Can Chronic Crack-Cocaine Exposure Cause Parrot Foot Necrosis? A Possible Hypothesis

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ABSTRACT

Background: Parrot foot necrosis is a poorly understood dermatitis with difficult diagnosis and treatment that has been reported in all species of Amazon parrots. Diagnosis is usually achieved by detailed history and ruling out other causes through evaluation of CBC and biochemical profile. Prolonged crack-cocaine misuse could cause digit or nail lesions in humans. In this report similar clinical manifestations in two African gray parrots owned by crack-cocaine addicted users have been reported.

Cases: Two African gray parrots were referred with pruritic foot, discoloration of digits, black and brown patching of the scales on the feet and legs associated with soft tissue swelling. Gross necrosis and self mutilation were also observed. According to the history, both birds had been suffering from the lesions for the past few weeks. A detailed history was obtained for each patient, including environmental condition and their main diet was nuts and fruits. Common causes were ruled out through evaluation of CBC and biochemical profile. Based on gross characteristics and distribution of lesions, foot necrosis was diagnosed. Husbandry recommendations were given and antibiotics were prescribed to prevent possible infections. However, no improvements were seen, following the prescribed medication. Also deterioration of the clinical signs and feet lesions were observed. Typical finger tips showed gangrenous necrosis and very severe dark discoloration. After scrutiny in history taking, and visit of the owner’s residence, it was evident that the birds have been exposed to the owner’s crack-cocaine smoking area for at least two years. One of the owners accepted the recommendation of amputation of the affected digits and changing either the owner or environment. Follow-up showed no further lesion progression.

Discussion: This clinical report presents two cases of parrots exposed to long term crack-cocaine smoke released to the environment. Generally speaking pet birds such as African gray parrots, used to share in many social activities with their owners, and such a behavior makes them more vulnerable to develop lesions in polluted environment. The history of both patients did not show any exposure to external or internal irritant of epithelial tissues except that they were continuously in close contact with crack-cocaine smoke. Clinical manifestations of both cases were similar in the first visit and follow-up clinical examination. So, according to the history and physical examination finding and ruling out other possibilities, it is assumed that foot necrosis may occur following long-term exposure of a bird in a crack-heroin-polluted area. Skin lesions such as burns and blackened hyperkeratosis on hands or digits of human associated with the use of crack have been reported before. Vasoconstriction (due to cocaine exposure) would be able to cause persistent hypoxia at the periphery. Another possible reason for these signs is acute peripheral arterial thrombosis associated with cocaine. Cocaine has also been associated with small vessel vasculitis. It is therefore postulated that, prolonged habitual use of crack-cocaine by parrot owners may result in visible digital changes (caused by multiple prolonged episodes of vasoconstriction, peripheral arterial thrombosis, hypoxia and ischemia) in parrots and could be one of the reasons for foot necrosis.

Keywords: parrot foot necrosis, African gray parrot, crack use, cocaine use, avian pathology, digit necrosis.
INTRODUCTION

Parrot foot necrosis is a poorly understood dermatitis with difficult diagnosis and treatment that has been reported in all species of Amazon parrots. The lesion is most commonly seen in yellow-napped and yellow-headed Amazon parrots. Affected birds will chew on the scaled portion of their feet and hocks, sometimes to the point of tearing scales and underlying tissue.

The etiology is unknown. Proposed causes include contact hypersensitivity, poor nutrition, seasonal sexual frustration, high-fat diets, and bacterial, viral, and immune-mediated infection. Itchy painful lesions often appear around the hocks and feet of these birds. Diagnosis is usually achieved by detailed history and ruling out other causes through evaluation of CBC and biochemical profile [1].

Cocaine is an extremely addictive central nervous system stimulant, extracted and refined from the leaves of the coca plant (*Erythroxylon coca*).

In recent years, the use of synthetic opioids such as crack-cocaine has increased dramatically worldwide [8]. Frequent direct and indirect exposure to crack-cocaine could have similar effects in human and animals living in vicinity [5]. Regular examination of crack-cocaine dependent individuals detained in police custody resulted in the observation of a phenomenon of changes in the appearance of the hands in 2006 [6]. Payne-James *et al.* [6] has reported perniosis, pulp atrophy and parrot-beaked clawing of the nails due to prolonged crack-cocaine misuse. In this report similar clinical manifestations in two African gray parrots owned by crack-cocaine addicted users have been reported.

CASE REPORT

Two African gray parrots were referred to private veterinary clinic for pruritic foot and discoloration of digits. According to the history, both birds had been suffering from the lesions for the past few weeks. Physical examination during the first visit showed black and brown patching of the scales on the feet and legs associated with soft tissue swelling (Figure 1). Gross necrosis and self mutilation were also observed.

