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Conspectus of Disease Investigation in Zebra Finch (*Taeniopygia guttata*) in India

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Abstract

The present era is witnessing tremendous advancements in disease diagnostics and therapeutics for different mammalian, reptilian and avian veterinary patients. On the other hand, there is also an increasing trend in national and international trade of different exotic birds which is permitted by national and international laws. This growing demand of exotic pet birds also forces veterinary practitioners to keep themselves updated with recent trends and advancements in avian medicine and surgery. Zebra finch (*Taeniopygia guttata*) is one of the exotic birds which have been found as a common pet bird for sale throughout India. Details pertaining to existing healthcare practices, managemental aspects, disease investigations etc. are not yet understood in Indian captive population of Zebra finches. Therefore, the present conspectus highlights some of the important aspects relevant to Zebra finches and places special emphasis on a need to investigate clinical ailments, endoparasites, ectoparasite, fungal and bacterial pathogens which may hold significant zoonotic potential.

Keywords: Zebra finch, clinical ailments, endoparasites, ectoparasites, India

Introduction

Exotic pets are gaining attention of people throughout the world resulting in an increased demand and supply of exotic mammalian, reptilian, amphibian and avian individuals. Many species have been permitted by national and international laws to be traded as exotic pets throughout the world; however, this trade may have legal and/or illegal procurement, travel and transport of such pets.

Among exotic birds, lovebirds, budgerigars, cockatoos, cockatiels, macaws, conures and finches have secured top place among bird-lovers throughout the world where psittacine birds are more commonly preferred over passerine birds as exotic pet birds. Both, 'wildly behaving' or tamed/trained birds are being sold by traders in exotic pet markets. Traders have started training birds from a young age which results in increased monetary gains. It is perceived that tamed/trained birds would cost more than untamed/untrained individuals. Training and taming psittacine birds is comparatively easier than passerine birds. Exotic pets kept in a cage by sellers (for sale) or by owners (purchased and kept throughout the life) or in zoos (*ex-situ* conservation or display) can be described as 'Captive' exotic birds where long period of captivity may invite certain health complications. Many passerine birds have gained interest of people because of their size, affordable cost, behavior, lower cost of maintenance and sounds. The present paper highlights some of the important healthcare related aspects of Zebra finches.

Zebra finch – Physical Examination & Diseases

Zebra finch (*Taeniopygia guttata*) is a passerine bird which has been found in almost all major cities of India as exotic pet. Traders or sellers would procure more than 10 birds depending on the demand while owners generally prefer keeping one or two pairs of Zebra finches as in-house companion birds. It is a common scenario to see around 30 to 40 Zebra finches housed together in a single suitable cage for sale in some regions. According to the field observations, a single pair of Zebra finches would cost around 400 INR (Indian rupees) while other costs may include cost of cage, feed, supplements and enrichment material. Thus, purchase cost and maintenance cost for a pair of Zebra finch appears lesser as compared to the cost associated with psittacine birds.

Mainland distribution of Zebra finch is believed to be Australia, but it is very common to be seen as exotic pet bird for sale in different regions throughout the world. The average life span of this bird may range from 5 to 8 years depending on care and consideration given to the healthcare and husbandry aspects. Adult birds often lay two to six eggs which have an incubation period averaging approximately 15 days. Zebra finches are permitted for trade in India, but they are less popular as compared to other psittacine birds such as budgerigars and cockatiels. It is also a known fact that Zebra finches are being kept as laboratory bird in some countries to conduct different type of research investigations; however, they are yet to be defined or included in the list of laboratory birds in veterinary colleges in India.

Irrespective of the popularity and preference by people, these birds suffer from various clinical ailments which may be focal or general (based on bodily involvement), infectious or non-infectious (depending on etiology); mild, moderate or severe (depending on involvement and stage of condition) and localized or systemic (based on organs involved). Common clinical manifestations in Zebra finches remain similar to those expressed by other sick birds. The small size of Zebra finches often makes it difficult to conduct a detailed physical examination. Therefore, a veterinarian should always focus more towards anamnesis and observations from a distance while dealing with a sick Zebra finch. Gentle restraint while conducting a thorough examination is must. It is also difficult to use general anesthesia for major surgical intervention because of the size of Zebra finches. It is desirable for veterinarians to take protective measures and use rubber gloves while examining Zebra finches since there is a lack of information on possible zoonotic pathogens which can be transmitted from these birds. The detailed physical examination of Zebra finches should be conducted in a systematic manner which include at least following steps;

