example, a case of egg yolk infiltration into the lungs by means of a ruptured air sac was once observed in an obese yellow nape Amazon.

Obesity can predispose birds to plantar pododermatitis and musculoskeletal disorders. Inappropriate perches exacerbate an obese bird's foot problems. Excessive weight in young and older birds can lead to postural abnormalities, osteoarthritis, osteochondritis, and cruciate ligament rupture.<sup>14</sup>

Obese birds should be considered high anesthetic risks because of respiratory compromise and potential underlying problems related to obesity. Large amounts of abdominal fat make endoscopy and laparotomy difficult procedures.

**Management of the Obese Bird**

The primary focuses in managing an obese bird are to make sure the bird is healthy, to start a gradual weight-loss program, and to monitor closely. This should include a full workup to discern any underlying problems. The workup would include a complete blood cell count, blood chemistries, radiographs, and thyroid level or a thyroid stimulation test. Any problems should

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## PRACTICE

Shawn Messonnier, D.V.M.

## Performing Radiography on Birds

## TIP

Radiography can be performed on both ill and healthy birds. When a bird appears “healthy,” radiographs can be used to screen for undetected diseases and serve as a normal baseline for the individual patient.

Radiographs may also be taken for birds examined for various illnesses. I find them especially useful for birds with signs of respiratory illness or possible orthopedic injuries and also as part of the laboratory evaluation of the chronically ill bird (weight loss, decreased appetite, unresponsive to “conventional therapies”).

Whereas some avian practitioners take radiographs while the bird is awake, I prefer to take radiographs with the patient under isoflurane anesthesia. The anesthetic procedure is quick, and the bird does quite well. Care should be exercised when working with birds with ascites because the birds can die as a result of horizontal positioning if dependent fluid flows into the air sacs.

Once anesthetized, the bird is positioned in dorsal recumbency on the cassette and held in place with bandaging tape applied to the wings and legs. A right lateral recumbent view is also taken, with the wings taped dorsally and the legs pulled and taped caudally. I try for fast time settings to minimize respiratory artifacts. My settings typically range from 5 mA-s and 60 kv for small birds to 5 mA-s and 70 kv for larger birds.

## WHAT'S YOUR DIAGNOSIS ???

A 1-year-old male Jackson's chameleon (*Chamaeleo jacksoni*) was evaluated for a change of color around the mouth. Over a period of 3 days, the owner noticed the animal's maxilla turning black. Additionally, the chameleon had stopped eating and was anorectic for 3 days. His cagemate was normal.

## Questions

1. What might be the cause of the darkened skin around the mouth?
2. What diagnostic tests would you recommend?
3. Initial treatment consisted of an intramuscular injection of enrofloxacin given in the left front triceps. Immediately upon injection, the entire left limb became black. Explain this.

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## ROUNDTABLE

## Wild Animals as Pets

## Part 1

**Q. It's not uncommon for someone to call and ask the physician to spay a raccoon or de-scent a skunk. How should veterinarians handle clients who want a wild animal treated?**

**Dr. Tynes:** Each doctor should decide his policy before being confronted with this question. I refuse to perform procedures on wild animals people choose to keep as pets unless they have the proper permits and a compelling reason. Surgically altered wild animals cannot usually be released into the wild. While the owner may

seek another doctor to perform the procedure, I choose not to let this sway me to do something I feel is wrong.

**Dr. Suedmeyer:** We commonly encounter this. In Missouri, doctors may or may not be exempt from state liability when treating wild animals. Because state laws vary, doctors should contact their local conservation authorities and veterinary medical associations for more information.

**Dr. Campbell:** As long as the client has the proper permits, the doctor can feel free to pro-

vide treatment. State or U.S. Fish and Wildlife Services can be contacted for an explanation of wildlife laws.

**Q. What legal issues are there for the veterinarian who offers to assist with a wild animal?**

**Dr. Tynes:** Doctors interested in treating wild animals should learn the local and federal laws pertaining to them. Doctors must know whom to call or where to look up the answer if faced with an unfamiliar legal issue.

**Dr. Suedmeyer:** The doctor can be responsible for injuries incurred when treating wild

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## What's Your Diagnosis ???

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### Answers

1. Increased pigmentation could be associated with local temperature change or trauma to the area. In this case, the chameleon had infectious stomatitis that was pronounced in the area of the mouth directly under the darkened skin.
2. Laboratory evaluation included a colonic wash and a fecal examination for internal parasites, the result of which was negative. A culture and sensitivity test of the oral cavity showed moderate growth of *Pseudomonas aeruginosa* and *Proteus mirabilis*. Treatment with topical silver sulphadiazine (Silvadene) and injectable enrofloxacin was unsuccessful; the chameleon died 48 hours after the visit.
3. Color change in lizards can be quite pronounced. I have seen several patients exhibit immediate and dramatic post-injection pigimentary changes. In this case, the normal green color of the limb returned approximately 2 minutes after the injection.

