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February 19, 2001

Dear Dr. Carpenter

This letter is a summary of my findings after my consultation visit to the Topeka Zoo. I became aware of the illness in your elephants after a telephone call from you Thursday, January 11, 2001. After your description of the clinical signs, we discussed the differential diagnosis and potentially useful diagnostic tests. At the time I suspected infectious diseases, but toxins were certainly a possibility. I felt that this telephone conversation was thorough and that your proposed diagnostic and treatment plans were very appropriate.

The next day (Friday, January 12, 2001), I was invited to visit the Topeka Zoo to provide an on-site consultation. I elected to bring Dr. Pickrell (a specialist in veterinary toxicology and toxic plants) as an unofficial guest during the consult. We arrived at about 3 pm and stayed for 2.5 hours. My visit started with a review of the clinical signs, progression, and available diagnostic test results with you and your technician, Dennis Stasinski. We then went to the elephant barn to examine the facilities and observe the elephants. During this portion of the visit Merle Miller and Dennis Stasinski accompanied us. We walked through the food storage area, keeper areas, and exhibit (indoor and outdoor areas). We spent considerable time looking for potential sources of toxic agents and asking question about husbandry practices that may have inadvertently introduced a toxin. Of particular interest to Dr. Pickrell was any potential source of toxic plants in the exhibit, hay, or browse. We found no evidence of any toxic substances that could be considered as potentially responsible for the clinical signs. We then spent some time performing visual observations of the two elephants. The next portion of the visit was spent in the administration building, reviewing videos taken of the elephants during their illness with you and Dennis Maxim. Finally, we spent some time discussing our observations, discussing the differential diagnosis and related diagnostic tests.

My conclusions from this consultation are the following:

1. I have been involved with elephant medicine in zoological collections for over 10 years and have been working with a herd of over 70 Asian elephants for the past two years. The clinical signs and course of illness I observed in the elephants at the Topeka zoo are unique, and to my knowledge not characteristic of any classic elephant syndrome.

2. I believe that a toxin is a probable cause of these elephant's illness. This is based on the self-limiting and acute onset of clinical signs that is inconsistent with most infectious agents, chronic metabolic diseases, or traumatic events. In addition, it would be very unusual for both animals to have similar clinical signs with a metabolic or traumatic problem.
3. Given a presumptive diagnosis of a toxic event, a considerable amount of time was spent during the consultation to determine if a toxic agent could have been inadvertently given to the elephants. Visual inspection for potential sources of toxins in the elephant barn and exhibit were not observed. Review of husbandry practices, feed sources, and feed storage revealed no problems.
4. Numerous clinical and environmental samples have been submitted to help determine the cause of this illness. Tests submitted include CBC, serum chemistries, urinalysis, fecal cultures, drug screens, and specific analytical tests for potential toxins. These tests are necessary and appropriate to help rule out certain diseases and toxins. Unfortunately, as in many cases such as this, determination of a definitive diagnosis is difficult and becomes a diagnosis of "exclusion". Many diagnostic and analytical tests have been performed that eliminate specific etiologies but fail to determine a specific cause of the illness.

I am happy to learn that both elephants have recovered fully from their illnesses. Although the outcome was good, this episode will undoubtedly stimulate further investigations. I would suggest continued vigilance of the food and husbandry practices to help identify any potential toxin sources. Additionally, periodic sampling of feed, hay, and serum samples from the elephants may be helpful in preventing future problems.

I want to thank you Dr. Carpenter, and the entire staff of the Topeka zoo for inviting me to consult on this case. I had full cooperation from the staff and unlimited access to the facilities in order to provide a full assessment of the problem. As always, we at Kansas State University appreciate the opportunity to work with you and your staff.

Sincerely,



Ramiro Isaza, DVM, MS, DACZM  
Assistant Professor  
College of Veterinary Medicine  
Kansas State University

Subject: Fwd: Elephants  
Date: Thu, 01 Feb 2001 10:35:36 -0600  
From: "Ramiro Isaza" <risaza@vet.ksu.edu>  
To: <Nancy Carpenter <ncarpenter@topeka.org>>

Subject: Elephants  
Date: Sat, 13 Jan 2001 12:55:49 -0600  
From: "John Pickrell" <Pickrell@vet.ksu.edu>  
To: "Ramiro Isaza" <risaza@vet.ksu.edu>

I was reading (Veterinary and Human Toxicology 43, 37, 2001) about  
a  
Brazilian plant *Atelia, glazioviana* today with somewhat similar signs to  
those we saw in the elephants. As far as I know this plant is not  
present  
in ambient forage in the US. I wondered if it was present in the  
cuttings  
from the tropical rain forest exhibit at the Topeka Zoo.

Secondly, I was struck with the similarity to signs from *Eupatorium  
rugosum*,  
white snakeroot. Further research revealed some similarity to it  
in  
Osweiler 1996, Toxicology an NVMS review outline, and even more re-  
semblance  
to it in Michael Murphy's A field guide to common animal poisoning  
page  
173. One drawback was that the signs were more those reported for  
horses  
than for cattle.

I'm really interested in how this case comes out. Let me know how  
it goes.

Best,

John P

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8:30 2/19/01 Spoke w/Dr. Pickrell. Gave him 1d.s of weeds in hay.  
He recommended checking for Nitrate & gave me the name  
of a lab at UNebl, chemist Dr. Mike Carlson.  
Spoke w/Dr Carlson, he is faxing submission information