1. Collection of appropriate history: History should include collection of information pertaining to time of purchase, period of captivity, duration of illness, present complaint, daily care, recent changes (housing, feeding, water supply), contact with other birds, fight between cage-mates, physical handling prior to onset of symptoms, failed attempt by predators such as cats or kites, sudden exposure to direct sunlight or cold weathers, exposure to human medicines, exposure to toxic materials, use of chemicals to clean the cage, chemicals used to clean water and feeding pens etc.
2. Checking the validity of the information received through anamnesis: For example, history of birds showing dropped eyelids, lethargy, ruffled feathers and reduced tendency to move must be taken by questioning the owner/seller about recent transport history to rule out post-transportation stress. Similarly, suspected cases of accidental poisoning should be questioned about possible exposure to any toxic or poisonous material. Cases of mass morbidity (e.g., severe diarrhea due to coccidial infection) and mortality (e.g., due to accidental poisoning) may have a common etiological factor.
3. Examination of cage and surroundings: Evaluation of floor of cage for droppings, evaluation of feeding area, observation of water pen, observation of breeding box, observation of enrichment material, presence of feathers stuck in cage, blood spots, cleanliness, presence of contaminated areas, circumstantial evidence of attack by predators etc. may give some ideas on cause of morbidity or mortality in Zebra finch.
4. Observation of normal or abnormal behavior and physical status from a distance: Feather quality, normal and abnormal sounds, normal and abnormal respiration, walking, jumping, gripping, wing flapping, preening, eating, excretion, limping, dropped wings, dullness, depression, weakness, stress symptoms, diarrhea, dirty vent, soiled feathers, dominant

or recessive behavior, tuning with cage-mates, presence of abnormal growth on body parts, bleeding areas, vices (such as vent-picking, feather plucking), ruffled feathers, localized or generalized feather loss, infight injuries, post-transportation stress, pox lesions, scratching or itching etc.

5. Gentle restraint.
6. Observation of facial expression while gentle restraint, response to stimuli and efforts to get rid of the gentle grasp.
7. Examination of beak and oral cavity: To check friction granuloma, mite infestation, beak deformities (such as scissors beak/crossed beak, elongated beak, overgrown beak, fang-like overgrown beak), presence of abnormal deposits in oral cavity as in case of avian trichomoniasis etc.
8. Examination of eyes: For normal appearance, dry eyes, excessive lacrimation, conjunctivitis, injuries, edema, staphylococcal infection, symptoms of sinusitis etc.
9. Palpation of keel bone: To check physical status, dehydration and emaciation.
10. Examination of wings: For normal appearance and movements as well as for presence of any lacerations, major injuries, tearing injuries, fractured wing bones and presence of ectoparasites (such as feather mites) etc.
11. Examination of neck region: For unnatural and prolonged accumulation of large sized seeds around neck region, abnormal unilateral deviation of neck, injuries etc. Some healthy Zebra finches may also show presence of seeds around neck region which persist for a very short period without having other symptoms such as difficulty in feed intake or in excretion.
12. Examination of abdomen: For presence of watery substance indicative of ascites and other abnormalities, injuries, obesity etc.
13. Examination of vent area: To check for diarrhea, egg-bound condition, constipation, vent-picking etc.
14. Examination of legs: To check fractures, scaly leg condition, toe abnormalities, deformities, minor injuries, lacerations, nail abnormalities etc.
15. Examination of dorsal midline (head, neck, back and tail): For abnormal deviation of neck, stiffness, placement of feathers, presence of ectoparasites, tail feathers etc.
16. Special examination: This may require collection of biomaterials (e.g., faecal sample for detection of endoparasites, blood sample collection, collection of ectoparasites, collection of swab samples from ophthalmic discharge etc.); use of advanced diagnostic techniques (e.g., use of stethoscope for respiratory/cardiac auscultation or performing radiography to diagnose gastric blockage/obstruction clinically represented by prolonged abnormal seed accumulation around neck, dehydration with constipation or no fecal output); post-mortem diagnosis (e.g., in case of mass mortality) etc.

Some of the common clinical ailments of Zebra finches may include post-transportation stress, hypothermia, heat stroke, coccidial diarrhea, *Cochlosoma* infection, coccidial diarrhea, ectoparasitic infestation (e.g., feather mites), injuries caused by cage-mates (commonly described as 'Infight' injuries), feather loss, fractures (especially in legs), ophthalmic injuries, conjunctivitis, beak deformities (e.g., scissors beak/cross beak, fang-like beak), sinusitis, wing injuries, water-borne diarrhea, stunted growth, absence of tail feathers, egg-bound condition etc. [Filippich and Donoghue (2008); Nouri *et al.* (2012); Chen *et al.* (2015); Madani *et al.* (2015); Siddalls *et al.* (2015); Rakhshandehroo *et al.* (2021)]. Most of such healthcare issues are documented based on observations recorded or studies conducted in countries other than India.

Furthermore, there is also a possibility of presence of zoonotic pathogens (especially bacteria, virus and fungus) in fecal droppings of Zebra finch which may act as a source of zoonotic transmission of diseases to humans. These aspects are poorly understood in Indian veterinary practice. Hence, it is important to initiate basic or advanced research to identify and understand existing diseases of Zebra finch population kept by owners and sellers in India.

Conclusion

Zebra finches are small passerine birds which have been permitted as a household pet in different countries. There is a lacuna in systematic research investigation on existing clinical ailments, non-infectious disorders, systemic and infectious diseases of Zebra finch in India. A well-planned survey is also needed to understand basic husbandry aspects for pet Zebra finches. Basic and advanced studies are

warranted to generate specific healthcare and management guidelines for owners, sellers as well as veterinary practitioners.

Conflict of Interest & Ethical Statement

Authors declare no conflict of interest with special regards to funding. This literature does not promote illegal trade of birds. No birds were harmed while preparation of this manuscript.

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