Owners of exotic pets often call with seemingly trivial problems. The one discussed here—the skin of the mouth turning black—indicated a very serious underlying problem. I recommend an immediate examination for any exotic pet that exhibits behavior different from the norm. This rule is easy to follow, and owners understand it: *anything a particular pet is doing differently is cause for an examination.*

## Wild Animals as Pets

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animals. The AVMA does not support private ownership of wild animals. There are very few medications approved for use in wild animals and many animals are protected by state and federal agencies.

**Dr. Campbell:** Each state has regulations that deal with various aspects of ownership/possession of native wild animals. The U.S. Fish and Wildlife Service regulates issues associated with the Endangered Species Act of 1973, the Migratory Bird Treaty Act of 1918, and the Lacey Act of 1900. Veterinarians who treat wild animals must become familiar with these laws and make sure their clients understand them as well.

### Q. Are there concerns for zoonotic diseases?

**Dr. Tynes:** Zoonotic concerns are important, depending upon the species of animal involved. Rabies is a primary concern among people who handle wild animals, but it is certainly not the only zoonotic disease of concern.

**Dr. Suedmeyer:** There is a plethora of zoonotic diseases seen in wildlife, including rabies, Baylisascaris, and tuber-

culosis. Owners and veterinarians need to be aware of the potential for zoonotic disease transmission. Dr. Fowler's latest edition of Zoo and Wild Animal Medicine (WB Saunders) contains useful information on zoonotic diseases of wild animals.

**Dr. Campbell:** There are many zoonotic concerns, especially with regard to the very young, to the very old, and to immunosuppressed individuals. Proper hygiene will minimize the risk of zoonotic diseases in healthy adults. Clients and hospital personnel should be warned about zoonotic diseases. Of special concern are rabies, Baylisascaris nematodiasis, salmonellosis, and yersiniosis.

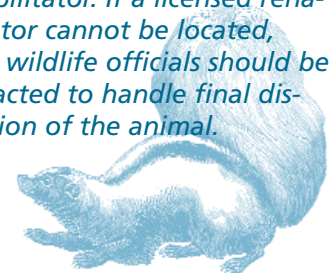
### Q. If a veterinarian treats a wild animal, can he charge for it? Does he have to return the animal to the person who brought it in?

**Dr. Tynes:** This may be a legal issue, depending on local laws, as well as an ethical issue. Doctors should discuss this with clients before treating the wild animal. I inform people who find an injured or orphaned wild animal that they can turn it over to me for treatment at no charge, and I will then release the animal to a licensed rehabilitator. By educating people about the difficulties and dangers associated with trying

to keep a wild animal as a pet, I can usually dissuade them from keeping it.

**Dr. Suedmeyer:** State laws may vary, but in general doctors can charge for treatment. Wildlife should then be turned over to a licensed rehabilitator. Veterinarians unsure about the legal ownership of wild animals should contact their local conservation, wildlife, or state veterinary authorities.

**Dr. Campbell:** That is up to the doctor. Because many rehabilitators have limited funds, doctors who treat wild animals often donate all or part of their services. As long as the caregivers have the proper permits, wild animals can be returned after treatment. Doctors don't necessarily need to have wildlife permits as long as the clients do. Clients without permits that find an injured wild animal should take it to a doctor for treatment; after treatment the doctor should give the animal to a licensed rehabilitator. If a licensed rehabilitator cannot be located, state wildlife officials should be contacted to handle final disposition of the animal.



## FROM THE LITERATURE

## Vitamin A Toxicity in Birds

Although vitamin A deficiency is more common than toxicity, toxicity can occur as a result of overzealous vitamin and mineral supplementation by owners. Toxic effects are seen in parrots when 20–100 times the required dose is administered. Little is known about the nutritional needs of psittacines, and there are species differences (Amazons and eclectus parrots require high levels of vitamin A). In this report, conures were seen with signs of vitamin A toxicity including weakness, hemorrhage, anorexia, dermatitis, hepatopathy, weight loss, swollen and crusting eyelids, and inflammation of the nares and oral mucosa. These birds were receiving vitamin A supplementation despite a high-quality fortified diet. Some birds were treated with antibiotic agents without resolution of signs of toxicity. The symptoms dissipated within 2–7 weeks after vitamin supplementation was discontinued.

Bourke A: Vitamin A toxicity in conures. *Newsletter of the AAV*, Feb 1997, pp 3–5.



**Editor's Note:** This report highlights the need for a thorough history to elucidate an accurate diagnosis. While vitamin supplementation may not cause symptoms in many birds, pets eating a good diet probably do not require additional vitamins and may actually show signs of intoxication. Counseling owners about the proper diet for birds is an important part of the avian visit.