A detailed history, including environmental condition and type of diet was obtained for each patient. Both parrots were social birds, spoke many words and were free in the home most of the time. Their main diet was nuts and fruits. CBC and biochemistry profiles were normal. Accordingly, based on gross characteristics and distribution of lesions, Amazon foot necrosis was diagnosed.

Husbandry recommendations were given and antibiotics (Lincospectin1, IM, q12h; Tetracycline2, topical, q12h) were prescribed to prevent possible infections. However, no improvements were seen, following the prescribed medication. Also deterioration of the clinical signs and feet lesions were observed. Typical finger tips showed gangrenous necrosis and very severe dark discoloration (Figure 2). After scrutiny in history taking, and visit of the owner’s residence, it became evident that the birds had been in close contact to the owners smoking area. Both owners had long term addiction habit. Exposure time of these birds to such an environment was estimated about two years.

Amputation of the severely necrotic digits, in addition to changing the owner or environment was recommended for treatment. One of the owners accepted the recommendations. Follow-up showed no further lesion progression in this case.

Figure 1. Severe soft tissue swelling of the feet from two (left and right pictures) African grey parrots subjected to frequent crack-cocaine exposure. Scaled and discolored feet (arrow) in 2 African parrots.
DISCUSSION

This clinical report presents two cases of parrots exposed to long-term crack-cocaine smoke released to the environment. The history of both patients did not show any exposure to external or internal irritant of epithelial tissues except that they were continuously in close contact with crack-cocaine smoke. Clinical manifestations of both cases were similar in the first visit and follow-up clinical examination. So, according to the history and physical examination finding and ruling out other possibilities, it is assumed that foot necrosis may occur following long-term exposure of a bird in a crack-heroin-polluted area.

Skin lesions such as burns and blackened hyperkeratosis on hands or digits of human associated with the use of crack have been reported before [2,3]. Vasoreactivity (i.e., vasomotor instability) is a common finding in human, especially in women [7]. It is described as those with a circulation that is more responsive than average, especially to temperature change. Individuals who are vasoreactors often have a perniotic circulation, especially in the hands and feet. At rest, a perniotic circulation is characterized by a cold (often clammy) purplish periphery. In perniosis, cold can cause vasoconstriction severe enough to induce temporary distal ischemia (e.g., over the knuckles). On rewarming, vasodilatation occurs and a reperfusion of blood occurs in the tissue. If there is enough cold damage to cause a thermal injury, reactive erythema, inflammation and edema can follow (i.e., chilblains). These thermal injuries may cause microscopic foci of necrosis. If repeated, the affected tissues will gradually atrophy [7].

It is well-known that cocaine, acting as a vasoconstrictor, may be expected to aggravate the vasoconstriction that underlies perniosis. Digital cutaneous circulation in humans has also been shown to be highly sensitive to the vasoconstrictive effects of intravenous cocaine [11]. Such cocaine-induced vasoconstriction persists beyond the more general hypertensive response in human [9]. It is recognized that certain individuals are at higher risk for cardiac complications, and that hemodynamic response patterns to cocaine differ amongst individuals [10]. When a parrot is exposed to a crack-cocaine-polluted area for a period of time, the peripheral vasoconstrictive effects may continue for days and even longer. This prolonged vasoconstriction would be able to cause persistent hypoxia at the periphery.

Another possible reason for these signs is acute peripheral arterial thrombosis associated with cocaine use (either powder-cocaine intra-nasally inhaled or smoked crack-cocaine) which presents as distinct episodes of ischaemia [12], and also from acute digital gangrene which is a consequence of arterial occlusion by impurities and can occur after accidental intra-arterial injection in humans. Cocaine (mode and amount unspecified) has also been associated with small vessel vasculitis where digital arteries were small with multiple occlusions and very limited blood flow [4].

Generally speaking pet birds such as African gray parrots, used to share in many social activities with their owners, and such a behavior makes them more vulnerable to develop lesions in polluted environment. The same behavior has been observed from these two cases and because they were free in a polluted environment and had close contact with their owners during the use of drugs, they have been in danger to side effects
of narcotics smokes. It is the opinion of the authors that all of the effects (in human) mentioned above may affect exposed amazon parrots as well.

It is therefore postulated that, prolonged habitual use of crack-cocaine by parrot owners may result in visible digital changes (caused by multiple prolonged episodes of vasoconstriction, peripheral arterial thrombosis, hypoxia and ischemia) in parrots and could be one of the reasons for foot necrosis.

REFERENCES


SOURCES AND MANUFACTURERS

1. Lincospectin (Lincomycin + Spectinomycin), Razak Laboratory Co., Tehran, Iran.
2. Tetracycline ointment 3%, Sina Darou, Tehran, Iran.

Declaration of interest. The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.