## Obesity in Pet Birds

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be addressed and treated. Some obese birds may have liver dysfunction or hepatic lipidosis. In these cases the animals may benefit from lactulose, hepatic aid, Travasorb enteral nutritional therapy, or other related drugs.<sup>15</sup> Even if a bird has a normal thyroid level, it may benefit from supplemental levothyroxine. Triiodothyronine can be used to stimulate increased levels of glucagon, resulting in an increased lipolysis. Thyroid hormone levels should be monitored closely to prevent thyrotoxicosis.

Weight loss, the primary goal, must be done in a controlled and supervised manner. If a diet change is required, 3–4 weeks should be allowed to convert the bird to the new diet. The diet should be high in fiber, low in fat, and less dense in calories. Increasing specific carbohydrates in a low-fat diet will encourage lipid metabolism.<sup>7, 16</sup> Vitamin and mineral supplements are recommended as well. Feeding behavior may need to be modified, perhaps with the introduction of AM and PM feedings. Some galah breeders spread dry food mix or seed in soil so the birds have to work to get to the food.

Owners should have the bird's weight checked weekly, then monthly once an accepted rate of

weight loss is established. The rate of weight loss depends upon the degree of obesity and the bird's health. A steady 2.5% weight loss per week until an optimum weight is reached has worked well but may need to be modified with each case.

Activity and exercise needs to be encouraged to achieve maximum benefits of the weight-loss program. Larger play areas, supervised free flight, or simulated hand flights are helpful.

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## Client Teaching Guide

# Ferret

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## CARE SHEET

Michael A. Dutton, D.V.M., Dipl. A.B.V.P.

### Ferret Hairballs

Hairballs are a common phenomenon in ferrets. The ferret ingests its own hair in the process of grooming. This hair can tangle together in the stomach and form what is termed a *hairball* or *furball*. The danger with a hairball is that it can become large enough to obstruct the intestinal tract. This obstruction usually occurs at the pylorus, which is the junction of the stomach and small intestine.

#### ✓ Prevention

Hairballs can be easily prevented with ordinary cat hairball medications such as the Laxatone, Petromalt, or Cat-a-Lax brands. The medications are flavored with white petrolatum and liquid petrolatum and allow the hair to pass more easily through the digestive tract. These hairball remedies are usually given twice a week. The recommendation is to use approximately a 1/4 inch at each time.

#### ✓ Signs

The worst kind of hairball causes an obstruction. The most common signs are vomiting and anorexia. The vomiting usually precedes any diarrhea that may occur. This is an important distinction between hairballs and a gastrointestinal infection (in which diarrhea starts before the vomiting). Early symptoms of hairballs may include vomiting, coughing, gagging, or having a raspy voice. Excessive drooling and pawing at the mouth are nonspecific signs of nausea and can be caused by hairballs or other gastrointestinal disease. Hairballs are common during the spring and fall, when ferrets change their fur coats.

#### ✓ Treatment

If your ferret is vomiting, take him or her to your veterinarian. Diagnosis of an obstruction usually requires both plain and barium x-ray examinations. If an obstruction is present, the treatment is surgical removal of the furball.

## CASE REPORT

## Cholangiocarcinoma in a Green Iguana

Valarie V. Tynes, D.V.M.

A 4-year-old male green iguana (*Iguana iguana*) weighing 8 lbs (3.6 kg) was brought in for a 2-month history of orange feces and anorexia that developed 1 week before the visit. The iguana's habitat was a bedroom in the owner's home. The room was furnished with potted tropical plants, a large shallow container of water, and logs of varying sizes roped together to provide climbing areas. Two basking lights and two full-spectrum lights were positioned over the branches. The iguana was also provided with basking areas on the window ledges in the room. The screened windows were left open for the iguana during temperate weather. He was fed a diet consisting primarily of dark leafy greens and assorted vegetables, with fruit offered periodically. The owner also offered crickets occasionally, which the iguana appeared to relish. No vitamin supplementation was provided.

Physical examination revealed the iguana was thin and slightly dehydrated. The skin, scales, and the mucous membranes of the oral cavity were markedly jaundiced in appearance. During the examination the iguana eliminated yellow feces and a large amount of yellow, gelatinous mucus. The urates ranged from yellow to orange. A fresh fecal direct smear was immediately performed and appeared normal. Fecal flotation revealed numerous strongyle eggs.

The owner authorized blood collection for a complete blood count and serum chemistry profile (Table 2) but declined urinalysis, radiographs, and hospitalization because of the cost. Fenbendazole was administered orally at a dose of 60 mg/kg. Metronidazole suspension (100 mg/mL) was dispensed with instructions to give 5 mL (125 mg/kg) once weekly. Piperacillin injectable (200 mg/mL) was administered at a dose of 60 mg/kg IM, and 10 mL were dispensed with instructions for the owner to administer 1 mL IM daily for 10 days for possible bacterial

hepatitis.<sup>1</sup> The owner was to attempt force feeding with a gruel of rabbit pellets and vegetables.

At presentation, the differential diagnosis was neoplasia, a metabolic disorder, or liver disease caused by viral, bacterial, fungal, or parasitic infection.<sup>2</sup> Blood testing, however, revealed numerous abnormalities more consistent with chronic renal failure than with hepatic disease (elevated phosphorus values).<sup>3</sup> The iguana continued to deteriorate and died 2 weeks later. The iguana was necropsied with the owner's permission.

Necropsy findings included numerous blood clots, many adhesions, and blood-tinged yellow peritoneal fluid within the coelomic cavity. The lungs appeared smaller than normal and were firm with hard nodules throughout. The major vessels of the heart appeared to be calcified. The liver appeared greatly enlarged with a mottled tan and yellow surface. The kidneys also appeared larger than normal and were pale, firm, and nodular. Tissue samples were fixed in formalin

and were sent to the laboratory for analysis. A sample of peritoneal fluid was also included for analysis.

The histopathology report indicated a diagnosis of cholangiocarcinoma of the liver with metastatic mineralization of the lung and renal tissues. A chronic, diffuse, non-suppurative, serofibrinous bronchopneumonia was also present. Results of the peritoneal fluid analysis were consistent with ascites.

This case illustrates several issues frequently encountered in exotic animal medicine. The owner's financial situation frequently dictates which diagnostic testing can be performed. In this case, a urinalysis and radiographs might possibly have verified the diagnosis. The results of the blood tests, however, indicated a grave prognosis that was partially responsible for the owner declining further diagnostics and treatment. Taking the opportunity to perform a postmortem examination is important. It can be an excellent learning experience.

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Table 2.—Blood Profile

Test	Result	Normals	
<i>Chemistry</i>			
SGOT	98	35–90	iu/dL
Total Protein	8.2	2.8–5.0	g/dL
Phosphorus	19.0	3.5–6.0	mg/dL
Calcium	11.6	9.0–13	mg/dL
Glucose	133	197–280	mg/dL
Uric Acid	3.9	2.8–6.0	mg/L
<i>CBC</i>			
WBC	7.0	4.3–15	1,000/mL
RBC	1.0	3.5–5.8	1,000,000/mL
Heterophils	41	5–55	%
Heterophils Absolute	2,870	215–8,250	
Lymphocytes	59	35–55	%
Lymphocytes Absolute	4,130	1,505–8,250	
Platelet Estimate	Adequate		
<i>Hematocrit</i>			
HCT	28	20–36	%
<i>Abbreviations: SGOT, serum glutamate oxaloacetate transaminase; iu, international units; CBC, complete blood count; WBC, white blood count; RBC, red blood count.</i>			

## FROM THE LITERATURE

## Hemachromatosis in Birds

Hemachromatosis, or iron storage disease, is a devastating condition affecting a variety of avian and mammalian species. The commonly affected avian species that might be presented to a veterinarian in clinical practice include both toucans and mynah birds. Although not all species of toucans can contract iron storage disease, most of the species commonly presented to veterinarians are among those species that do. Most affected toucans demonstrate no discernable clinical signs, while mynah birds often have ascites and dyspnea. Definitive diagnosis is obtained through a liver biopsy, which demonstrates the abnormal presence of iron pigments and varying degrees of histopathological changes. Etiology is unknown, but may involve a genetic defect of the intestinal absorption of iron. Whether dietary iron load is significant is currently unknown. Treatment, in those cases documented ante mortem, can revolve around weekly phlebotomies to decrease the iron load in the body. Intermittent intramuscular injections with an iron chelating agent, deferoxamine mesylate (Desferal), may also be beneficial. Mynahs with ascites may benefit from manual fluid removal and diuretic agents.

Worell AB: Diagnosis and Management of Iron Storage Disease in Toucans. *Sem Avian and Exotic Pet Med* 3:30-39, 1994.

**Editor's Note:** Hemochromatosis is a common condition in mynahs and toucans; it should be considered whenever one of these birds is brought in with abdominal enlargement. Unfortunately, there is no known cure for this condition.



Readers: We welcome your questions, practice tips, and case reports. Please submit any materials to Tania Banak, Mosby-Year Book, Inc., 11830 Westline Industrial Drive, St. Louis, MO 63146; (800)325-4177; [tania.banak@mosby.com](mailto:tania.banak@mosby.com); fax (314)453-4191.



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